Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

United States
Environmental Protection
Agency

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Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
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1- Note the same standardized comment was submitted by multiple commenters, including those comments denoted in this index. See the rulemaking docket, EPA-HQ-OAR-2005-0161, for these comments.

Acronyms and Abbreviations

AEO	Annual Energy Outlook
AFOLU	(2006 IPCC) Agricultural Forest and Other Land Use Guidelines
AFV	Alternative Fuel Vehicle
ARMS	(USDA) Agricultural Resource Management Survey
ASTM	American Society for Testing Materials
B	Billion
BESS	Biofuel Energy Systems Simulator
BG, Bg	Billion Gallon
Bgal	Billion Gallon
BLUM	Brazil Land Use Model
BOB	Blendstock for Oxygenate Blending
BTL	Biomass-to-Liquid
Btu	British Thermal Unit
bpcd	Barrels per Calendar Day
CAA	Clean Air Act
CBOB	California Blendstock for Oxygenate Blending
CAFE	Corporate Average Fuel Economy
CAMx	Comprehensive Air Quality Model with Extensions
CARB (or ARB)	California Air Resources Board
CARD	Center for Agricultural and Rural Development (at Iowa State University)
CASAC	Clean Air Science Advisory Committee
CBE	Cellulosic Biomass Ethanol
CBI	Confidential Business Information
CBI	Caribbean Basin Initiative
CCS	Carbon Capture and Sequestration
CDX	Central Data Exchange
CET	Constant Elasticity of Transformation
CFR	Code of Federal Regulations
CG	Conventional Gasoline
CGE	Computable General Equilibrium
CHP	Combined Heat Processes
CMAQ	Community Multi-scale Air Quality Model
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CRC	Coordinating Research Council
CRP	Conservation Reserve Program
CWPPs	Community Wildfire Protection Plans
DDG	Dried Distiller Grain
DG	Distiller Grain
DoE, DOE	U.S. Department of Energy
DME	Dimethyl Ether
DRIA	Draft Regulatory Impact Analysis

E10	10% Ethanol
E15	15% Ethanol
E85	85% Ethanol
EBAMM	ERG Biofuel Analysis Meta-Model
ECA	Emission Control Area
EIA	Energy Information Administration
EISA	Energy Independence and Security Act of 2007
EMTS	EPA Moderated Trading System
EO	Executive Order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act of 2005
ERG	Energy Resources Group (at the University of California Berkeley)
ETBE	Ethyl Tertiary Butyl Ether
ETRAE1	Elasticity of Transformation
EU	European Union
EV	Equivalence Value
FADS	Fatty Acid Distillate Streams
FAME	Fatty Acid Methyl Ester
FAO	(United Nations) Food and Agricultural Organization
FAPRI	Food and Agricultural Policy Research Institute (Model)
FASOM	Forest and Agricultural Sector Optimization Model
FFV	Flex-Fuel Vehicle
FR	Federal Register
FRAR	Fuel Registration and Reporting
FRM	Final Rulemaking
FT	Fischer-Tropsch
FWP	Fuel Warming Potential
GATT	General Agreement on Tariffs and Trade
GE	General Equilibrium
GHG	Greenhouse Gas
GREET	Greenhouse gases, Regulated Emissions, and Energy use in Transportation (Model)
GTAB	Gasoline Treated as Blendstock
GTAP	Global Trade Analysis Project (Model)
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HC	Hydrocarbon
HWP	Harvested Wood Products
HR	House Report
ILUC	Indirect Land Use Change
IPCC	Intergovernmental Panel on Climate Change
ISO	Independent System Operator
ISO	International Standards Organization
IT	Information Technology
LCA	Lifecycle Analysis

LCFS	Low Carbon Fuel Standard
LEM	Lifecycle Emissions Model
LEV	Low Emission Vehicle
LHV	Lower Heating Value
LNG	Liquefied Natural Gas
MCF	Methane Correction Factor
MM5	(Pennsylvania State University/National Center for Atmospheric Research) Fifth-generation Mesoscale Model
MODIS	(NASA's) Moderate-resolution Imaging Spectroradiometer
MPG	Miles Per Gallon
MSAT	EPA's Mobile Source Air Toxics Rule
MSW	Municipal Solid Waste
MTBE	Methyl Tertiary Butyl Ether
MY	Model Year
N	Nitrogen
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standard
NASA	National Aeronautics and Space Administration
NATA	National Air Toxics Assessment
NETL	National Energy Technology Laboratory
NGV	Natural Gas Vehicle
NHTSA	National Highway Transportation Safety Administration
NLEV	National Low Emission Vehicle
NMHC	Non-methane Hydrocarbon
NMIM	National Mobile Inventory Model
NMOG	Non-methane Organic Gas
NOx	Oxides of Nitrogen
NPRM	Notice of Proposed Rulemaking
NREL	National Renewable Energy Laboratory
OEM	Original Equipment Manufacturer
OMB	Office of Management and Budget
OPEC	Organization of the Petroleum Exporting Countries
OPIS	Oil Price Information Service
ORNL	Oak Ridge National Laboratory
OTAQ	Office of Transportation and Air Quality
PADD	Petroleum Administration District for Defense
PE	Partial Equilibrium
P.E.	Professional Engineer
PET, PETE	Polyethylene Terephthalate
PM	Particulate Matter
ppb	Parts Per Billion
ppm	Parts Per Million
psi	Pound-force per Square Inch
PSD	Prevention of Significant Deterioration
PTD	Product Transfer Document

R&D	Research and Development
RBOB	Reformulated Blendstock for Oxygenate Blending
RD	Renewable Diesel
REC	Renewable Electricity Credits
REDD	(United Nations Collaborative Programme on Reducing Emissions from) Deforestation and Forest Degradation in Developing Countries
RFA	Regulatory Flexibility Analysis
RFG	Reformulated Gasoline
RFS	Renewable Fuel Standard
RFS1	First Renewable Fuel Standard Program (*finalized on May 1, 2007*)
RFS2	New Renewable Fuel Standard Program
RIA	Regulatory Impact Analysis
RIN	Renewable Identification Number
RSM	Response Surface Model
RSPO	Roundtable for Sustainable Palm Oil
RVO	Renewable Volume Obligation
RVP	Reid Vapor Pressure
SBA	Small Business Administration
SBAR Panel	Small Business Advocacy Review Panel
SBREFA	Small Business Regulatory Enforcement Fairness Act
SCC	Social Cost of Carbon
SEC	U.S. Securities and Exchange Commission
SIP	State Implementation Plan
STEO	Short-term Energy Outlook
THC	Total Hydrocarbon
TRS	Total Recoverable Sugars
ULSD	Ultra-low Sulfur Diesel
USC	United States Code
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

Table of Contents

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 1
General

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

1 GENERAL

1 GENERAL

What We Proposed:

The following comments relate in general to the Notice of Proposed Rulemaking (NPRM). The comments in this chapter are not on any specific aspect of the proposed rule; rather, they are directed to the general substance of the proposal. More detailed comments on specific provisions of the proposal can be found in later chapters of this Summary and Analysis of Comments.

For more information on the proposed rule, see the Federal Register at 74 FR 24904, published on May 26, 2009. The public comments submitted on this rule can be viewed online at www.regulations.gov (the public docket for this rulemaking is docket number EPA-HQ-OAR-2005-0161).

1.1 Supports Rule

What Commenters Said:

We received many comments supporting the proposed rule, which generally stated that they support the rule itself and/or efforts to reduce dependence on non-renewable resources and foreign petroleum supplies to reduce carbon dioxide (CO2) and greenhouse gas (GHG) emissions. Commenters additionally expressed support for various potential positive aspects on the development and use of biofuels, including: technology and economic growth, job development, support of the agricultural sector, and energy security.

However, many of these commenters also stated that, although they support the rule, they believe that additional work should be done before the rule is finalized. Commenters offered various suggestions on how they believe that the rule could be improved, and those specific comments can be found throughout this Summary and Analysis of Comments document.

Our Response:

We appreciate the support we have received from these commenters and well as many other parties during the development of the final rule to implement the RFS2 standards as mandated by EISA. As our analysis in support of the rulemaking demonstrates, we believe that the increase use of renewable fuels in place of petroleum fuels will provide both greenhouse gas and energy benefits to our nation, as well as significant economic benefits to our agricultural sector.

We have conducted extensive analysis in support of the rulemaking on the greenhouse gas, air quality and water quality impacts of increased use of renewable fuels as summarized in the preamble and detailed in the Final Regulatory Impact Analysis (RIA). In addition, EPA is required by section 204 of EISA to assess the environmental and resource conservation impacts on an ongoing basis.

1.2 Opposes Rule

What Commenters Said:

We also received comments expressing opposition to the proposed rule. These comments listed various aspects such as flawed analyses with respect to land use and fuel use assumptions, negative experiences with ethanol and other biofuels, regulatory and compliance requirements, inadequate peer review, and emissions impacts of renewable fuels.

More specifically, one commenter stated that it believes that EPA policy should advance the intent of the Congress in workable ways; accordingly, this proposed rule should be revisited and made practical. As written, the proposed rule suffers from suspect methodology in the science; flawed assumptions regarding land use, petroleum and biodiesel use; and complex regulatory burdens which inhibit rather than facilitate desperately needed innovation.

Another commenter stated that the congressional intent clearly aims to encourage an environmentally sound, innovative, and an economically viable renewable fuels industry, but the proposed rule will stifle innovation. The proposed rules would effectively deny important economic incentives to their energy crop innovations.

Some commenters stated that they are opposed to the EPA changes in RFS2. They noted that the very intent of the original legislation, growing the US renewable fuels industry, will be irreparably harmed if the EPA proposal is allowed to stand. Some of these commenters further stated that there is more than sufficient testimony and sound science refuting many of the EPA interpretations of the 2007 Energy Bill. The commenters believe that the negative economic impact of the EPA proposal to America's farmers, consumers, and businesses is further cause for discussion and revision to develop fair and sensible rules.

Our Response:

We have in fact taken the comments we received on the proposal into account and made significant changes in the lifecycle and other analyses for the rulemaking, as well as to modify some of the programmatic requirements which should ease implementation (e.g., new renewable biomass provisions and EMTS system). We believe that the final rule faithfully implements the requirements of EISA in a manner consistent with our legal

obligations, with sound science, and with sound environmental, energy, and economic policy.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 2
Effective Date of the RFS2 Program

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

2. EFFECTIVE DATE

What We Proposed:

The comments in this section correspond to Section II.A.5 of the preamble to the proposed rule and pertain to the date when the RFS2 requirements start to apply to refiners and importers of gasoline and diesel and producers and importers of renewable fuel, as well as the volumes of renewable fuel that are required during calendar year 2010. The comments we received and our response to those comments are summarized below.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that reporting of RIN transactions should shift from RFS1 formats to RFS2 formats only once. The commenter believes that EPA should not begin RFS2 reporting until EMTS is ready to accept RIN transactions. (2110.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2548
Organization: Xyleco, Inc.
Comment:
EPA should ensure sufficient time for the entry-into-force of RFS2, and that transitional regulatory arrangements support the overarching legislative objective of promoting development of renewable fuels. That is, RFS2 should enter into force on January 1, 2011, with RFS1 continuing to apply in the meantime. This delayed implementation date would have the added advantage that the EPA would have another year to analyze historical data on renewable fuels production before determining whether to grant waivers, and, if so, to what level mandates should be adjusted.

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports implementing the RFS2 amendments quickly, but believes that EPA's revised lifecycle analysis is not likely to be completed in time for a January 1, 2010 effective date. The commenter believes much work still needs to be done with respect to EPA's lifecycle analysis, particularly with respect to the sensitivity and uncertainty analysis. (2329.1, p.15)

The commenter believes that EPA can rely on the current RFS program to meet the revised requirements pending issuance of final regulations. The commenter noted that the RFS1

regulations currently in place are sufficient to implement the EISA requirements. (2329.1, p.16) [[See Docket Number 2329.1 pp.16-19 for a detailed discussion of this issue]].

The commenter agrees that January 1, 2011 is the "most straightforward" alternative effective date and EPA should not implement the program in the middle of the year. (2329.1, p.18)

Document No.: EPA-HQ-OAR-2005-0161-0988
Organization: National Renderers Association
Comment:
The commenter requests that EPA not delay implementation of the proposed RFS2 beyond 2009 so that the RFS2 program applies to "all renewable fuel produced on or after January 1, 2010..." as set forth in proposed 40 CFR 80.1400. (P.1)

The commenter believes that a January 1, 2010 start date for RFS2 implementation is essential to meet the Congressional mandate to reduce U.S. dependence on foreign sources of petroleum by increasing domestic sources of renewable fuels. The commenter also believes the final rule must be promulgated in 2009 to encourage the production and use of renewable fuels, especially biomass based diesel, which will significantly reduce greenhouse gas emissions associated with petroleum fuels. (P.1)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) noted that the Biodiesel industry needs to have the RFS2 program launched as soon as practical in order to preserve its current infrastructure. Due to current economic conditions, the Biodiesel industry needs this defined market to survive and continue producing the proposed volume of biomass-based diesel products. (0994.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-0999
Organization: Darling International Inc.
Comment:
The commenter (0999) urges EPA to promulgate the RFS2 final rule in 2009 so that the RFS2 program applies to "all renewable fuel produced on or after January 1, 2010..." as set forth in proposed 40 CFR 80.1400. The commenter believes that a January 1, 2010 start date for RFS2 implementation is essential to meet the Congressional mandate to reduce U.S. dependence on foreign sources of petroleum by increasing domestic sources of renewable fuels. The commenter also believes the final rule must be promulgated in 2009 to encourage the production and use of renewable fuels, especially biomass based diesel, which will significantly reduce greenhouse gas emissions associated with petroleum fuels. (P.1)

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:

The commenter (1015) believes the U.S. biodiesel industry is ready today to meet the volumetric demands required by the RFS2. The industry will suffer if the program is delayed. EPA should enact a January 1, 2010 implementation date for the RFS2. (1015, p.1)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) believes that efforts should be made to implement the non-contentious elements of the proposed rule as fast as possible and further work regarding the LCA and GHG should be developed. [[Docket number 1044.1, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) recommends that EPA move forward to enforce the volumetric requirements as soon as practicable but do so in a way that does not rush the premature application of the controversial ILUC. (2101.1, p.16)

Document No.: EPA-HQ-OAR-2005-0161-1969
Organization: SeQuential-Pacific Biodiesel
Comment:
The commenter states that they have weathered the turbulent markets by utilizing every resource available including capitalizing on the value of our RINs. This revenue stream has been vital the past year. The commenter urges EPA to consider the effect a delay in implementing RFS2 will have on the renewable fuel industry. The commenter strongly supports the RFS2 regulatory program beginning on January 1, 2010. Postponing implementation will continue to devalue RINs currently being traded and delay the recovery for renewable fuel producers. [[Docket number 2027, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-1975
Organization: Canadian Bioenergy Corporation
Comment:
The commenter believes that EPA should implement RFS2 volume requirements for Jan. 1, 2010. Delaying the effective date is not consistent to the stated goal to reduce U.S. dependence of foreign sources of petroleum by increasing domestic sources of energy. Recognizing the complexity of this task and that never before has a regulatory program assessed greenhouse gas emissions of fuels, the industry stands ready to bring low carbon fuel to market. [[Docket number 1975, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2017
Organization: Aloha Petroleum, Ltd.
Comment:

The commenter (2017.1) believes that the start date should be January 1, 2011. A start date any time during calendar year 2010 would create a great deal of confusion in the marketplace because not all participants in the program would have adequate time to fully prepare. (2017.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2102
Organization: RENTECH, INC
Comment:
The commenter (2102.1) strongly supports EPA's proposed effectiveness date of January 1, 2010, as opposed to an alternative date of January 1, 2011. Any delay in implementation of the RFS2 program will negatively affect the ability of fuel producers to deliver volumes in future years by complicating their pathway to financing. (2102.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests that EPA begin implementation of the RFS2 regulatory program on January 1, 2010 or as soon as possible thereafter but much sooner than January 1, 2011. The mechanisms for RIN generation and compliance are already in place for a substantial portion of the transportation fuels marketplace. While there have been some inevitable challenges, the system is up and operating and therefore these refinements are incremental to a working system to achieve the EISA goals. Any further delay has the effect of sending the wrong signals to the renewable fuels marketplace where investments are necessary to achieve the EISA goals. Additional, EPA has confirmed in this NPRM that it will be revisiting these rules on an annual basis to correct any deficiencies in the rules that may occur with an aggressive implementation date. [[Docket number 2106.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter supports the comments of API and NPRA.

The commenter (2110.1) thinks a year after final rule promulgation should be reasonable but EPA should survey producers, including foreign, to confirm this view. Part of the year needs to be devoted to logistics (purchase, transport, deployment) so that qualifying renewable fuels can be available for compliance purposes on the program start date. Given the complex and unique nature of the issues associated with this rulemaking, there will not be enough time for EPA to promulgate final rules and for affected industries to make adequate preparations to comply with a January 1, 2010 implementation date. The commenter believes that the earliest feasible option is a January 1, 2011 start date, assuming that the final rule can be promulgated by the end of this year. (2110.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2118

Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that the RFS2 program should begin on January 1, 2011. The January 1, 2010 implementation date would be infeasible. Due to the delay in promulgating the RFS2 proposed changes, implementation of the program should be delayed to January 2011. This would provide time to address record keeping requirements and other issues in the proposed changes. (2118.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the RFS2 program should begin on January 1, 2011. A January 1, 2010 implementation date is infeasible. The commenter believes that the affected industries need adequate lead time to implement these complicated new rules. There simply is not time between now and January 1, 2010 to implement these rules. (2124.1, p.8)

The commenter believes that the only option is for implementation of the program is January 1, 2011 or later. (2124.1, p. 9).

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) states that the delay in OMB approval of the draft RFS2 proposal make it highly unlikely that EPA can respond to comment and finalize the RFS2 rulemaking by the end of October 2009 so that it can take effect on January 1, 2010. If EPA is unable to complete the rulemaking on that schedule, the commenter urges EPA to delay implementation until January 1, 2011 and rely on the current RFS1 regulation for 2010. [[Docket number 2130.1, pp. 3 and 16]]

The commenter does not support a partial year 2010 implementation due to the complexity for those who transact RINs, nor does the commenter believe EPA has the authority to impose EISA total renewable volume until RFS2 rules are implemented.[[Docket number 2130.1, pp. 8 and 16]]

The commenter urges EPA to avoid the use of "advisories" regarding how it intends to promulgate RFS2 requirements, particularly if EPA cannot meet its own schedule for promulgating such requirements. [[Docket number 2130.1, pp. 8-9]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) noted that there are concerns regarding the rulemaking delay and questioned the availability of cellulosic ethanol volumes next year. However, the commenter has concluded that EPA should continue with the January 1, 2010, start date as proposed. If EPA

does delay the start date, however, it will need to provide clear direction to obligated parties regarding the continuation of RFS1, and the commenter recommends applying a single standard for the total renewable fuel under RFS1 regulations. (2132.1, p.17)

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter (2136) urges the Agency to put in place interim rules for the RFS2 schedule while taking more time to develop a strong scientific consensus on international ILUC, its models and its assumptions. In addition, the commenter urges the Agency to finalize an interim rule, and especially the biomass based diesel carve-out within the overall RFS2 schedule, beginning on or before January 1, 2010. Such a rule needs to make clear that obligated parties must meet the combined 2009 and 2010 biomass based diesel requirement in 2010. [[Docket number 2136.1, p. 4]] [[See docket number 2136.1, p. 4 for additional discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) urges EPA to complete the RFS2 rulemaking at the earliest opportunity, specifically so that the RFS2 mandate may be implemented starting on January 1, 2011. The commenter notes that the deadline by which Congress ordered EPA to revise the RFS regulations already has passed. [[Docket number 2137.1, p. 10]]

While the commenter has some specific concerns, they believe that it is imperative to avoid any further delay. The thoroughness of the analysis and conclusions in the proposed rule demonstrate the extent to which the RFS2 can be finalized without delay. The commenter states that EPA must reject requests for further delay and comply with the nondiscretionary mandate specified in the EISA. [[Docket number 2137.1, pp. 11-12, 17]]

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports implementation of the RFS2 program on January 1, 2011. The January 1, 2010 start date is unrealistic because it does not provide affected parties with enough time to prepare for implementation of the new requirements. The commenter agrees with EPA that the second option considered, starting the program sometime during the 2010 calendar year, carries the many disadvantages described in the preamble. (2145.1, p.5)

The commenter also believes the requirements for the additional categories (advanced biofuels, cellulosic biofuels and biomass-based diesel) should start contemporaneously with the rule in 2011. Prior requirements for 2009 and 2010 (which would likely have been modified) should not be included. (2145.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) suggests that the RFS2 program effective date be delayed until January 1, 2011, to allow additional time for refinement and to give regulated parties an opportunity to prepare adequately. The commenter would expect the current RFS1 program rules to remain in effect in the interim. (2146.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
The commenter (2148) encourages EPA to defer the proposed regulations until such time as they can be reformulated by applying the results of long-term research, accepted scientific principles, and to be made consistent with the statutory mandates. (2148, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) supports EPA's proposal that the RFS2 regulatory program start on January 1, 2010. Holding firm on a January 1, 2010, start date would help to ensure that renewable fuel producers and obligated parties are progressing on a timeline consistent with EISA's intent. (2149.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) believes that there is not sufficient time to accomplish implementation by January 1, 2010. It is possible that EPA will not even have the rule finalized and issued by January 1, 2010. The commenter believes that the only feasible option is an implementation date of January 1, 2011. This timeframe would allow the necessary time for the renewable fuel producers to register and verify their processes and associated "D" codes for RIN generation. It would also provide alignment with the projected availability of the EMTS, a significant tool that will aid in facilitating the implementation of the program. (2154.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) believes that the effective date for the RFS2 should remain as January 1, 2010. If reasonable arguments can be made for the further assessment of indirect land use formulas, then EPA should proceed with RFS2 without that component if for no other reason than to preserve and better facilitate our renewable fuels production industry. (2155.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2233

Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes the RFS2 programs should begin on January 1, 2011 because it is extremely complex and the first of its kind. The commenter also believes that creating two partial year compliance programs would create a degree of complexity and uncertainty that might prevent the RFS2 from delivering its intended benefits. [[Docket number 2233.2, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249) urges EPA to implement a workable program by January 1, 2010, which should include volume requirements from both 2009 and 2010 in calendar year 2010. To ensure continued investment and realization of the environmental and economic benefits derived from a vibrant biodiesel industry, the commenter supports timely implementation. [[Docket number 2249.1, pp. 1-2]]

The commenter states that until EPA can finalize the RFS2 regulations, the current RFS regulation can be used to implement the volume requirements for advanced biofuels and biomass-based Diesel. Even if portions of the RFS2 program must be delayed as EPA continues to work on the final rule, EPA must ensure an interim program is in place so that the annual mandated volumes are met for 2009 and 2010, as required by the statute—this is a non-discretionary duty of EPA. [[Docket number 2249.1, p. 3]]

[[Also see docket number 2249.2, pp. iv-v and pp. 3-9 for additional discussion of program implementation and an interim program.]]

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) supports EPA's proposed effective date of January 1, 2010, as opposed to an alternative date of January 1, 2011. We believe that any delay in implementation of the RFS-II program could affect the ability of fuel producers to deliver volumes in future years by negatively impacting their ability to obtain financing. [[Docket number 2310.1, p. 4]] [[See docket number 2310.1, pp. 4-5 for further discussion of the effective date.]]

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter (2317) believes that EPA should apply the renewable fuel volumes of EISA in 2010 and defer the remainder of the program to at least 2011, so as to ensure a new calendar year, rather than a mid-year start date in 2010. [[Docket number 2317.1, p. 43]]

Document No.: EPA-HQ-OAR-2005-0161-2345

Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
The commenter (2345) believes that a January 1, 2010 implementation date is unworkable and does not support an implementation date in the middle of 2010. The commenter suggests January 1, 2011 as this date will allow EPA sufficient time to formulate a workable rule and provide the regulated community time to comply with the programs complex rules. [[Docket number 2345.1, pp. 7-8]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) does not support a January 1, 2010 implementation date and believes the effective date should coincide with the start of the EMTS so that parties will not have to develop and abandon procedures, and then develop new requirements mandated by EMTS. [[Docket number 2358.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) supports EPA's proposal that the RFS2 regulatory program start on January 1, 2010. Holding firm on a January 1, 2010, start date would help to ensure that renewable fuel producers and obligated parties are progressing on a timeline consistent with EISA's intent. In addition, while there will of course be uncertainties associated with any program, it is unclear that the benefits of delaying the start beyond January 1, 2010, outweigh the costs. (2364.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) believes EPA should publish regulations to implement the basic volumetric requirements for renewable fuels established by Congress without further delay. This is critical to the continued viability of the current ethanol industry. [[Docket number 2383.1, p. ES-1]]

The commenter adds that EPA should implement EISA's volume requirements beginning January 1, 2010, but should defer implementation of the LCA GHG performance standard until such standard is appropriately developed. [[Docket number 2383.1, p. ES-3, docket number 1959.1, p. 3, and docket number 2380, p. 3]]

The commenter urges EPA to immediately implement the RFS2 volume requirements while continuing to examine the proper approaches to implementing other features of the 2007 Energy Act. [[Docket number 2383.1, pp. 57-58]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) recommends that the RFS2 commence on January 1, 2011. Compliance with the final RFS2 requirements will take considerable time for biofuel producers and obligated parties to implement. In addition the systems needed for the industry to comply are complex and will take time for programming. The commenter believes the most workable solution would be to continue the RFS1 program through 2010 and then transition into RFS2 in 2011. [[Docket number 2384.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that the extremely complex and first-of-a-kind nature of the issues associated with this rulemaking, the length of time needed by EPA to promulgate final regulations, and for impacted industries to prepare to comply, rule out a 1/1/2010 program start date. It is critically important that obligated parties and all other parties involved in the RFS, such as biofuel producers and distributors, have adequate time to prepare for implementation of the complex four-tier RFS2 mandate. Also, the complexity of the compliance issues associated with a partial year program should rule-out that possibility as essentially infeasible. The commenter supports a 1/1/2011 start date, but adds that companies that followed EPA advice to acquire bio-based diesel renewable identification numbers (RINs) in 2009 should not be penalized. [[Docket number 2393.1, p. 2 and 2523.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.1) supports the effective date of 1/1/2011 for the RFS2 program. The later start date will ensure more accurate positions for Refiners, Feedstock Producers, and even Obligated Parties. Starting the program mid-year may affect its success. (2400.1, p.1 and 2400.2, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment: The commenter (2408.1) supports EPA's proposed effectiveness date of January 1, 2010 as opposed to the alternative date of January 1, 2011. Further delay in the implementation of the RFS2 program will continue to negatively affect the ability of fuel producers to seek funding and develop many of the new technologies which arc now in the pilot and demonstration phases of development. (2408.1, pp.5-6)

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated

Comment:
The commenter (2511.1) noted that if the agency is unable to complete the necessary refinements to the rule due to the massive amount of review required and complexity of the proposed rule for the industry, the commenter would not oppose a start date of 1/1/2011. The commenter does not agree with a mid-year start date of the program. (2511.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2423
Organization: Green Earth Fuels, LLC
Comment:
While regulators debate how to calculate complex new sciences such as international indirect land use, the commenter (2423) states that countless biodiesel producers are going out of business. People are losing their jobs, their savings, and their investments. Experienced alternative fuels entrepreneurs are being driven from the industry. The commenter believes EPA has the authority to stop this loss and proposes that EPA issue an immediate emergency rule for obligated parties to meet the 2009 and 2010 obligations in the RFS2. This would qualify any biodiesel purchases in 2009 and 2010, regardless of pending GHG calculation, until such time as final rules are completed and published. This emergency rule is consistent with what EPA has wisely included in its proposed rules; however, it would eliminate the regulatory uncertainty of this obligation by making the obligation final, not "proposed." This strategy would also give the agency time to adequately debate complex issues such as indirect land use change without jeopardizing the industry the RFS is design to develop. [[Docket number 2423, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2465
Organization: Ford Motor Company
Comment:
The commenter (2465.1) supports the proposed implementation date of January 1, 2010 for the Renewable Fuel Standard and the 36 billion gallons scheduled for 2022. The deadline of January 1, 2010 to initiate the RFS2 program should be maintained in support of the renewable fuel industry. (2465.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) urges EPA to allow for adequate lead-up time prior to implementation after the final rule is issued. The issues involved in RFS2 are considerably more complex and many key areas require additional time and effort to resolve. EPA should also provide notice as early as possible, but at least by November 30, 2009, to clearly explain how the 2010 mandates will be implemented both before and after the RFS2 effective date (assuming a mid-year 2010 start date). Stakeholders, including Obligated Parties and renewable fuel producers, need to prepare accordingly; thus, EPA should take advantage of its statutory duty to set the 2010 renewable fuel standard in November to notify parties about the entirety of 2010 compliance. The commenter also recommends that EPA set the RFS2 start date at the beginning of a new

compliance quarter. This will ease the reporting process and allow for a "clean break" between RFS1 and RFS2 compliance. (2471.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) believes the only workable option for implementation of the program is January 1, 2011 or later. Even if EPA is able to promulgate a final rule before January 2010, it will take until 2011 to accomplish the registrations that are required and to put in place the systems and plans that are necessary for compliance. [[Docket number 2472.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that EPA must act now with an interim final rule to ensure that 2009 and 2010 volumes are met as required by law. (2474, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
The commenter (2486) strongly supports expeditious implementation of RFS2. Any further delay in implementation of the policies is unacceptable from a political, economic, and environmental perspective. The commenter views the RFS2 as a dynamic regulation which, with proper implementation, should generate clear and actionable price signals through RIN trading, to motivate the development and uptake of lower carbon fuels and the technologies that produce them. The commenter urges EPA to act immediately with an interim final rule to ensure that 2009 and 2010 volumetric mandates are met as required by law. "Congressional risk" threatens sufficient levels of investment in low-carbon renewable fuels R&D and commercialization. [[Docket number 2486.1, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should provide the affected industries adequate lead time to implement these complicated new rules. There simply is not enough time between now and January 1, 2010 for implementation. The commenter also believes that EPA should delay the start of the program to January 1, 2012 if the rules cannot be promulgated by the end of 2010. If EPA delays the implementation of RFS2 but is intent on increasing the required renewable fuel volumes to implement EISA during 2010, EPA should use the existing RFS rules with the EISA renewable fuel volumes (adjusted down for biomass-based diesel and cellulosic), similar to the way that EPA implemented the RFS2 requirements in 2009. (2505.2, pp.1-3) (See Docket Number 2505.2, pp.1-3 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) strongly urges EPA, in the case that the rule is not approved in time to set the mandate for 2010, to freeze the mandate at current levels until the rule is approved. (2508, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2537
Organization: Musket Corporation
Comment:
The commenter (2537) requests EPA issue an interim version of RFS2 in time to enforce the 2009 volumes in the EISA no later than January 1, 2010 unless a final version can be issued at that time. [[Docket number 2537, p. 2]]

The commenter notes that EPA is proposing to combine the mandated 2009 volume of biomass-based diesel with the 2010 volume, enforcing a two year total beginning no earlier than January 1, 2010. The commenter states that many investments in biomass-based diesel are currently standing idle in the frustrated anticipation of supporting the congressionally-mandated 2009 volumes. Despite the recommendations that EPA published in 11/08 recommending that obligated parties should behave in 2009 as if the final rule had been enacted, EPA in May 2009 is requesting ideas on how to delay even further adding doubt as to the value of 2009 efforts. This has the effect of penalizing forward-thinking companies who invested in 2009 compliance. [[Docket number 2537, pp. 1-2]]

EPA requests comment on the challenges that will be faced by the fuel distribution system and the steps that will be necessary to facilitate the volumes of renewable fuels required under EISA. The renewable fuel distribution system stepped up to the challenge in 2007 and 2008, led completely by market forces, and far exceeded Congress‘ expanded renewable fuel targets for those years. For the new 2009 requirement for biomass-based diesel we believe that the biggest challenge that the distribution system currently faces is the uncertainty caused by the ongoing delay in the issuance of final RFS2 rules. The distribution system for biomass-based diesel is, in many cases, independent of the feedstock used to produce the renewable fuel. The investment in these important distribution facilities, therefore, should not be confounded with the also important debate surrounding virgin versus waste biomass feedstocks which may take considerably more time to complete. [[Docket number 2537, p. 2]]

Our Response:

Under CAA section 211(o)(2)(A) as modified by EISA, EPA was required to adopt regulations to implement the new requirements of EISA within one year of enactment, or December 19, 2008, with the expectation by Congress that all of the RFS2 program requirements and applicable volumes would apply starting with calendar year 2009. However, as described in the NPRM, we were not able to promulgate final RFS2 program requirements by December 19,

2008. EPA published the proposed rulemaking on May 26, 2009. Since the NPRM was not published until after 2009 had started, EPA sought comment on various options for starting the requirements of the RFS2 program (e.g., 1/1/2010, 1/1/2011, or a mid-2010 start date) depending on the timing of the final rule. This includes inviting comment on what volumes of renewable fuels should be required for calendar year 2010.

As evidenced above, we received a wide range of comments on these issues from a broad array of stakeholders expressing either their support for and/or concerns with these various options. A number of commenters also suggested that EPA should issue interim standards particularly for biomass-based diesel applicable until such time as the final rulemaking could be promulgated. Our response to the comments regarding an interim rulemaking can be found in Section 3.6.2.

Some of the concerns expressed with regard to starting the RFS2 program on January 1, 2010 related to the time needed to complete the lifecycle analyses, including the analysis of uncertainty. As described more fully in Section 7, we have completed the revised lifecycle analyses for this final rule and used them as the basis for assigning various renewable fuel production pathways to the four categories defined by EISA. The time needed to finish our lifecycle analysis is therefore not a reason to delay implementation of the RFS2 requirements any further.

EPA is issuing this final rule in January 2010. The issue regarding the effective date that is before the agency is twofold: (1) what date should regulated parties – refiners and importers of gasoline and diesel, and producers and importers of renewable fuel – have to start complying with the new requirements in the RFS2 regulations, and (2) for refiners and importers of gasoline and diesel (obligated parties), what volumes of renewable fuel should they have to meet during calendar year 2010. In addressing these two issues, EPA was guided by two goals. One goal was to maximize compliance with the requirements Congress set out for calendar year 2010. That means implementing as expeditiously as practicable the transition to the requirements of the RFS2 regulations, such as the implementation of the new definitions of renewable fuel and the renewable biomass from which they are produced. It also means requiring the use of the four renewable fuel volumes expected by Congress for calendar year 2010. In effect this goal calls for transitioning as expeditiously as practicable to the RFS2 program, and doing it in a way that maximizes the ability to meet the volume requirements Congress set for calendar year 2010. EPA also had another goal – to provide the regulated parties with adequate lead-time to transition to the new requirements of the RFS2 regulations and to establish renewable fuel volume requirements that provide adequate lead-time for the obligated parties. In considering the lead time needed by the regulated parties, EPA recognized that the RFS2 program and the required volumes would require parties to make changes in their behavior, however in most if not all cases, the changes build on a preexisting program and call for updating and revising current practices, as discussed in more detail below.

As discussed in Section I.A.2. of the preamble, EPA has determined that the appropriate balance of these two goals calls for the transition from using the RFS1 regulatory provisions regarding registration, RIN generation, reporting, and recordkeeping to using comparable provisions in this RFS2 rule to occur on July 1, 2010. This is the start of the 1st quarter following completion of the statutorily required 60-day Congressional Review period for such a rulemaking as this. This will provide adequate lead time for all parties to transition to the new regulatory requirements, including additional time to prepare for RFS2 implementation for those entities who may find it helpful, especially those covered by the RFS program for the first time. In addition, making the transition at the end of the quarter will help simplify the recordkeeping and reporting transition to RFS2.

In addition, we are applying the RFS2 renewable fuel volume obligations on a calendar year basis for 2010. That is, EPA used a full year's volume of the four renewable fuel categories to establish the volume obligation for refiners and importers. In determining the applicable percentages used by obligated parties, EPA used the entire 2010 calendar year projected volumes for gasoline and diesel, and the entire 2010 calendar year volumes for renewable fuel given in section 211(o), with certain exceptions. EPA set the applicable percentages using a volume of 12.95 B gallons of renewable fuel, and 0.95 B gallons of advanced biofuel. EPA used less than the entire 0.1 B gallons of cellulosic biofuel, based on our projection of the total volume of cellulosic biofuel for 2010, under section 211(o)(7)(D). For biomass-based diesel, EPA used a combined volume of 1.15 B gallons covering both the 2009 and 2010 volumes of 0.5 B gallons and 0.65 B gallons. Using these volumes, EPA determined the applicable percentages that obligated parties will use to determine their renewable volume obligations (RVOs) at the end of a calendar year. Obligated parties are required to apply the annual percentages to the volume of gasoline or diesel fuel they produce during the full calendar year. Obligated parties must demonstrate compliance with their RVOs in an annual report that is due two months after the end of the calendar year. For 2010, the four RFS2 RVOs for each obligated party will be calculated on the basis of all gasoline and diesel produced or imported on and after January 1, 2010, through December 31, 2010. Obligated parties will be required to demonstrate by February 28 of 2011 that they obtained sufficient RINs to satisfy their four 2010 RVOs.

As discussed below, regulated parties have adequate lead-time to comply with these requirements. The transition described above will ensure that the regulations will comply in large part with the results Congress intended for 2010, even if the time needed for this rulemaking means the results Congress desired for 2010 cannot be fully achieved.

In discussing the adequacy of the lead time to meet these requirements, there are two distinct groups of regulated parties that should be considered separately, as the regulatory requirements and related lead time concerns differ. These two groups are obligated parties and renewable fuel producers and importers.

Obligated parties – refiners and importers of gasoline and diesel.

These parties are required to register with EPA and satisfy various record keeping and reporting requirements. In general all of these parties are already registered with EPA for various fuel programs, and gasoline refiners and importers are already registered under the RFS1 regulations. Any new or updated registrations must be submitted by July 1, 2010, but the information required is straightforward to develop and submit. Obligated parties already registered under RFS1 need not re-register under RFS2. Parties who are not already registered under RFS1, such as the limited number of parties who refine or import diesel but not gasoline, will need to submit initial registrations. In most if not all cases these parties are already registered with EPA under other fuel programs. The time provided for registration is adequate to meet this straightforward requirement.

Recordkeeping will call for ensuring that adequate records are kept, which in most cases will mean updating the current RFS1 record systems. For diesel only refiners or importers not already covered by RFS1, there is a need to ensure an adequate record keeping system is in place, however the information called for is the kind of information that will normally be generated in producing or importing diesel fuel and in obtaining and tracking the purchase of RINs to demonstrate compliance. These parties have been on notice since EISA was passed and since the proposal was issued of the need to develop such recordkeeping systems. The lead-time provided by this rule should be adequate for what is a relatively straightforward recordkeeping requirement. The first reports to EPA are not required until several months after the rule is issued, providing adequate time to comply with the reporting requirements

Obligated parties will need to satisfy their volume obligation by the end of February 2011, which is when they submit their annual report to EPA. In that annual report they will need to demonstrate that they have adequate RINs to satisfy their renewable volume obligations. These volume obligations are calculated as a percentage of the entire volume of gasoline and diesel produced or imported during colander year 2010, so it is expected that obligated parties will obtain RINs from renewable fuel producers throughout the year. In determining the adequacy of lead time to meet this 2010 volume obligation, one needs to consider whether there will be an adequate supply of RINs generated by renewable fuel producers for obligated parties to comply, and whether there is adequate lead time for the obligated parties to implement commercial relationships to obtain these RINs.

On the first issue, two kinds of RINs can generally be used to meet the 2010 volume obligation – (1) 2010 RFS1 RINs, generated on January 1, 2010 through June 30 31, 2010, and up to 20% of 2009 RFS1 RINs, to the extent there are credits from over compliance with the 2009 volume obligation, and (2) 2010 RFS2 RINs generated from July 1, 2010 through the remainder of 2010. (In addition, certain 2008 RINs can be used for compliance with the 2010 biomass-based diesel standard. See Section 3.6.3.) In effect the entire production of renewable fuel for 2010 plus a certain amount of the renewable fuel production of 2009 may be used to satisfy the parties' volume obligations. RFS1 RINs have been produced throughout 2009 and continue to be produced since the beginning of 2010. There has been and will be no gap or lag in the production of RINs, as the RFS1 regulations continue in effect and require that renewable

fuel producers generate RINs for the renewable fuel they produce. These 2009 and 2010 RFS1 RINs will be available and can be used towards the RFS2 volume requirements of obligated parties for 2010. As discussed in Section IV of the preamble EPA projects that an adequate supply of renewable fuel will be produced or imported in 2010 with corresponding RINs to meet the all of the volume obligations that must be met for 2010[1]. This projected volume of 2010 renewable fuel, combined with the ability to use a certain percentage of 2009 RFS1 RINs, means that there will be an adequate supply of RINs for obligated parties to use in demonstrating compliance with the 2010 volume obligation established in this rule.

On the second issue, compliance requires obligated parties to develop a commercial relationship with generators or owners of RINs so that the obligated party purchases or otherwise obtains enough RINs to demonstrate compliance. Obligated parties do not need lead time for construction or investment purposes, as they are not changing the way they produce gasoline or diesel. They do not need time to design or install new equipment, nor take other actions that require longer lead time. Obtaining the appropriate amount of RINs involves contractual or other arrangements with renewable fuel producers or other holders of RINs. Obligated parties now have significant experience implementing RFS1, and the actions needed to comply under the RFS2 regulations are a continuation of these kinds of RFS1 activities. In addition, the renewable fuel producers have an economic incentive to sell RINs they generate, as compared to having them expire before they are sold. It is clear that there is an incentive for RIN generators to enter into the kind of commercial relationships that obligated parties need to enter to be able to demonstrate compliance. Based on the significant experience already developed under RFS1, and the ongoing generation of RINs, there is clearly adequate lead-time for obligated parties to develop the commercial relationships needed so they can obtain enough RINs by the end of February 2011 to demonstrate compliance with their 2010 volume obligation.

EPA has also considered whether the required volumes of renewable fuel can in practice be produced or imported, transferred, transported and blended or otherwise used. This is discussed in Section IV of the preamble and Chapter 1 of the RIA. As discussed there, it is feasible to produce or import, transport and blend or otherwise use the volumes of renewable fuels called for in 2010 under the RFS2 program.

Renewable fuel producers and importers

As discussed in Section IV of the preamble, EPA projects that the 2010 volume requirements for renewable fuel, biomass-based diesel, and advanced biofuel will be met in large part by ethanol produced from corn, ethanol produced from sugarcane, and biodiesel produced from soybean and renewable biodiesel, and a limited volume of cellulosic biofuel that will be produced. There may be a limited volume of renewable fuels from other sources, but they are not projected. For the vast majority of this volume of projected renewable fuel, the producers or

[1] For discussion of the adequacy of the volume of biomass-based diesel from 2009 and 2010, see Section IV.B.4 of the preamble.

importers involved are already registered with EPA for RFS1 and have recordkeeping and reporting systems designed to implement the RFS1 requirements.

For RFS2 there are also new restrictions on the biomass that can be used to produce renewable fuel, and renewable fuel producers and importers who generate RINs are subject to new requirements designed to implement these biomass restrictions. The biomass restrictions are described in more detail in Section II.B.4 of the preamble. For ethanol and diesel produced from crops and crop residue, the "aggregate" approach adopted by EPA means there should be no lead time concerns with addressing the new requirements. For other renewable fuel producers not covered by the aggregate approach, the producer and/or importer will need to have adequate records to demonstrate that the renewable fuel was produced from renewable biomass that met the requirements of the regulations. These recordkeeping requirements are new, but they call for the producer and/or importer to obtain information that should already be available to them in the normal course of their business – the source of the feedstock used to produce the renewable fuel. If not kept already, then it is information that can reasonably be obtained in the normal course of business. The time provided to meet this requirement should be adequate, given the nature of the information and business records that must be kept.

Producers or importers of renewable fuel will generate RINs when they produce or import the renewable fuel, and there are limited changes to the codes within RINs from RFS1. These changes have been made to implement the new categories of renewable fuels, and will call for RIN generators to determine the fuel's specific pathway prior to generating the RINs. In most cases this is just a variation on practices already occurring under RFS1, using basic information that is developed in the normal course of the business. In some cases, a party will need to register with EPA as a fuel producer, if they have not already done so. Only a limited number of new entrants to the renewable fuel market will be in this situation, and the information required for this is generally straightforward for the current renewable fuels and kept in the normal course of business.

Producers of renewable fuel in other countries may decide to be the RIN generator for the fuel they produce that is exported to the U.S. In that case they need to follow all of the same requirements applicable to domestic renewable fuel producers. As noted above, the information needed to do this is all information they have or can obtain in the normal course of their business. In addition, there are additional compliance related provisions that must be met, however they are also matters that are straightforward to address.

The discussion above makes it clear that generators of RINs will have to submit additional information to EPA and keep additional records to support that the RINs they generate are valid, compared to RFS1. However this information is all information that should be available in the normal course of business, and in many cases is similar to or an update to information already kept under RFS1. The vast majority of RIN generators in 2010 are expected to be parties already implementing the RFS1 regulations, either now or in the recent past. In

these circumstances the lead time for the start of the RFS2 regulations for producers and importers of renewable fuel should be adequate.

In addition, obligated parties and other regulated parties have received adequate notice of these obligations and generally are well on their way to preparing for compliance. Since December of 2007 when EISA was signed, the basic obligation of both gasoline and diesel producers to meet the EISA volume requirements has been clear. The proposed rule called for obligated parties to meet the full volume mandates for all four volume mandates, and to base their volume obligation on the volume of gasoline and diesel produced starting January 1, 2010. It also provided EPA's position on other changes called for by EISA, including the new renewable biomass definition. The final RFS2 regulations are largely similar to the proposal as far as the requirements that parties must meet. Changes from the proposal to the final in many instances reduce the burden and the lead time needed for compliance. Based on discussions with a wide variety of stakeholders, the requirements in EISA itself and EPA's proposal have led regulated parties to take many actions preparatory to implementation of the RFS2 requirements. Across the regulated industries, therefore, parties generally now need to finish those preparations, as compared to starting from scratch upon issuance of the final rule. This provides additional support for EPA's view that, as discussed above, there is adequate time for regulated parties to meet the requirements of the RFS2 regulations, including for obligated parties to meet their 2010 volume obligations by February 28, 2011.

This approach for volume requirements in 2010 does not impose any retroactive requirements. The obligation that is imposed under the RFS2 regulations is forward looking – by February 28, 2011, when compliance is determined, obligated parties must satisfy certain volume obligations. These future requirements are calculated in part based on volumes of gasoline and diesel produced prior to the effective date of the RFS2 regulations, but this does not make the RFS2 requirement retroactive in nature. The RFS2 regulations do not change in any way the legal obligations or requirements that apply prior to the effective date of the RFS2 regulations. Instead, the RFS2 requirements impose new requirements that must be met in the future. There is adequate lead time to comply with these RFS2 requirements, and they achieve a result that is more consistent with Congress' goals in establishing four volume mandates for calendar year 2010, and for these reasons EPA is adopting this approach for calendar year 2010.

Some commenters expressed concern over the lead-time to develop electronic recordkeeping and reporting programs, including the desire to transition from RFS1 to the new EMTS program without an additional interim change. We also received numerous comments indicating that EMTS should align with implementation of the RFS2 program, and that other transition options such as monthly reporting were less desirable. We appreciate commenters' concerns over having sufficient time to implement the new systems and/or make changes to existing systems. EPA has throughout the development of EMTS utilized an open process for sharing information with stakeholders. Since EMTS was first introduced in the NPRM, we have conducted and continue to conduct workshops and webinars to inform stakeholders (providing recordings of events on our website for on-demand replay) and to solicit stakeholder

participation in EMTS evaluation and testing. Additionally, EPA has stressed to the regulated community that they should prepare and make plans for changing requirements associated with new RFS2 requirements. As a result of our interactions with stakeholders, we are providing three options for regulated parties to implement EMTS. Parties may interact with EMTS 1) via an interactive web interface, 2) through a batch file uploading routine where batch files are similar to RFS1 reporting, and 3) through direct node-to-node computer connections. Parties are not limited to any one method and may change at anytime. All methods differ in the level of technical sophistication required for implementation as well as time intensity for user involvement. For example, parties planning to implement the node-to-node method may experience technical issues or development constraints, and may utilize one of the other methods until such issues can be resolved. In addition, EPA has created an XML conversion tool and various outreach materials, including step by step tutorials, which will aid and educate EMTS users. EPA pledges to continue to work with the regulated community, as a group and individually, to ensure EMTS is successfully implemented. EPA anticipates that with this level of assistance, regulated parties will not experience significant difficulties in transitioning to the new system, and EPA believes that the many benefits of EMTS warrant its immediate use.

EPA did consider a range of other options on the effective date. In addition to a January 1, 2011 start date, we also took comment on imposing a mid-year start to the renewable fuel volume obligations, despite the negative comments received on such an approach. For example, EPA considered a more complicated option – (1) determine an RFS1 applicable percentage based on just the total renewable fuel volume mandate, using the same total volume for renewable fuel as used in the first approach, and require obligated parties to apply that percentage to the gasoline produced from January 1, 2010 until the effective date of the RFS2 regulations, and (2) determine the four RFS2 applicable percentages as discussed above, but require obligated parties to apply them to only the gasoline and diesel in 2010 after the effective date of the RFS2 regulations. This approach would fail to ensure that the total volumes for three of the volume mandates are met for 2010. In effect EPA would be requiring that obligated parties use enough cellulosic biofuel, biomass-based diesel, and advanced biofuel to meet approximately 50% of the total volumes required for these fuels under EISA, assuming that the RFS2 standards went into effect on July 1, 2010. While the total volume mandate under EISA for renewable fuel would likely be met, the other three volumes mandates would only be met in part. This failure to maximize compliance with the requirements of EISA makes it appropriate to reject this option, given there is adequate lead time to ensure the use of the entire annual volumes as called for by these final rules.

In addition, this option would have introduced significant new complications into the program for both standard setting and compliance. For instance:

(1) We would have been required to determine an RFS1 applicable percentage standard based on just the total renewable fuel volume mandate, using the same total volume for renewable fuel as used in our final action, and require obligated

parties to apply that percentage to the gasoline produced from January 1, 2010 until the effective date of the RFS2 regulations

(2) We would have been required to determine the four RFS2 applicable percentage standards as discussed above, but require obligated parties to apply them to only the gasoline and diesel in 2010 after the effective date of the RFS2 regulations.

Another option would have delayed all of the RFS2 requirements until January 1, 2011, which would avoid the complexity of the above alternative, but would be even less consistent with EISA's volumes requirements. Again, given the adequate lead-time to implement the requirements imposed in this final rule, it is appropriate for EPA to reject this option.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 3
Major Elements of the Program Required Under EISA

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

3. MAJOR ELEMENTS OF THE PROGRAM AS REQUIRED BY EISA

3. MAJOR ELEMENTS OF THE PROGRAM AS REQUIRED BY EISA

What We Proposed:

The comments in this section correspond to Section III of the preamble to the proposed rule and address elements of the program required by the Energy Independence and Security Act of 2007 (EISA). A summary of the comments received and our response to those comments are located below (and in Section II of the preamble to the final rule).

3.1 Changes to RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter states that EPA should require a cellulosic ethanol RIN generator to apply the narrowest possible RIN type definition and allow the obligated party to choose if the fuel is used to meet the cellulosic, advanced or total renewable fuel mandate. This approach should reduce the risk of market manipulation to favor one product over another and enhance the available information regarding each renewable fuel. [[Docket number 2393.1, pp. 8-9]]

Our Response:

Cellulosic ethanol that meets the definitional requirements of cellulosic biofuel will be assigned a D code of 3. As described in the regulations at §80.1427(a)(2), a RIN with a D code of 3 can be used to meet an obligated party's RVO for cellulosic biofuel, advanced biofuel, and total renewable fuel. However, there is no requirement that an obligated party apply a RIN to all the RVOs for which it is valid. Thus, an obligated party could apply a RIN with a D code of 3 to its advanced biofuel RVO, but not its cellulosic biofuel or total renewable fuel RVO.

3.1.1 Valid Life of RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes EPA can take actions to ensure RINs are available to all obligated parties, including implementing the 12-month limit on the life of RINs and eliminating the use of equivalence values. Limiting the amount of excess RINs that may be available ensures that RINs move through the system, and are available to obligated parties. (2329.1, p.88-89) [[See Docket Number 2329.1, pp.88-89 for a more detailed discussion of the 12-month limit]]

Our Response:

As described in the final rulemaking for the RFS1 program [72 FR 23933], we have implemented the 12-month limit on the life of "credits" under the statute by allowing RINs to be valid for 12 months following the year in which they are generated. Thus, the valid life of RINs will span two annual compliance periods, and RINs can be used for compliance purposes in the year generated and the following year. The rollover cap (see Section 5.4) limits the amount of excess previous-year RINs that can be used for compliance purposes and ensures that the valid life of RINs is real. Further limits on the number of RINs that could be used for compliance purposes, and the elimination of Equivalence Values, are not necessary to implement the credit provisions under the Act and would make RINs less available for compliance purposes in the marketplace. EPA's decision to retain energy-based equivalence values is discussed in Section II.D.1 of the preamble and Section 3.5.1 of this S & A document.

3.1.2 Designation of D Codes Differently for RFS2

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) supports the alternative of the six D codes to distinguish the difference between 2009 RINs and 2010 RINs. (0994.1, p.3)

Upon examination of the proposed regulations §80.1425(g), the commenter notes that EPA has not utilized the six D codes. The commenter recommends that the regulations be changed as such. The commenter also recommends that Table 1 for §80.1426 be revised to utilize the six D codes, recognizing that the D=1 and D=2 apply to 2009 biofuels and their RIN numbers. Tables 2 and 3 of this section also need to be changed to reflect use of the six D codes. (0994.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2083.1) recommends that EPA modify the proposed regulations to utilize a sequence of codes as 3, 4, 5, and 6 for RFS2. In this way there will be no dual intra-year representation for the use of codes 1 and 2, and the same effect will be achieved. (2083.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) agrees with EPA's proposal to use four D codes numbered 1, 2, 3 and 4, and to only allow RINs with a D code of "2" to be able to be used to meet the RVO for Biomass-based Diesel.

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports EPA's proposal, which makes minimal changes to the current RIN.

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) generally supports EPA's approach of maintaining the existing RIN structure, but modifying the D code to identify the categories of renewable fuels. The commenter is concerned, however, about the possibility of this system growing in complexity if EPA attempts to implement the RFS2 program mid-year, or if obligated parties become responsible for averaging various biodiesel fuels to meet the Act's GHG threshold. EPA should avoid these complexities by making the biodiesel producers or importers responsible for meeting the GHG reduction thresholds. (2505.2, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) noted that if in finalizing the rule EPA changes a particular biofuel's qualification in a manner that in essence "demotes" its "D-code" assignment, EPA should provide notice and allow an opportunity to comment before finalizing. The commenter believes that EPA should also allow for notice and comment before finalizing a new pathway assessment or revised assessment that demotes the previously-assigned "D" code for a fuel. (2471.1, p.11)

Our Response:

We agree in concept with the need for a minimum of four separate D codes under RFS2. As discussed in section II of the preamble, we believe that the best way to do this to allow for a smooth transition from RFS1 to RFS2 is to maintain the use of D codes 1 and 2 for RFS1 RINs, since RINs will be generated under RFS1 regulations for the first part of 2010. Subsequent D-Codes in the final regulations are then assigned to RFS2 RINs. These D-codes effectively allow renewable fuel producers to distinguish their product as meeting the 4 different renewable fuel categories under RFS2, and allow obligated parties to demonstrate compliance with the 4 different RFS2 standards.

As described in preamble Section V.C, there is no longer a need to allow for averaging of various types of biodiesel in order to meet the GHG threshold associated with the biomass-based diesel standard. Therefore, the D code structure that we have finalized will not create additional complexities in this context.

The final D codes assigned to individual renewable fuel pathways as shown in the lookup table in §80.1426(f) are based on the updated lifecycle analysis completed for this final rule. Stakeholders were given an opportunity to provide comments on the draft versions of those lifecycle analyses in the NPRM, and EPA reviewed those comments as part of the process of

updating those analyses. If additional pathways are added to the lookup table in the future, or changes made to the D codes assigned to existing pathways, stakeholders will be given an opportunity to provide comment on draft versions in a notice-and-comment process.

3.1.3 D-Code for Cellulosic Diesel Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter opposes the alternative approach to create 5 D codes to give obligated parties the choice to apply RINs for cellulosic biodiesel to either its cellulosic biofuel or biomass-based diesel obligation, but not both. (2329.1, p.91)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter opposes EPA's proposed alternative treatment of cellulosic-based diesel, which would create five D codes and give the obligated party the choice to apply that RIN to either its Cellulosic Biofuel or Biomass-based Diesel obligation, but not both. Congress clearly intended to treat Biomass-based Diesel separately from Cellulosic Biofuel, by creating two distinct RVOs and a higher volume mandate for Cellulosic Biofuel than Biomass-based Diesel. The definition of Cellulosic Biofuel and Biomass-based Diesel do not coincide, and EPA should require cellulosic diesel to be applied toward the Cellulosic Biofuel requirement. [[docket number 2249.2, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter supports the alternative D code definitions in Table III.D.2.a-1 but does not agree that the producer should be allowed to choose whether to categorize his product as either cellulosic biofuel or biomass-based diesel. The commenter suggests that EPA create a flexible D code that would denote a fuel that can be counted as either, and that the obligated parties have the ability to choose whether to apply such a RIN to cellulosic or biomass-based diesel. (2124.1, p.32)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) recommends that a separate D code be established for cellulosic diesel. Cellulosic diesel has the unique ability to qualify as "Biomass-based Diesel" or as "Cellulosic Biofuel". The commenter believes the obligated party should have the decision rights to use these RINs in either category depending on its needs. This can be accomplished by assigning a unique D code to this type of renewable fuel (e.g., D code "5"). Under this process, a producer

would assign a D code of 5 to the fuel and the obligated party could use the RIN to satisfy the obligation under biomass-based diesel or cellulosic biofuel. The RIN could still only be used in one of these categories (2145.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports EPA's alternative D code approach to accommodate cellulosic diesel. This approach would enable the obligated party to choose if the fuel is used to meet the cellulosic, advanced or renewable fuel mandate. [[Docket number 2233.2, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
In addition, the commenter supports EPA's alternative approach where an additional D code is created to accommodate cellulosic diesel. This approach reduces the risk of market manipulation to favor one product over another. It is also more appropriate to allow the obligated party to determine the RINs ultimate use and is consistent with the "nested requirements" methodology. [[Docket number 2393.1, pp. 8-9]]

Our Response:

We disagree with the comment that the definition of cellulosic biofuel and biomass-based diesel do not coincide. As described in the proposal and the final rule, a renewable diesel made from cellulosic feedstocks would meet the definition of both categories. As such, the D-code must allow for cellulosic biofuel qualify for either the cellulosic biofuel standard or the biomass-based diesel standard. As discussed in Section II.A of the preamble, we believe that the best way of implementing this for the smooth implementation of the program is to have the cellulosic diesel producer identify their product in a way that allows it to be used to qualify for either standard. Therefore, we have created a separate D code of 7 for cellulosic diesel, and producers are required to use this D code for any renewable diesel fuel that they produce from cellulosic feedstocks.

3.2 Changes in Renewable Fuel Definitions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) noted that Table II.A.1-1 should be revised to list all four categories and their required volumes as well as the total renewable requirement so that it matches the categories listed in all tables such as Table II.A-2. Table II.A.1-1 does not support the statement: "As shown in the table, the volume requirements are not exclusive, and generally result in nested

requirements." If the volumes are to be nested, then the regulations need to say so directly and the direction of the nesting. (0994.1, p.2)

Our Response:

Table II.A.1-1 in the NPRM reflects the four fuel volume requirements as stipulated in EISA. The nested nature of these standards is made clear in the definitions of these four fuel standards. We have attempted to clarify the text in the FRM to better explain the nested nature of these volume requirements.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter noted that the fourth category should have its own name such as "Other Renewable Biofuels" and should be used throughout these regulations. Then regulated parties will know when the term "Renewable Fuel" is used, the regulations are referring to all four categories of biofuel and not just the fourth category. Section II.A.2 and other like sections should be revised and consistently use the term "categories". In Section II.A.2 there are definitions of three of the biofuel categories; there also needs to be a definition for the fourth category under its specific name. (0994.1, p.2)

Our Response:

There is not a separate standard for "Other Renewable Fuels". Given the nested nature of the RFS2 standards, the total renewable fuel standard is made up of fuels required to meet the advanced biofuel standard and any other renewable fuels meeting the renewable fuel definition. The advanced biofuel standard in turn is made up of fuels required to meet the cellulosic biofuel standard and the biomass-based diesel definition, and any other fuels meeting the advanced biofuel definition. We appreciate that this matter may be confusing, and in the final rule and preamble have tried to make the requirements clear.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) requests clarification on the definitions of advanced biofuels; biomass-based diesel; and non-ester renewable diesel. Table 1 to §80.1426 provides the applicable D codes for each pathway for generating RINs. The commenter believes that this table is inconsistent with the above definitions. For advanced biofuels, there are only two pathways identified that qualify: Ethanol from Sugarcane and Non-ester renewable diesel produced from waste grease, waste oils, tallow, chicken fat, or non-food grade corn oil that is hydrotreated and

co-processed in a facility that also processes petroleum feedstock. This is inconsistent with the discussion of advanced biofuels in the preamble. Other feed stocks and pathways should qualify for a D code of 2 or 3 such as waste grease, etc. hydrotreated in a dedicated process; hydrotreating of non-edible plant oils such as camelina, jatropha, algae, or pennycress in a dedicated process; etc. Section 80.1426 does not provide a method to qualify other fuel pathways for applicability. (2118.1, p.3)

The commenter also noted that Table 1 to 80.1426 also provides three pathways for non-ester renewable diesel each having different D codes of 2, 3, or 4. This is inconsistent with the definition of non-ester renewable diesel. The commenter contends that non-ester renewable diesel definition should include D codes of at least 2 or 3. The commenter believes that other virgin plant oils that are non-edible such as camelina, jatropha, algae, or pennycress should qualify for a D code 2 or 3. In addition, a dedicated facility that processes waste grease, etc. should qualify as a D code of either 2 or 3. (2118.1, p.4)

Our Response:

The table in §80.1426 of the regulations has been substantially modified since the NPRM to reflect the fuel pathways for which lifecycle assessments have been completed for the final rule. Fuel pathways that have not yet been modeled, such as some of those listed by the commenter, may still qualify in the future depending the results of future lifecycle GHG assessments. The process by which future pathways are assessed and will be added to the table in section 80.1426 is described in Section V.C. of the preamble.

However, the commenter appears to be confusing generation of RINs with use of RINs. The table in §80.1426 is the table used by renewable fuel producers for the generation of RINs, and identifies the specific RIN that should be generated for each qualifying renewable fuel. Section 80.1427 describes the provisions for the appropriate use of RINs for compliance. RINs may often be used for multiple standards. For example, any RIN with a D-Code of 3, 4, 5, or 7 may be used for compliance with an obligated party's total renewable fuel obligation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) supports EPA's proposal to allow generation of RINs for renewable fuels used as jet fuel, home heating oil, and locomotive and marine diesel. EPA should also allow RIN credits to be generated for the sale of renewable fuels in the broadest possible applications. [[Docket number 2310.1, p. 14]]

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:

The commenter (2425) does not agree with the exclusion of ocean vessels from the definition of eligible transportation fuels. Ocean going vessels are a very large consumer of diesel fuel and a major emitter of CO_2. By excluding ocean vessels, EPA will omit a significant sector and will limit the demand of renewable fuels thus making it more difficult to reach the aggressive consumption goals. [[Docket number 2425.1, p. 7]]

Our Response:

In keeping with the revisions to section 211(o) of the Clean Air Act in EISA, we are finalizing these provisions as proposed. EISA explicitly excludes fuel used in ocean-going vessels from the definition of transportation fuel, so EPA does not have the discretion to adopt the commenter's suggestion.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
The commenter (2486.1) believes that oils recovered from biomass streams post primary processing should be considered waste greases. This should include materials like corn oil recovered from dry-mill ethanol plants post-fermentation. [[Refer to Docket Number 2486.1, p. 1 for additional details of this issue.]]

Our Response:

We are allowing all waste greases, fats and oils that meet the definition of renewable biomass to be valid for generating renewable fuels under RFS2. Any oils present in post-primary processing that would otherwise be discarded would be considered waste oils. We have included non-food grade corn oil in the lookup table in regulation section 80.1426(f) as a valid feedstock for the production of biodiesel and renewable diesel.

3.2.1 Renewable Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter believes that the proposed definition for "renewable fuel" in §80.1401 clearly states that ethanol shall be denatured. This should be repeated in other places, such as §§80.1426, 80.1428, 80.1460, and 80.1466. (2124.1, p.42)

Our Response:

We have specified in §80.1401 that ethanol must be denatured before RINs can be generated for it. We also reiterate this requirement in §80.1415 in the context of specifying its Equivalence Value. However, §80.1401 is preceded by the following statement: "The definitions of §80.2 and of this section apply for the purposes of this Subpart M." Therefore, there is no need to repeat any part of the definitions in other sections of Subpart M.

3.2.2 Treatment of MSW

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2021
Organization: Fulcrum Energy
Comment:
The commenter (2021.1) believes that the text of EISA is ambiguous with regard to the definition of Renewable Biomass and it is well within EPA's discretion to find that urban waste qualifies as Renewable Biomass, especially post-recycled urban waste. Renewable Biomass includes urban waste because the definition of Renewable Biomass lists the primary constituents of urban waste that can be converted to biofuel: biomass gathered from areas of human habitation, separated yard waste, and food waste. A careful textual reading shows that these wastes need not be separated to qualify but, regardless, urban waste is sorted several times before being converted to biofuel, which satisfies any reasonable requirement for sorting and separation of the eligible components of urban waste. The commenter believes that EPA's final RFS2 rule should clarify that such urban waste qualifies as Renewable Biomass, leaving no question that fuels derived from urban waste can qualify as Renewable Fuel and Cellulosic Biofuel. (2021.1, p.26) (See Docket Number 2021.1, pp.15-26 for a detailed discussion of this issue.)

The commenter also believes that if EPA concludes that urban waste must be sorted to remove recyclable materials in order to be an eligible feedstock for some or all types of renewable fuels, the commenter recommends that EPA define a new term, "post-recycled urban waste," to describe the waste materials that would be allowable as biofuel feedstock. The commenter recommends that Post-Recycled Urban Waste be expressly included in the RFS2 regulations as a form of "Renewable Biomass" and defined as "solid waste derived from residential or commercial waste streams that have been subjected to separation through a recycling process." (2021.1, p.32) (See Docket Number 2021.1, pp.32-33 for a detailed discussion of this issue)

The commenter also believes that EPA must allow Advanced Biofuel to be derived from urban waste because the definition of Advanced Biofuel in EISA leaves no question that urban waste is an eligible feedstock. Congress clearly intended for the RFS2 program to allow the use of urban waste to produce Advanced Biofuel, regardless of EPA's interpretation of the definition of Renewable Biomass. Advanced Biofuel need not be derived from Renewable Biomass if it is one of the five types of eligible fuels derived from a broader category of feedstocks. The ethanol generated from urban waste fits at least two of those broader categories since it would be derived principally from "cellulose, hemicellulose, or lignin," and "waste material." Urban waste-derived ethanol is therefore eligible to be Advanced Biofuel under a careful textual reading of EISA, so long as it meets the lifecycle greenhouse gas reduction requirements for Advanced

Biofuel. (2021.1, p.8 & pp.13-14) (See Docket Number 2021.1, pp.8-14 for a detailed discussion of this issue).

Document No.: EPA-HQ-OAR-2005-0161-2021
Organization: Fulcrum Energy
Comment:
The commenter (2021.1) noted that EPA requested comment on its plan to assign Renewable Identification Numbers (RINs) in situations where a facility co-processes a renewable feedstock simultaneously with a fossil fuel feedstock. The commenter believes that most or all waste plastics are either direct "food wastes" (e.g., packaging, utensils), become contaminated with food residues after entering the waste stream, or are collected from the "vicinity of buildings and other areas regularly occupied by people" which qualifies them as Renewable Biomass as discussed above. The commenter recommends that EPA's final rule explicitly classify post-recycled urban waste as a renewable feedstock and not consider it to be a mixed feedstock. (2021.1, p.37) (See Docket Number 2021.1, pp.37-42 for a detailed discussion of this issue.)

Document No.: EPA-HQ-OAR-2005-0161-2401
Organization: Clean Energy
Comment:
The commenter (2401) urges EPA to include, not exclude, MSW as a qualifying feedstock for renewable biomass under the RFS2. [[Docket number 2401.1, p. 3]] [[See docket number 2401.1, pp. 2-4 for extensive discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) supports changes to the renewable fuel definitions that include Municipal Solid Wastes (MSW) in its original un-segregated (neat) form. (1044.1, p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) believes that municipal solid waste (MSW) should not be considered renewable biomass. [[Docket number 2130.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes that the fact that Congress included MSW in EPAct 05, but not later EISA 07 and limited EISA 07 to food and yard waste that is often contained in MSW suggests Congressional intent to exclude MSW and provides an incentive for separation of those renewable biomass components of MSW.

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:

The commenter (2393) believes that the fact that Congress included municipal solid waste (MSW) in EPACT05, but not later in EISA07 and limited EISA07 to food and yard waste that is often contained in MSW suggests Congressional intent to exclude MSW and provides an incentive for separation of those renewable biomass components of MSW. [[Docket number 2393.1, p. 78]]

Document No.: EPA-HQ-OAR-2005-0161-2416
Organization: Enerkem
Comment:
The commenter (2416) urges EPA to include MSW as an eligible feedstock and notes that this is within EPA's Authority and consistent with broad public policy goals. The definition of "renewable biomass" in EISA includes materials that ordinarily comprise MSW - food waste, yard waste, biomass removed from the vicinity of occupied structures, and wood waste. Additionally, the definition of "advanced biofuel" includes "ethanol derived from waste material, including crop residue, other vegetative waste material, animal waste, and food waste and yard waste." As with renewable biomass, the listed materials are among those generally within the scope of MSW. [[Docket number 2416.1, p. 3]]

The commenter believes that because the definitions in EISA reflect the composition of MSW, the inclusion of MSW as a single category is consistent with the statute. Requiring biofuels producers to separate waste streams into smaller component parts creates a significant cost and compliance burden, without a corresponding benefit and is not necessary to comply with the statutory language of EISA. [[Docket number 2416.1, p. 3]]

Additionally, the greenhouse gas profile of fuels derived from MSW is well within the most aggressive greenhouse gas targets of the statute. EISA requires "advanced biofuels" to demonstrate a 50 percent GHG reduction, while "cellulosic biofuel" must demonstrate a 60 percent reduction. A 2007 joint study between Michigan State University and the University of Toronto indicated that MSW reduces GHG emissions by at least 65% percent compared to gasoline, based on a GREET model analysis of lifecycle emissions. In addition, using EPA's WARM model, the study showed significant GHG reductions for MSW-to-ethanol as compared to landfilling MSW. The commenter states that if EPA included the reduction in landfill emissions as a part of the lifecycle analysis of MSW, the emissions reduction profile of MSW would be even stronger. [[Docket number 2416.1, p. 3]]

Regarding EPA's request for comments on the inclusion of certain non-fossil portions of MSW, such as non-recyclable plastics, the commenter recommends that EPA allow non-recyclable plastics to be included in the waste stream used to process fuels. Plastics represented 12% of MSW in 2007 (EPA Waste Statistics). Overall recovery of plastics is small: only 7%. Of the 30 million tons of plastics generated in 2007, only 2.1 million tons of plastics were recycled. The rest was discarded in landfills. Plastic trash bags, plastic packaging and plastics in non-durable goods are virtually all discarded while recovery of PET (polyethylene terephthalate) soft drink bottles is significant with a rate of more than 36%.

[[See docket number 2416.1, pp 3-6 for extensive discussion of this issue.]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) urges EPA to interpret the definition of renewable biomass to include MSW that contains, but isn't limited to yard and/or food waste. As EPA notes in the preamble of the proposed rule (pg. 24922), the statutory definition of renewable biomass does not include a reference to MSW as did the definition of "cellulosic biomass ethanol" but instead references "separated yard waste and food waste." However, as EPA also observes, ethanol derived from waste material and biogas including landfill gas are specifically identified as eligible for consideration under the definition of advanced biofuel (pg. 24922). The commenter believes that at a minimum, EPA should define all biogenic materials in MSW as renewable biomass and consider them qualifying feedstock for renewable fuels. The commenter concludes that failure to define, at a minimum, all biogenic materials in MSW as renewable biomass would be counterproductive and contrary to Congress' inclusion of landfill gas as an eligible biofuel feedstock, due to the fact that landfill gas is the result of the decomposition of the entire biogenic portion of MSW. [[Docket number 2472.1, pp 10-11]] [[See Docket number 2472.1, pp 10-11 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:
The commenter (2491) suggests that all components of MSW that are biogenic (derived from plants and animals) in origin such as paper, yard trimmings, food waste, etc. should qualify as renewable biomass. Therefore, an important criterion for classifying the components of MSW as renewable or nonrenewable should be how it is produced. Although fuels can be made from fossil derived waste such as plastics, they should not be characterized as renewable biomass. However, there should not be any restrictions on fuel production from non-renewable portions of MSW. [[Docket number 2491.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2095
Organization: New Planet Energy
Comment:
The commenter (2095) states that urban waste is an expressly permitted feedstock for advanced biofuel. The commenter adds that carbon-based wastes represent the nation's most promising and virtually untapped renewable energy source. Advanced conversion technologies, which will be commercially proven and a recognized factor in the nation's energy mix within the next three years, could produce enough ethanol from these resources to not only satisfy the requirement for Advanced Biofuel in EISA but to completely eliminate U.S. dependence on foreign oil. Since one of Congress' objectives in passing EISA was to promote the use of advanced biofuels with reduced land-use impact, and urban waste is the only currently viable feedstock with no indirect land-use impact, the commenter believes that it is especially important that urban waste be a part of the RFS2 program. [[Docket number 2095.1, pp. 1-2]] [[See docket number 2095.1, pp. 3-5 for background information on advanced conversion technologies]]

Document No.: EPA-HQ-OAR-2005-0161-2532
Organization: BioEnergy Producers Association

Comment:
The commenter (2532) points out that the text of EISA unambiguously requires ethanol derived from urban waste to be considered advanced biofuel. Statutory context affirms that ethanol derived from urban waste can be "advanced biofuel." The Obama administration, by its actions and key appointments, has affirmed its commitment to advanced biofuels as an essential element in America's quest for energy independence. The President has stated his intention to double within three years the amount of energy that could be produced from renewable resources. [[Docket number 2532, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-2376
Organization: County Sanitation Districts of Los Angeles County
Comment:
Sanitation Districts strongly believe that as long as there is no attempt to "spike" the waste with plastics beyond what is considered normal disposal for a community, the entire MSW waste stream should be defined as a "renewable biomass." EPA can ensure that plastics and other components of concern are present at the lowest levels possible. One approach could require that in order for a community's MSW to qualify as renewable biomass, that community shall have a recycling program that achieves diversion rates at least as great as the national average for the year of qualification. [[2376.1 p.3]

The commenter states that waste-to-fuel advanced technologies have potential to produce significant volume of renewable fuels that could help EPA achieve the RFS2 volume mandates of 36 billion gallons of renewable fuel by 2022. However, the emerging waste-to-fuel industry needs additional incentives to improve the economic feasibility of such projects. Credit trading systems for renewable fuels such as the trading system in RFS will help the emerging waste to-fuel industry gain economic stability and promulgate long-term investments. Therefore, we again request that waste-derived renewable fuels be included in RFS2 in order to participate in the credit trading system. [[2376.1 p.6]]

The commenter cites evidence on pages 5-7.

Document No.: EPA-HQ-OAR-2005-0161-2023
Organization: New York Biomass Energy Alliance
Comment:

The commenter (2023) supports the inclusion MSW as renewable biomass. The commenter also believes that yard waste and food waste should be considered renewable biomass. The commenter suggests categorizing landfill gas as an advanced biofuel, will make RFS2 serve as a stimulant to improved waste handling and development of waste-to-energy technologies, while contributing the overall EISA goal of reducing fossil fuel consumption. (2023.1.pdf, p6)

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) recommends that EPA include MSW that contains yard and/or food waste within the definition of renewable biomass. (2466.1.pdf, p.8)

Document No.: EPA-HQ-OAR-2005-0161-1995
Organization: Waste Management (WA)
Comment:
The commenter (1995.1) recommends that EPA interpret the definition of renewable biomass to include MSW that contains, but isn't limited to, yard and/or food waste. The commenter believes that at a minimum, EPA should define all biogenic materials in MSW as renewable biomass and consider them qualifying feedstock for renewable fuels. Exclusion of MSW as a qualifying feedstock would exclude unprocessed MSW from any role in the development of renewable fuel under the Energy Independence and Security Act (EISA), and would also likely severely limit the amount of yard and food waste available as feedstock for EISA-qualifying fuel, since large quantities of these materials are disposed of as un-separated MSW. (1995.1, pp.1-2) (See Docket Number 1995.1, p.2 for more discussion on this issue)

The commenter also believes that the inclusion of MSW in the definition of renewable biomass should not reduce paper recycling. To ensure that the inclusion of MSW as renewable biomass does not divert recyclable paper materials from recycling, EPA could define all MSW as qualifying feedstock for renewable fuels as long as the producer can certify that the MSW came from communities that provide recycling services for their residents, or comes from commercial, industrial or institutional sources that operate or have access to a recycling program. (1995.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2004
Organization: NxENRG
Comment:
The commenter (2004.1) is concerned that the proposed definition of renewable biomass does not expressly include Municipal Solid Waste (MSW) in all forms. The exclusion of MSW will severely limit the available feedstocks under both the advanced biofuels and cellulosic biofuels categories. Not only does the exclusion of MSW reduce available feedstocks and thereby make compliance more difficult, it undermines the opportunity to reduce the amount of materials in our nation's landfills. The commenter believes that MSW should include all items that are routinely placed in landfills including construction waste, demolition waste and used tires. The commenter also believes that:
(1) All MSW should qualify as renewable biomass including plastics and used tires that are derived in whole or in part from petroleum.
(2) There is no sound policy reason and no Congressional directive requiring that fossil portions be treated differently than other components of MSW.

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
The commenter [[2071]] states that by interpreting "separated yard and food waste" to include MSW, the EPA will encourage the use of MSW as a feedstock and provide an environmentally desirable alternative for disposing of MSW by allowing the repurposing of waste that would otherwise be placed into costly, polluted landfills.

The commenter [[2071]] also states that yard and food waste should be interpreted to include MSW because it will facilitate the economics of the domestic fuel industry and fulfill the objectives of the EISA in encouraging domestic fuel production using domestic feedstocks. [[#2071.1 p.3]]

The commenter [[2071]] states the American Clean Energy and Security Act of 2009, amended the definition of renewable biomass to include MSW. HR 2454 states that renewable biomass includes "the non-fossil biogenic pollution of municipal solid waste and construction, demolition, and disaster debris." The House's amendment would definitively make clear that MSW will be considered renewable biomass. EPA should follow the House's lead and include MSW within the definition of renewable biomass. [[#2071.1 p.6]]

Document No.: EPA-HQ-OAR-2005-0161-2095
Organization: New Planet Energy
Comment:
The commenter (2095) states that EPA can and should interpret "renewable biomass" to include urban waste. The commenter adds that carbon-based wastes represent the nation's most promising and virtually untapped renewable energy source. Advanced conversion technologies, which will be commercially proven and a recognized factor in the nation's energy mix within the next three years, could produce enough ethanol from these resources to not only satisfy the requirement for Advanced Biofuel in EISA but to completely eliminate U.S. dependence on foreign oil. Since one of Congress' objectives in passing EISA was to promote the use of advanced biofuels with reduced land-use impact, and urban waste is the only currently viable feedstock with no indirect land-use impact, the commenter believes that it is especially important that urban waste be a part of the RFS2 program. [[Docket number 2095.1, pp. 1-2]] [[See docket number 2095.1, pp. 3-5 for background information on advanced conversion technologies]]

Document No.: EPA-HQ-OAR-2005-0161-2102
Organization: RENTECH, INC
Comment:
The commenter (2102.1) believes that the definition of renewable biomass should not be limiting and therefore should explicitly include waste streams found in Municipal Solid Waste. Every effort should be made to allow and encourage the use of renewable wastes that are collected as part of rural and municipal waste and recyclable collection programs, or as part of conventional municipal waste collection. These materials, tree and yard trimmings from various sources, waste from food production and processing (including table scraps) are truly zero carbon feedstocks as they are gathered in the normal course of municipal waste collection. The definition should also seek to sweep in other materials that are currently not economic to recycle but could be used in fuels production. (2102.1, pp.3-4) (See Docket Number 2102.1, p.4 for more discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that not including MSW in the RFS2 standards eliminates some 140 million tons of biogenic and non-biogenic MSW materials annually. As we pursue

energy independence the U.S. can not afford to turn our backs on this significant source of renewable energy. The commenter noted that of the roughly 56 cellulosic biofuel technologies currently being developed, 20 percent (nearly 160 million gallons total capacity) of these planned projects utilize MSW as a feedstock. (2112.1, p.5)

The commenter also believes that the neglect of biomass from federal lands in the proposed RFS2 rule adds significant restrictions to the success of energy independence. Without the inclusion of biomass from federal lands in the RFS2 standards, the incentive to remove this undervalued resource from federal lands goes away. (2112.1, p.5)

The commenter noted that most of EPA's assumptions on advanced biofuel production are based on the brief history of using corn for ethanol which the regulation is moving away from. This rule is written for land-centric biomass (ag and forestry). It nearly ignores all the human-centric biomass (wastes). (2112.1, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
Renewable Biomass from Waste
The commenters would like EPA to consider making post-recycling residues such as the biomass portion of the waste material left over at material recovery facilities eligible as renewable biomass feedstocks. The commenters believe that these residues from recycling programs, separated out in the recycling process, fit within the letter and spirit of the definition of renewable biomass. (2129.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) recommends that EPA interpret the term "renewable biomass" as broadly as is reasonable, so that it includes both MSW and C&D streams as eligible feedstocks under the RFS2. (2132.1, p.10).

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] states that they strongly urge EPA to modify the category of renewable biomass, "Separated food and yard waste" to include all forms of organic municipal sold waste, including demolition and construction residues and food processing waste. Also they strongly urge EPA to add a new category of renewable biomass, "8. Plant material, including invasive species, removed for habitat restoration, fire mitigation, or as a result of natural disaster". They further suggest that this new category be excluded from predictive assessments. Also that they encourage EPA to include the possibility that new forms of renewable biomass may emerge that

are not specifically designated in the rule, and that they support EPA's inclusion of CRP land as agricultural.

The commenter [[2302]] also states that they encourage EPA to include rangeland as agricultural land, and that they encourage that EPA not set limits on fallow periods, and that abandoned agricultural land be included in the allowance for renewable biomass production. [[#2302 p.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter also states that regulated entities for several years have planned facilities based upon the settled expectation that biomass portions of MSW would be acceptable feedstocks under the RFS2 program. Indeed, much of EPA's modeling analysis in the draft RFS2 assumes inclusion of some MSW within the definition of renewable biomass. We urge EPA to not upset these settled expectations and allow biomass portions of MSW as renewable fuel feedstock. [[Docket number 2310.1, p. 7] [[See docket number 2310.1, p. 6 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2370
Organization: NGVAmerica
Comment:
The commenter (2370.1) believes that MSW, while not specifically identified under the definition of renewable biomass, should be counted as renewable biomass for purposes of the RFS Program. Even if renewable biomass does not include MSW, it is important to note that the definition of advanced biofuel specifically includes "biogas (including landfill gas and sewage waste treatment gas)." Even if MSW is somehow excluded from the general definition of renewable biomass, the more specific definition of advanced biofuel expressly includes biomethane produced from landfill gas and does not require the separation of yard waste and food waste at the landfill in order to qualify. (2370.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
2. MSW: There is no policy or scientific reason why material that is renewable and biogenic in nature and may otherwise be discarded, should not be available as feedstock for the production of renewable fuels. [[Docket number 2383.1, p. 14]]

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) believes that EPA should clearly include the use of municipal solid waste ("MSW") and industrial waste gases in its definition for biomass. By including MSW in its definition of renewable biomass, the EPA will maintain feedstock neutrality and enhance a number of various participants who otherwise would be excluded from participation. The commenter also urges EPA to consider defining MSW as it is defined in the Solid Waste

Disposal Act of 2002. This approach would harmonize the EPA's approach with the approach under the Solid Waste Disposal Act. (2408.1, pp.3-4)

The commenter also supports the inclusion of all non-recyclable waste streams found in MSW as well as construction and demolition and disaster debris destined for landfills. Specifically, after the last several natural disasters, significant amounts of refuse was available for use to produce biofuels at affordable cost. The commenter believes this will significantly reduce the amount of landfill waste, decrease total landfill methane emissions, reduce GHG impacts and extend the life of the existing landfills. (2408.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2475
Organization: LanzaTech, Inc.
Comment:
The commenter urges EPA to include MSW in the definition of renewable biomass. Defining renewable biomass to include MSW will capitalize on the opportunity to tap into what Congress has identified as a valuable energy source. Additionally, by including MSW in the definition of renewable biomass, EPA will maintain feedstock neutrality. In short, a broad definition of renewable biomass which includes both MSW and industrial waste gases will further EPA's goals of minimizing GHG emissions and reducing the carbon footprint. Finally, including MSW in the definition of renewable biomass is consistent with similar definitions in existing federal programs. [[Docket number 2475, p. 3]]

The commenter also believes that EPA should define MSW as it is defined in the Solid Waste Disposal Act of 2002, adding that the definition of renewable biomass should explicitly include all non-recyclable waste streams found in MSW destined for landfills. Currently, the anaerobic decomposition of these wastes in landfills releases methane, a potent GHG with a global warming potential 21 times that of carbon dioxide. Methane emissions from landfills constitute 34 percent of U.S. methane emissions. Even with advanced mechanisms to recover landfill gas, approximately 30 percent of the landfill methane emissions will still reach the atmosphere. Recognizing these waste streams in the definition of renewable biomass will reduce the amount of landfill waste, decrease total landfill methane emissions, reduce GHG emissions, and ultimately extend the life of existing landfills. [[Docket number 2475, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment:
The commenter (2526) urges the EPA to adopt an inclusive and attainable approach towards the Renewable Biomass Definition and recordkeeping requirements. This will allow the cellulosic biofuels industry to fully achieve its potential for reducing greenhouse gases. The commenter makes the following points:
- Waste streams should specifically include MSW and C&D waste.

Document No.: EPA-HQ-OAR-2005-0161-2532
Organization: BioEnergy Producers Association
Comment:

The commenter (2532) notes that the implied requirement that only source separated food waste or green waste will qualify for RINs and RFS2, which they believe is based upon a flawed interpretation of the intent of federal statute, will place feedstock source separation and regulatory reporting responsibilities on the shoulders of this industry that will meaningfully stifle its development—whereas it is beneficial to the nation, both from an environmental and energy recovery point of view, to encourage the production of advanced biofuels from the complete range of carbonaceous materials that are now being placed in landfills. [[Docket number 2532, p. 2 and 2539, p. 1]] [[See docket numbers 2532, pp. 3-4 and 2539, p. 1 for discussion of food waste, nonrecycleable paper, construction and demolition lumber, methane, urban waste, and conversion technologies.]]

Document No.: EPA-HQ-OAR-2005-0161-2534
Organization: Minnesota Pollution Control Agency
Comment:
The commenter (2534) believes that the final rule should specifically allow MSW that contains yard waste or food waste to qualify as renewable biomass. Although additional analysis is needed, it is likely that the conversion of MSW to biofuel provides significant Greenhouse Gas (GHG) benefit compared to landfilling. (2534, p.1)

The commenter also believes that the final rule should not require that both yard waste aid food waste be present in the MSW for it to qualify. By replacing "and" with "or" the rule will fully facilitate the use of MSW for biofuel. This clarification is also supported by the EISA definition, which uses "separated yard waste or food waste" rather than separated yard waste and food waste, as listed in the proposed rule. (2534, p.2)

The commenter noted that the processing of MSW into a biofuel involves technology, which can utilize both the fossil and nonfossil portions of the MSW. The rule should clarify that both portions will qualify as renewable biomass because of the significant potential for GHG benefits from using all of the feedstock. By allowing the fossil portions of the MSW to be counted as renewable biomass, the EPA will provide an incentive to use MSW in a way that could achieve greater GHG benefits and reduce future landfill disposal. In the event that EPA chooses not to include both fossil and non-fossil portions of MSW in the final definition of renewable biomass, the commenter suggests that the final rule include, at a minimum, the nonfossil portion. The commenter also believes that the final rule should not require the non-fossil portion to be separated from the remaining MSW prior to processing, but rather acknowledge that the separation requirement of the statute can be accounted for through the testing of the final fuel product in accordance with recognized scientific methods such as ASTM test method D-6866. (2534, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
The commenter [[2071]] states that with the expected number of facilities Terrabon expects to build, the commenter believes the reduction in GHG emissions will be 4.5 million tons by 2015 and 8.0 million tons by 2022. These GHG emission reductions would be even greater as other companies use different technologies to convert MSW to biofuels. [[#2071.1 p.6]]

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) noted that the definition of "fallow land" may be in line with terminology used within the United States Department of Agriculture (USDA), however marginal lands, lands that are not suitable for agriculture represent potential areas for growing energy crops. Given the large volumes of biofuel that will be required to fulfill RFS2, all land and resources possible, including MSW, will be required unless or until there are major advancements with algae oils or cellulosic biofuels. (2549.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) recommends that demolition wood waste, construction wood wastes and wood product manufacturing wood wastes in addition to backyard waste should be included in the definition of renewable biomass. (2156.1 p.2)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should promote the use of landfill gas, which may be transported through common carrier pipelines. EPA should include the use of methane from animal wastes and landfill gas, including methane transported through common carrier pipelines, as part of the pathways in the final rule implementing the RFS2 program. (2329.1, p. 99-100)

Our Response:

The majority of commenters stated that MSW should be considered as renewable biomass. American Petroleum Institute and Marathon Petroleum Company felt it should not be. They argued that since EPAct of 2005 included MSW and EISA specifically did not, renewable biomass is limited only to the separated yard and food waste portion of MSW.

Generally, commenters supporting the use of MSW in producing qualifying fuels under EISA, favored either 1) a determination that unsorted MSW can be used as a feedstock for advanced biofuel even if it does not meet the definition of renewable biomass, 2) that the Act be interpreted to include MSW as renewable biomass, or 3) that MSW from which varying amounts of recyclable materials have been removed could qualify as renewable biomass. Clean Air Task Force et al. said that for EISA volume mandates to be met, it is important to take advantage of biomass resources from urban wastes that would otherwise be landfilled. They urged that post-recycling residues would fit within the letter and spirit of the definition of renewable biomass.

Fulcrum Energy, New Planet Energy, Enerkem and Bioenergy Producers Association argued that the statute can be reasonably interpreted to allow advanced biofuel to be made from material that does not meet the definition of renewable biomass. We do not agree with the argument because the definition of advanced biofuel specifies that it is a form of "renewable fuel," and renewable fuel is defined in the statute as fuel that is made from renewable biomass.

While the definition of advanced biofuel includes a list of materials that "may" be "eligible for consideration" as advanced biofuel, and that list includes "ethanol derived from waste materials" and biogas "including landfill gas," the fact that the specified items are "eligible for consideration" indicates that they do not necessarily qualify but must meet the definitional requirements – being "renewable fuel" made from renewable biomass and having life cycle greenhouse gas emissions that are at least 50% less than baseline fuel. There is nothing in the statute to suggest that Congress used the term "renewable fuel" in the definition of "advanced biofuel" to have a different meaning than the definition provided in the statute. The result of the commenter's approach would be that general renewable fuel and cellulosic biofuel would be required to be made from renewable biomass because the definitions of those terms specifically refer to renewable biomass, whereas advanced biofuel and biomass-based diesel would not, because their definitions refer to "renewable fuel" rather than "renewable biomass." EPA can discern no basis for such a distinction. EPA believes that the Act as a whole is best interpreted as requiring all types of qualifying renewable fuels under EISA to be made from renewable biomass. In this manner the land and feedstock restrictions that Congress deemed important in the context of biofuel production apply to all types of renewable fuels.

EPA also does not agree with Fulcrum Energy's argument that the listing in the definition of renewable biomass of "biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire" should be interpreted to include MSW. It is clear that the term "at risk of wildfire" modifies the entire sentence, and the purpose of the listing is to make the biomass that is removed in wildfire minimization efforts, such as brush and dead woody material, available for renewable fuel production. Such material does not typically include MSW. Had Congress intended to include MSW in the definition of renewable biomass, EPA believes it would have clearly done so, in a manner similar to the approach taken in EPAct, as Marathon Petroleum and API both argue. EPA also does not believe that it would be reasonable to interpret the reference to "separated yard or food waste" to include unsorted MSW. Although MSW contains yard and food waste, such an approach would not give meaning to the word "separated."

The Clean Air Task Force et al stated that residues from recycling programs, separated out in the recycling process, fit within the letter and spirit of the statutory definition of renewable biomass. Also, the County Sanitation Districts of Los Angeles County argued that EPA could ensure that plastics and other non-biogenic and fossil components of MSW are minimized. The commenter suggested that waste collected in municipalities that had curbside recycling or other comparable programs be considered separated for purposes of the definition of "separated yard and food waste." Such an approach would leave to municipalities and waste handlers a determination of how much waste should be recycled before the residue was used as a feedstock for renewable fuel production. EPA believes that such an approach would not guarantee sufficient "separation" from MSW of materials that are not yard waste or food waste to give meaning to the statutory text. Nevertheless, the suggestion that the non-biogenic and fossil components of MSW be minimized has merit. We believe it is reasonable to interpret the word "separated" in the term "separated yard or food waste" to refer to the degree of separation that is practicable. Material recovered from waste streams is typically sold to companies that will recycle the material. EPA believes that the MSW-derived residue remaining after reasonably practicable efforts to separate out recyclable materials should be considered separated yard and food waste and, therefore, renewable biomass. The final rule adopts this approach. This MSW-

derived residue would include some amount of residual non-recyclable plastic and rubber of fossil fuel origin, much of it being wrapping and packaging material for food. Since this material cannot be practicably separated from the remaining food and yard waste, EPA believes it is appropriate to include it in the category of separated food and yard waste. In sum, EPA believes that the residue remaining after paper, cardboard, plastic, textiles, metal and glass have been removed for recycling should qualify as renewable biomass. This interpretation is consistent with the text of the statute, and will promote the productive use of materials that would otherwise be landfilled. It will also further the goals of EISA in promoting energy independence and the reduction of GHG emissions from transportation fuels.

Producers using this second option, will need to determine what RINs to assign to a fuel that is derived from a variety of materials, including yard waste (largely cellulosic) and food waste (largely starches and sugar), as well as incidental materials remaining after reasonably practical separation efforts such as plastic and rubber of fossil origin. EPA has not yet evaluated the lifecycle greenhouse gas performance of fuel made from such mixed sources, so is unable at this time to assign a D code for such fuel. The final rule, however, requires ASTM test method D-6866 to be applied to the fuel made from MSW-derived feedstock. Through this method, producers can determine what portion of the fuel is of biogenic origin. That biogenic portion of the fuel will likely be largely derived from cellulosic materials (yard waste, textiles and construction materials), and to a much smaller extent starch-based materials (non-cellulosic food wastes). (See Tables 1 and 3 in EPA's "Municipal Solid Wastes in the United States, 2007 Facts and Figures.) Unfortunately, EPA is not aware of a test method that is able to distinguish between cellulosic- and starch-derived renewable fuel. Under these circumstances, EPA believes that it is appropriate for producers to base RIN assignment on the predominant component and, therefore, to assume that the biogenic portion of their fuel is entirely of cellulosic origin. The, non-biogenic portion of the fuel, however, would not qualify for RINs at this time Thus, we are providing via the ASTM testing method an opportunity for producers using a MSW-derived feedstock to generate RINs only for the biogenic portion of their renewable fuel, and to assign a D code of 3 (cellulosic biofuel) to such portion. There is no D code for the remaining fossil-derived fraction of the fuel in the final rule. There is also no D code applicable to the entire volume of renewable fuel produced when using MSW-derived residue as a feedstock. The petition process for assigning such codes in the final rule can be used for such purpose.

NGV America suggested that biogas from landfills should be treated in the same manner as renewable fuel produced from MSW. EPA agrees with the commenter to a certain extent. The definition of “advanced biofuels” in EISA identifies “Biogas (including landfill gas and sewage waste treatment gas) produced through the conversion of organic matter from renewable biomass” as “eligible for consideration” as an advanced biofuel. However, as with MSW, the statute requires that advanced biofuel be a “renewable fuel” and that such fuel be made from “renewable biomass.” The closest reference within the definition of renewable biomass to landfill material is “separated yard or food waste.” However, in applying the interpretation of “separated” described above for MSW to landfill material, we come to a different result. Landfill material has by design been put out of practical human reach. It has been disposed of in locations, and in a manner, that is designed to be permanent. For example, modern landfills are placed over impermeable liners and sealed with a permanent cap. In addition, the food and yard waste present in a landfill has over time become intermingled to an extraordinary extent. This occurs in the process of waste collection, shipment, and disposal, and subsequently through

waste decay, leaching and movement within the landfill. Additionally, we note that the process of biogas formation in a landfill provides some element of separation, in that it is formed only from the biogenic components of landfill material, including but not strictly limited to food and yard waste. Thus, food and yard wastes are effected a significant degree of separation from other landfill materials through the process of biogas formation. As a result of the intermixing of wastes, the fact that biogas is formed only from the biogenic portion of landfill material, and the fact that landfill material is as a practical matter inaccessible for further separation, EPA believes that biogas should be considered as produced from separated yard and food waste for purposes of EISA. Therefore, we agree with the commenter that all biogas from landfills is eligible for RIN generation

A number of commenters asked that additional waste streams be considered renewable biomass, including construction and demolition wastes industrial waste gases, and invasive species removed from lands for various beneficial purposes. However, EISA lists materials that are eligible for consideration as renewable biomass, and EPA does not believe that these waste categories fit within the statutory structure.

Comments regarding the lands from which renewable biomass may be obtained are addressed in Section 3.3 of this document.

3.2.3 Advanced Biofuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2303
Organization: American Bakers Association
Comment:
The commenter (2303.1) believes that EPA should restructure the RFS2 to accelerate the development of advanced biofuels. Modifying the food-to-fuel mandates and restructuring the RFS2 to give priority to advanced biofuels would limit the diversion of food to fuel. The commenter encourages EPA to freeze mandates for conventional biofuels, and establish an "off-ramp" that would automatically reduce the RFS2 for corn based ethanol in years when too much food will be diverted to fuel. The commenter does not support efforts to fill the deficit created by an inadequate supply of advanced biofuels with conventional biofuels. (2303.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2504
Organization: American Frozen Food Institute
Comment:
The commenter [[2504]] states that EPA should restructure the RFS to accelerate the development of advanced biofuels. Modifying the food-to-fuel mandates and restructuring the RFS2 to give priority to advanced biofuels would limit the diversion of food to fuel. And that implementing the RFS2 proposal would pose economic harm by significantly increasing the cost of food. [[see #2504.1 p.1]]

Document No.: EPA-HQ-OAR-2005-0161-2309

Organization: Grocery Manufacturers Association, National Council of Chain Restaurants, and Snack Food Association
Comment:
The commenter [[2309]] urges EPA to restructure the RFS to give priority to advanced biofuels and to limit the diversion of food and feed to fuel. The Clean Air Act provides EPA with the power to waive the requirements of the RFS, in whole or in part, if implementation of the RFS would severely harm the economy or the environment. [[#2309.1.p.1]]

Our Response:

These comments are really comments on the CAA provisions in EISA and not on our implementing regulations. EISA establishes the required volumes of each type of renewable fuel, and EPA regulations are designed to create a program to implement and enforce those volume requirements. As the commenters note, however, EPA is granted authority to waive volume mandates specified in the statute under certain conditions. EPA intends to monitor the effect of EISA implementation on the economy and will consider waiving volume requirements if circumstances warrant.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2422
Organization: North American Affairs Committee of the International DME Association
Comment:
The commenter (2422) petitions EPA to specifically include DME as motor fuel in its rulemaking. Many scientific tests have proven the merits of DME as motor fuel. DME is a clean, colorless gas, with high ignition quality, which is easy to liquefy and transport which makes it an ideal diesel fuel replacement, suitable for passenger cars, trucks and buses. The commenter believes it offers great potential as a fuel for diesel vehicles due to its high cetane number and environmental benefits (no soot, particulates or sulfur emissions). When made from coal, natural gas or biomass, DME lowers CO and NOx emissions slowing global warming. Moreover only modest engine modifications are required to use DME and such equipment is available today. Extensive testing of advanced transportation fuels including DME has been funded by government agencies. The results have proven the benefits of DME and methanol as excellent low-carbon motor fuels. [[Docket number 2422.1, pp. 2-3]]

The commenter adds that various academic institutions that specialize in biofuels have confirmed the merits of DME as a superior transportation fuel. Their testing confirms that these fuels have low-carbon footprint and among the lowest green house gas emissions.

Leading global vehicle manufacturers have studied the performance of various renewable fuels and find DME to be among the best biofuels in terms of performance, climate impact and energy efficiency. [[Docket number 2422.1, p. 4]]

Our Response:

This rulemaking is not approving fuels for use as motor vehicle fuels. Rather, those fuels that meet all the other requisite requirements under the CAA and also meet the requirements under 211(o) for renewable fuels as implemented through the final RFS2 regulations are allowed to generate RINs under the RFS2 program.

3.2.4 Cellulosic Biofuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0953
Organization: Great River Energy
Comment:
The commenter (0953) believes that the proposed new Renewable Fuel Standards (RFS2) definition and criteria has eliminated "other waste materials...and...otherwise used to displace 90% or more of the fossil fuel normally used in the production of ethanol" from the definition of Cellulosic biofuel. The commenter feels that this change deals a serious financial blow to owners and operators of Combined Heat and Power (CHP) plants and their renewable fuel partners. (P.1)

The commenter notes that the new definition would shift some of the current "Cellulosic biofuel" volumes into the conventional biofuel category, making it more difficult to achieve future volumetric requirements. Eliminating the incremental RINs for each gallon produced from steam fired conventional ethanol plants that no longer qualify under the proposed "Cellulosic biofuel" definition, impedes the ability of power plants and other combined heat and power (CHP) operations to attract new renewable fuel partners to utilize excess thermal energy and steam rather than relying on the incremental combustion of primary fuel to drive the conversion process to biofuels. (P.1)

The commenter strongly advocates adding a simple steam fired CHP provision to the qualifying definition of Cellulosic biofuel. This additional provision would make a meaningful contribution toward improving energy independence and domestic security by promoting co-location of renewable, advanced and cellulosic biofuels with new or existing combined heat and power (CHP) plants without increasing the combustion of primary fuels. (P.1)

Document No.: EPA-HQ-OAR-2005-0161-2362
Organization: Canopy Prospecting, Inc. and Trinidad Dehydration Company, Limited
Comment:
The commenter (2362) believes that EPA should consider a waiver of the Cellulosic Biofuel mandated description of a renewable fuel from any cellulosic, hemicellulosic, or lignin source so as to include cane ethanol especially since its bagasse by-product is usually used in power generation as well as for a new source of cane derived ethanol. Such a waiver would reduce the proposed 60% reduction to 50% in the case of cellulosic ethanol for baseline lifecycle GHG emissions. With such a modification any current projected shortfall for mandated volumes of cellulosic ethanol would be replaced with superior advanced biofuels that meet the 50% reduction goal. [[Docket number 2362.1, p. 2]]

Our Response:

These comments are really comments on the CAA provisions in EISA and not on our implementing regulations. In EISA, Congress eliminated the provision in EPAct that allowed ethanol to be considered cellulosic biomass ethanol if produced in plants that use waste materials to displace 90 percent or more of the fossil fuel normally used in the production of ethanol. Thus, there is no such provision under the new definition of cellulosic biofuel, and the statute does not provide EPA with the authority to modify the new definition. The statute also does not allow EPA to provide other mechanisms for starch- or sugar-derived ethanol to be considered cellulosic. However, the final rule does recognize that ethanol made from "cellulosic biomass from agricultural residues" achieves the 60% GHG reduction threshold required of cellulosic biofuel. Therefore, if the agricultural residues are renewable biomass, such fuel would be eligible for cellulosic biofuel RINs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) noted that while the new statute more accurately defines cellulosic biofuel, not providing incentives to existing ethanol producers to have a lower environmental impact ensures that the industry will remain status quo given that it has been grandfathered. While 2.5 RINs may be too high under the new program, the commenter believes that there should be some incentives to the ethanol industry to improve its environmental footprint. (2549.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) states that while the new statute more accurately defines cellulosic biofuel, not providing incentives to existing ethanol producers to have a lower environmental impact ensures that the industry will remain status quo given that it has been grandfathered. While 2.5 RINs may be too high under the new program, the commenter believes that there should be some incentives to the ethanol industry to improve its environmental footprint. [[Docket number 2369.1, p. 1]]

Our Response:

As discussed in response to the comments above, EPA does not have the authority to amend the statutory definition of cellulosic biofuel in EISA. Nevertheless, we believe that incentives will still exist to improve the lifecycle GHG performance of grandfathered renewable fuel volumes. An incentive continues in the marketplace to reduce energy related costs in producing fuels, which would also tend to improve GHG performance. In addition, any facility

expansions beyond the baseline volume will require that the expanded volume meet the lifecycle thresholds.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) believes that EPA should modify its definition of eligible feedstocks for cellulosic biofuels production. To ensure consistent treatment and avoid undue discrimination among these various types of biomass, a different definition along the following lines would be more suitable:

"Cellulose and hemicellulose from agricultural residues (for example, including but not limited to corn stover, wheat straw, rice straw, and sugarcane bagasse); planted grasses; planted trees, slash and pre-commercial thinnings; and yard waste." (2502.1, p.5)

Our Response:

We do not believe that a new definition is needed. The statutory definition specifies that cellulosic biofuel be renewable fuel derived from any cellulose, hemicellulose, or lignin that is derived from renewable biomass. It is clear from the reference to "any" cellulose, hemicellulose or lignin that the sources of cellulose and hemicellulose that the commenter cites are included.

3.2.5 Biomass-Based Diesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that Renewable Jet Fuel needs to be included in the discussion on Advanced Biofuels, and should state that for Renewable Jet Fuel to qualify as Advanced Biofuel it must use animal fats or waste greases as the feedstock. The discussion should also specify that Renewable Jet Fuel produced from vegetable oils (and palm oils) are not classified as Advanced Biofuel but are classified as Other Renewable Biofuel. The same discussion in Biomass-based Diesel on co-processing in section III.B.1.d should be repeated in the Advanced Biofuel section for Renewable Jet Fuel. (0994.1, p.4)

Our Response:

Renewable fuel that is used for jet fuel may fall into multiple renewable fuel categories depending on its feedstock and lifecycle performance. Several pathways have been specified in the regulations in §80.1426, while others will need to be added at a later date. However, the

restrictions suggested by the commenters on what can qualify or not qualify as advanced would be inconsistent with the requirements under the Act, and as such we do not have authority to impose such restrictions. Renewable jet fuel does not have to be produced from animal fats or waste greases for it to be considered an advanced biofuel, especially given the lifecycle results now developed for the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) believes the definitions at §80.1401 are incomplete and offers the following recommendation:

Non-Ester Renewable Diesel—the commenter proposes the definition of Non-Ester Renewable Diesel to include the federally defined standards of both ASTM 975, as amended for transportation fuel, and ASTM 396 for heating oil applications. In addition, the standard for aviation (jet fuel) should be included. The commenter proposes the language change to state (3) intended for use as transportation fuel, home heating oil or jet fuel and (4) to read &derived from renewable biomass sources.

Their recommendation is based upon the fact the EISA changed the definition of the fuels and the current definition does not codify the change. The language for item (5) does not correlate with reference to §80.1426 and conflicts with §80.1426 table 1.

The commenter also feels the D code qualifier is inaccurate because renewable diesels can be made with advance techniques other than hydro-cracking and thermal depolymerization. This is supported by other companies being approved by the agency with technologies other than those mentioned this year. The commenter believes these changes are warranted to accurately reflect the intent of the EISA to capture transportation and alternate fuels as defined. [[Docket number 1044.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) believes that EPA should include green diesel meeting ASTM D975 fuel specifications in its definition of biomass-based diesel. (2099.1, p.13) (See Docket Number 2099.1, pp.13-14 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2377
Organization: National Solid Wastes Management Association (NSWMA)
Comment:
NSWMA is concerned about the impact of these new biofuels on engine performance. We urge EPA to mandate that cellulosic biofuels conform with ASTM's specification D-975 for diesel fuels.

Our Response:

We do not believe that the definition of renewable diesel or cellulosic diesel should include the ASTM specifications in D-975 for diesel fuel. There may be renewable fuels or fuel additives that are or will be approved for use in diesel engines, but which nevertheless do not meet all specifications in ASTM D-975. In addition, heating oil and jet fuel are already defined in §80.2. The definition of renewable fuel in §80.1401 requires such fuel to be made from renewable biomass, and be used to replace or reduce the quantity of fossil fuel present in a transportation fuel, heating oil, or jet fuel. Thus, §80.1401 codifies the changes in definitions required by EISA, and these definitions apply to all RFS2 provisions in Subpart M.

The final lookup table in §80.1426(f) is more general that the one proposed in the NPRM with respect to required elements of the renewable diesel production process. Moreover, insofar as the lookup table does not specify a D code for a particular production pathway, a party can petition the Agency for assignment of a D code through the provisions of §80.1416.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2147
Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) suggests that the final rule provide that any "neat" biodiesel used for biodiesel/petroleum diesel blends be blended at a rate consistent with applicable industry standards and manufacturers' guidelines. (Page 11)

Our Response:

The Agency would prefer that these issues be handled and addressed by industry outside of EPA rulemaking to the extent possible, particularly if they relate more to vehicle performance issues rather than to emission performance. The final RFS2 regulations allow biodiesel to be blended at any level and still be valid for RFS2 compliance purposes so long as it is used as transportation fuel, heating oil, or jet fuel. If necessary, we may address these issues through future rulemaking efforts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
While the commenter (2249.2) generally supports the definition of biomass-based diesel, they urge consistency for purposes of complying with multiple federal agencies and recommends EPA utilize the most updated version of the ASTM standard, which would make the definition consistent with IRS tax guidance. (Docket number 2249.2, p. 10)

Our Response:

We have included the most recent version of ASTM D-6751 in the definition of biodiesel in §80.1401.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
With regards to the "Biomass-based Diesel and Non-ester Renewable Diesel" definitions, the commenter (2132.1) recommends allowing "non-ester renewable diesel" to retain its chemically natural interpretation as being something other than biodiesel and moving the code qualification from this definition to Biomass-based Diesel, for a parallel construction of the two types of biomass-based diesel. This change will make both definitions internally consistent and less confusing, and it will improve flexibility in the event of future policy changes. (2132.1, p.9)

The commenter urges EPA to clarify that renewable fuels in general and non-ester renewable diesel fuel in particular exclude non-hydrogenated vegetable oils. This change is needed to ensure that only hydrogenated vegetable oils which undergo processing to remove oxygen and thus are fully compatible with typical diesel fuel vehicles may be used to produce non-ester renewable diesel. (2132.1, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) believes that EPA should revise the definitions of renewable fuel categories to include categories of advanced biofuels able to meet EISA objectives and provide certainty regarding appropriate RIN credits. (2099.1, p.12) (The commenter's proposed definition revisions can be found in Docket Number 2099.1, p.29)

The commenter believes that the definition of non-ester renewable diesel should be revised to include fuel that qualifies for a D code of 2 or higher. (2099.1, p.14) (See Docket Number 2099.1, pp.14-15 for more discussion on this issue)

Our Response:

We agree that the definitions of biodiesel, non-ester renewable diesel, and biomass-based diesel were not clear in the NPRM. They have been revised for this final rule to clarify that biodiesel and non-ester renewable diesel are two different types of fuel that both meet the requirements for biomass-based diesel. EPA, however, does not have authority under EISA to revise the definition of advanced biofuels to include additional categories of fuel beyond those specified in the Act. Moreover, we do not believe it would be appropriate to specify that advanced biofuels include "green gasoline" as that term is not defined elsewhere in the

regulations, and regardless the lookup table in §80.1426(f) identifies the specific types of fuels that qualify as advanced biofuel. We do not believe that the definition of renewable diesel should include ASTM D-975, as some renewable diesels or diesel additives are or may be approved for use in diesel engines even though they do not meet all aspects of D-975. Finally, we do not believe that non-ester renewable diesel should be allowed to be assigned a D code of 2 "or higher" as this would provide producers with inappropriate market power.

The Alliance of Automobile Manufacturers suggests that renewable fuels in general and non-ester renewable diesel fuel in particular exclude non-hydrogenated vegetable oils. We are not authorized to make such a change because the Clean Air Act (CAA) allows credit under 211(o) for any qualifying renewable fuel. Accordingly, our RFS2 regulations must as well. It is important to note, however, that qualifying as renewable under RFS2 does not constitute qualification as a fuel under the CAA. To be a fuel, it must still satisfy any other applicable requirements under the CAA, including 211(f). Under present EPA policy, we will allow for the use of vegetable oil as an additive at up to 5% in petroleum diesel fuel for use in motor vehicles.

3.2.5.1 Definition of Co-processed

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) supports EPA's proposal for defining renewable diesel as co-processed or not co-processed. The commenter also supports EPA's proposed definition of co-processed. This definition enables manufacturers of non-ester renewable diesel to categorize their product as biomass-based diesel by choosing to operate existing or modified equipment in a blocked out or sequential operation rather than processing the renewable feedstock simultaneously with petroleum feedstock. The definition also provides additional flexibility to meet the biomass-based diesel requirement in the most cost effective manner. (2124.1, p.21)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) supports EPA's proposed definition of co-processed renewable diesel. The proposed definition would allow producers of non-ester renewable diesel to categorize their product as biomass-based diesel by choosing to operate existing or modified equipment in a blocked out or sequential operation rather than processing the renewable feedstock simultaneously with petroleum feedstock. (2154.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:

The commenter (0994.1) supports EPA's definition of co-processing and agrees that the end product classification, Advanced Biofuel or Other Renewable Biofuel, must depend on the GHG reduction of the biomass feedstock. (0994.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-0999
Organization: Darling International Inc.
Comment:
The commenter (2151.1) believes that co-processing of biomass feedstock and petroleum products in the same unit ("Co-mingling") is not the proper scenario to decrease our nation's dependence on imported sources of petroleum or meet Congressional renewable fuel mandates. Simply utilizing existing hydro-treating capacity available for processing crude oil does not increase our nation's "refining" capacity and in no way lessens our dependence on foreign oil. If the EPA were to allow this as an option, further development of the industry would be "on hold" as potential investors of new units designed to convert biomass feedstock into renewable diesel would have to wait to see if the difficult technical issues associated with Co-mingling could be overcome. (2151.1, p.2)

The commenter does support the definition for "Co-processed" in the NPRM because it allows an alternative to the traditional uses of a petroleum hydrotreater, reduces the risk profile for the construction of new renewable diesel capacity and encourages investment in renewable fuel development and production. At the same time, the definition does not promote or encourage "Co-mingling" as a solution to meeting RFS2's biomass-based diesel volume mandates. (2151.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) recommends that EPA choose option 2 whereby only processing in dedicated hydrotreating equipment can be considered as valid for compliance with production of biomass-based diesel. This is the most practical option in our opinion since it is unlikely that the same equipment would be able to readily switch from renewable feedstocks to petroleum without change out of catalysts and/or other critical processing equipment. It is also recommended for compliance purposes that the renewable portion of the fuel be held in a separate storage vessel until such time as it can be certified and not be blended with petroleum diesel until final certification. This should also be the case where further processing such as isomerization or other pre or post hydrotreating steps occur. These criteria should also be strongly considered where the finished product is renewable aviation fuels. [[Docket number 2106.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) believes that the "co-processed" definition will help those newer biofuels that can be produced at refineries, blended interchangeably with diesel fuel and are compatible with vehicle technologies and existing infrastructure. (2132.1, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2127

Organization: Caterpillar Inc.
Comment:
The commenter (2127) encourages the EPA to reconsider the co-processing position. Processing virgin plant oils, used oils and greases in refineries results in a renewable fuel that is a drop-in replacement in the engines and that reduces, or eliminates, the risks of engine incompatibility. The commenter believes the exclusion of co-processed fuel from consideration as a renewable fuel can result in undue production burden and discourages the production of this fuel by refining pathway. Table V.B4-3 of the NPRM shows the significant volume currently co-processed with petroleum and shows a projected decrease in volume from new facilities due to the current Proposed Rule. [[Docket number 2127.1, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) recommends that the statutory definition of Biomass-based Diesel expressly exclude biomass co-processed with petroleum feedstock. EPA seeks comments on two options to deal with this exclusion. The commenter (2249.2) supports the second option because it fulfills the intent of Congress. The 1 billion gallon requirement for Biomass-based Diesel was based on estimates of biodiesel capacity in the United States, which is currently 2.69 billion gallons. By excluding co-processing in the definition, Congress clearly did not intend for co-processed renewable diesel produced by conventional petroleum refiners to qualify as Biomass-based Diesel under the RFS2 program. There is no principled reason for EPA to treat refineries that happen to separate the feedstocks and then mix the fuels later to allow the fuel to be considered Biomass-based Diesel. Thus, EPA should exclude any renewable diesel coproduced at refineries from the definition of Biomass-based Diesel, and implement the second option. (docket number 2249.2, pp. 10-11)

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) believes that in order to more clearly demonstrate that only certain types of co-processed fuels do not qualify as biomass-based diesel, EPA should alter the biomass based diesel definition to read “renewable fuel that is simultaneously processed with petroleum feedstock in the same unit or units is not biomass-based diesel.” EPA could then eliminate the definition of “co-processed,” which the commenter believes is confusing in its own right as it is limited to petroleum co-processing. [[Docket number 2310.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) strongly disagrees with the definition of co-processing and the exclusion of biomass-based diesel if co-processing occurs. The definition as included in RFS2 will remove any possibility of manufacturing biomass-based diesel at refineries. This must seriously be evaluated and reconsidered. The commenter believes that the definition of co-processing must be changed, because it is not feasible as written and will limit biomass-based diesel processed

through oil refineries. [[Docket number 2425.1, pp. 4 and 8]] [[See docket number 2425.1, pp. 4-5 for further discussion of this issue.]]

Our Response:

Commenters were split between allowing biomass-based diesel to be processed in the same equipment at a refinery provided that fossil fuel was not processed at the same time, and allowing processing only in dedicated equipment. Darling International, Endicott Biofuels, and the National Biodiesel Board favored the second option. We note that changes in refinery capacity are not a requirement or goal in EISA as it relates to the production of biomass-based diesel under RFS2. Nevertheless, our country is currently shutting down refining capacity. Allowing petroleum refining equipment to instead produce renewable fuels would be both financially and environmentally responsible and in keeping with the intent of EISA to reduce dependence on foreign supplies of fuel.

The National Biodiesel Board states that "There is no principled reason for EPA to treat refineries that happen to separate the feedstocks and then mix the fuels later to allow the fuel to be considered Biomass-based Diesel." EISA is clear that co-processing of renewable biomass and petroleum precludes the product from being categorized as biomass-based diesel, but says nothing about mixtures of renewable fuels and petroleum-based fuels after processing. Our final regulations implement the requirements of statute.

We selected the first option to be used in the final rule. We believe this is the most straightforward approach and an appropriate one, given that it would allow RINs to be generated for volumes of fuel meeting the 50% GHG reduction threshold that is derived from renewable biomass, while not providing any credit for fuel derived from petroleum sources. In addition, this approach avoids the need for potentially complex provisions addressing how fuel should be treated when existing or even mothballed petroleum hydrotreating equipment is retrofitted and placed into new service for renewable fuel production or vice versa.

Under the final rule, any fuel that does not satisfy the definition of biomass-based diesel only because it is co-processed with petroleum will still meet the definition of "Advanced Biofuel" provided it meets the 50% GHG threshold and other criteria for the D code of 5. Similarly it will meet the definition of renewable fuel if it meets a GHG emission reduction threshold of 20%. In neither case, however, will it meet the definition of biomass-based diesel.

This restriction is only really an issue for renewable diesel and biodiesel produced via the fatty acid methyl ester (FAME) process. For other forms of biodiesel, it is never made through any sort of co-processing with petroleum. Producers of renewable diesel must therefore specify whether or not they use "co-processing" to produce the fuel in order to determine the correct D code for the RIN.

3.2.5.2 Algae

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) states that although the definition of biomass diesel includes micro-algae, it does not specifically include the more broad definition of micro-crops. Limiting the definition will limit advancement in biofuel. [[Docket number 2425.1, pp. 3 and 8]] [[See docket number 2425.1, pp 3-4 for further discussion of algae and micro-crops.]]

Our Response:

As discussed in Section II.B.4 of the preamble, we have modified the definition of "planted crops" to specifically reference duckweed and, more broadly, any crop intentionally applied to a tank, pond or other growth medium. Thus, these micro-crops can qualify as renewable biomass under the same conditions as other planted crops such as corn or soy. Algae are separately listed in the definition of renewable biomass.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2490
Organization: Sapphire Energy
Comment:
The commenter (2490) notes that the current version of the RFS, including the amendments made by the Energy Independence and Security Act of 2007, does not provide parity for algae-based fuels. This lack of parity, which must be addressed through changes to EISA itself and is beyond the scope of the present rulemaking proceeding, limits the ability of the current RFS program to fully encourage the development of algae-based fuel. [[Docket number 2490.1, pp. 1-2]]

The commenter adds that algae-based fuels are also presumptively excluded from the remaining portion of the RFS. While the law does not specify that the first 15 billion gallons of the RFS must be comprised of corn-based ethanol, existing market conditions are such that conventional ethanol will likely comprise all of it. Furthermore, Congress has grandfathered corn ethanol production facilities built prior to 2009 that meet a requisite 20 percent GHG reduction threshold, further ensuring that corn ethanol will survive environmental scrutiny. Therefore, as a practical matter, the RFS will start with 15 billion gallons of conventional, corn-based ethanol, and the remaining 21 billion gallons will be comprised of advanced biofuels nearly 80 percent of which will exclude algae-based biofuels. [[Docket number 2490.1, pp. 2-3]] [[See docket number 2490.1, pp. 1-4 for a discussion of this issue]]

Our Response:

This comment includes certain comments on the CAA provisions in EISA that EPA is unable to remedy through its implementing regulations. In setting the volume requirements under EISA for RFS2, Congress divided the total renewable fuel standard into four separate

mandates. Biomass-based diesels, of which algal oil based diesel fuels would qualify, have their own separate mandate. However, algal oil based fuels could also qualify for the advanced biofuel and total renewable fuel standards. By virtue of the Act's restriction that cellulosic biofuels be produced from cellulose, hemicellulose or lignin, only the cellulosic biofuel standard would not be applicable for algal oil derived biofuels.

3.2.6 Additional Renewable Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) noted that EISA defines "additional renewable fuel" as fuel produced from renewable biomass that is used to replace or reduce fossil fuels used in home heating oil or jet fuel, and indicates that EPA may allow for the generation of credits for the production of such additional renewable fuel. The commenter supports EPA's proposal to effectuate these provisions and allow RINs attached to qualifying renewable fuel used as heating oil or jet fuel to remain viable. The commenter believes that this change from RFS1 should help both biodiesel producers and Obligated Parties. (2471.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter believes that marine use of blended biodiesel should not be excluded from additional renewable fuel credit. [[Docket number 2130.1, p. 17]]

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that the discussion in Sections II.A.2 and III.B.1.e needs to clarify the concept that any qualified biofuel from one of the four biofuel categories, not some other category called "additional renewable fuel" can now have RINs attached and used for compliance when used as described for home heating oil or jet fuel. Biofuels used in these applications are not "new" renewable fuels, but existing renewable fuels that are now qualified for compliance purposes when used in these applications. (0994.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) supports EPA's intention to allow for RINs to be generated for renewable fuels that displace fossil fuels used in jet fuel, home heating oil, locomotive and marine diesels. The overarching goal of the statute was to reduce U.S. dependence on foreign oil and lower the overall greenhouse gas footprint of fuels. Limiting renewable fuels only to those used in ground vehicles is not consistent with those goals. EPA should assign RINs based on

equivalency value of the energy contained in the fuel to each gallon of renewable jet fuel that meets the ASTM specifications or other nonroad fuels. (2408.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter believes that EPA's interpretation of Congressional intent with the inclusion of "home heating oil" as an additional renewable fuel is overly restrictive. The term "home heating oil" is a generic reference. Congress did not intend to limit the crediting of biofuel use in heating oil to only residential uses. This overly restrictive interpretation should be changed so as to encourage the use of biofuels in stationary source and industrial applications. The commenter points out that several states have either already imposed requirements or are considering such requirements for blending biofuel into heating oil. It would be ineffective if biofuel mandated for use in heating oil in state laws were not allowed to be credited under the RFS, particularly given the limited amount of diesel-type biofuel qualified under the RFS2 thresholds. [[Docket number 2393.1, p. 11]]

The commenter also supports allowing all renewable fuels to be counted towards RVO compliance, including fuels used in ocean going vessels. Regarding the EISA-defined Additional Renewable Fuel "home heating oil", the difficulty in ascertaining that fuels which can be used for home heating are actually used for home heating suggests that any fuel that can be used as home heating oil should qualify. The commenter believes this is the correct interpretation of the intent of EISA and EPA should clarify in the final rule and preamble. If EPA does not allow such an interpretation, this Additional Renewable Fuel, created by EISA, is meaningless due to the inability of obligated parties to track home heating oil use to the consumer. [[Docket number 2393.1, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
The commenter (2134.1) strongly supports the proposal in the NPRM that would allow RINs to be generated and traded when biodiesel is blended with heating oil. The commenter believes that RINs generation will greatly assist the recent and ongoing efforts by the heating oil industry to promote and market a product blended with renewable fuel. (2134.1, p.1)

The commenter also believes that allowing marketable RINs to be generated for renewable fuel volumes blended with heating oil would significantly advance the transformation of this vital product into a new generation "bioheat". (2134.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2328
Organization: Petroleum Marketers Association of America (PMAA)
Comment:
The commenter (2328.1) strongly supports the proposal that would allow renewable fuels used in heating oil and jet fuel to generate RINs. The commenter believes that the RINs generation will greatly assist the recent and ongoing efforts by the heating oil industry to promote and market a greener product blended with renewable fuel. (2328.1, p.4)

The commenter opposes any effort to subject these fuels to the RVO mandate. The problem with calculating the RVO for heating oil obligated parties is that it is difficult to predict with any reliability the volumes used for a particular year due to fluctuating winter weather conditions. The commenter understands that neither EISA nor the NPRM calls for assigning RVOs to heating oil refiners, importers or blenders but wishes to point out the logistical problems that such a requirement would create for both the agency and the heating oil industry. (2328.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
The commenter (2345) strongly supports the reinstatement of RINs for heating oil and jet fuel. It is consistent with statutory intent to encourage as much use of renewable fuels as possible to reduce petroleum usage and to reduce GHG emissions. [[Docket number 2345.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter seeks clarification to ensure that biodiesel used in heating oil applications meeting the latter definition in EISA is applicable for the renewable fuel category under RFS2. The commenter also seeks clarification on D code applicability for biodiesel used in jet fuel or home heating applications. [[Docket number 2249.2, p. 36]]

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) supports EPA's proposed inclusion of jet fuel as additional renewable fuel eligible to generate RINs. (2099.1, p.21)

Document No.: EPA-HQ-OAR-2005-0161-2102
Organization: RENTECH, INC
Comment:
The commenter (2102.1) supports EPA's intention to allow for RINs to be generated for renewable fuels that displace fossil fuels used in jet fuel, home heating oil, locomotive and marine diesels. By including additional fuels, EPA will promote the development and use of renewable fuels by a broader spectrum of industries. The commenter believes that EPA should assign RINs, based on Equivalency Value of energy contained in the fuel, to each gallon of renewable jet fuel that meets the ASTM specification (ASTM 7566) or the specifications for other nonroad fuels. This will allow fuel marketers and consumers greater flexibility in meeting their obligations under the law, as well as encourage the development of renewable jet fuel production. (2102.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:

The commenter (2110.1) believes that EPA should apply a broad interpretation of the definition of home heating oil. The commenter urges EPA to view the term "home heating oil" as it appears in Section 211l(o)(I)(A) as a generic reference to heating oil not intended to limit the crediting of biofuel use in heating oil to only residential uses. This overly restrictive interpretation should be changed so as to encourage the use of biofuels in such stationary source applications. Providing credit for blending biofuel in heating oil under RFS2 would not only be consistent with RFS2 program goals of increasing renewable fuel use but also with existing mandates for use of biofuel in heating oil in several of the states. (2110.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter believes that EPA's interpretation of Congressional intent with the inclusion of "home heating oil" as an additional renewable fuel is overly restrictive. Home heating oil is a generic reference to heating oil not intended by Congress to limit the crediting of biofuel use in heating oil to only residential uses. [[Docket number 2130.1, pp. 11-12]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter supports allowing all renewable fuels to be counted in the program, including fuels used in ocean going vessels. [[Docket number 2233.2, pp. 8-9]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) suggests that RINs should be created when neat renewable fuel is designated as transportation fuel, home heating oil or jet fuel. This approach simplifies the tracking and trading system by limiting the possible number of transactions and advances the programs goal. [[Docket number 2358.1, pp. 10-11]]

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) recommends the following change to §80.1401:
Home Heating Oil—the use of the phrases Home Heating Oil and Heating Oil are ambiguous. 40 CFR 80.2 clearly identifies the legal definition of heating oil. In this instance a new definition for Home Heating Oil is needed as directed by the EISA. In addition, all references to heating oil should be changed to home heating oil (HHO) as a consistent use of the term throughout RFS2. [[Docket number 1044.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:

The commenter (2135) agrees with the proposal that petroleum based heating oil should not be included in requirement calculation for renewable volume obligation. If, however, renewable fuels are used in boiler and heating or off-road applications, the commenter believes that their associated RINs should not have to be retired. Thus, renewable fuels, such as biodiesel, that are blended into non-motor vehicle fuels should not void the RINs associated with those fuels. [[Docket number 2135.1, pp. 20-21]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the reference to "home heating oil" in the proposed definition of Additional Renewable Fuel should be clarified. The commenter recommends that RINs associated with any renewable fuel blended into diesel, heating oil or other distillates be allowed to be separated and used for compliance purposes without regard to ultimate end use of that fuel. Distillate usage in stationary sources and ocean-going vessels is minor compared with other uses. Allowing RINs associated with such usage to be used for compliance rather than being retired will not change an obligated party's RVO, will not result in less renewable fuel being used and will only contribute to meeting the renewable fuel volume mandates in EISA. (2124.1, p.29)

Document No.: EPA-HQ-OAR-2005-0161-2023
Organization: New York Biomass Energy Alliance
Comment:
The commenter (2023) argues that the draft regulation considers biodiesel to be the only available substitute for home heating oil. In the Northeastern United States, where most of the country's home heating oil is consumed, liquid renewable fuel alternatives to number 2 heating oil are quite limited. On the other hand, wood pellets, which meet the definition of an advanced biofuel for cellulosic fuels (i.e., 40-44% GHG reduction), presents a viable alternative to home heating oil throughout the region. The commenter (2023) strongly urges EPA to work with the rapidly expanding wood pellet industry to include a workable system by which pellet fuel manufacturers (whether using wood or cropped biomass as a feedstock) can generate RINs under RFSII. (2023.1.pdf, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) supports allowing RINs for use of renewable fuels in heating oil and jet fuel. (2466.1.pdf, p-9)

Note - These are additional comments are from the State of New Jersey to the commenter.

Our Response:

The majority of commenters believed that renewable fuel blended into heating oil and jet fuel should be allowed to be used for compliance purposes without regard to the ultimate end use of the fuel. We believe that this is an appropriate approach. Thus, under our final regulations,

there is no difference between renewable fuels blended into fuels used for transportation purposes, versus fuels used for heating oil and jet fuel purposes.

EISA uses the term "home heating oil" in the definition of "additional renewable fuel." The statute does not clarify whether the term should be interpreted to refer only to heating oil actually used in homes, or to all fuel of a type that can be used in homes. We note that the term "home heating oil" is typically used in industry in the latter manner, to refer to a type of fuel, rather than a particular use of it, and the term is typically used interchangeably in industry with heating oil, heating fuel, home heating fuel, and other terms depending on the region and market. We believe this broad interpretation based on typical industry usage best serves the goals and purposes of the statute. If EPA interpreted the term to apply only to heating oil actually used in homes, we would necessarily require tracking of individual gallons from production through ultimate use in use in homes in order to determine eligibility of the fuel for RINs. Given the fungible nature of the oil delivery market, this would likely be sufficiently difficult and potentially expensive so as to discourage the generation of RINs for renewable fuels used as home heating oil. This problem would be similar to that which arose under RFS1 for certain renewable fuels (in particular biodiesel) that were produced for the highway diesel market but were also suitable for other markets such as heating oil and non-road applications where it was unclear at the time of fuel production (when RINs are typically generated under the RFS program) whether the fuel would ultimately be eligible to generate RINs. Congress eliminated the complexity with respect to non-road applications in RFS2 by eliminating the Epact restriction that renewable fuel was a type of "motor vehicle fuel," and instead providing that renewable fuel must be used to replace or reduce the quantity of fossil fuel present in "transportation fuel." That term is broadly defined to include nonroad fuel. We believe it best to interpret the Act so as to also avoid this type of complexity in the heating oil context. Thus, under today's regulations, RINs may be generated for renewable fuel used as or blended into "heating oil," as defined in existing EPA regulations at §80.2(ccc). In addition to simplifying implementation and administration of the Act, this interpretation will best realize the intent of EISA to reduce or replace the use of fossil fuels.

New York Biomass Energy Alliance stated that wood pellets should qualify as a renewable fuel. We believe this would be an inappropriate interpretation and expansion beyond the statutory language. EISA specifically defines additional renewable fuel as that which "is used to replace or reduce the quantity of fossil fuel **present in** (emphasis added) home heating oil or jet fuel." By this we believe a qualifying renewable fuel must be actually blended in heating oil or jet fuel, or is a fungible fuel with them in the marketplace and capable of being used in similar equipment. For example, in the case of home heating oil, it must be a fuel that meets the marketplace requirements for the type of fuel referred to as heating oil. Thus, other types of fuel, such as wood, wood pellets, and biogas that are today used to heat homes and provide energy to businesses but which are not capable of blending into heating oil or replacing it in similar equipment would not get credit under the RFS2 program for those heating applications.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2115
Organization: Corn Plus
Comment:
We would propose that EPA define home heating oil to include qualifying Renewable Fuels utilized to displace #2 Fuel Oil at Renewable Fuel production facilities in boiler applications. In addition, because we utilize a production process that reduces GHG emissions in additional respects, we request that EPA also consider these components and establish a fuel pathway for DDS Fuel in Table 1 to §80.1426 that recognizes the benefits of our process. The proposed fuel type we propose is "Dewatered Distiller Solubles." We believe that under the definitions above, DDS Fuel generated at the Corn Plus facility that is blended into #2 Fuel Oil and is combusted in our facility's fluidized bed boiler to produce steam for the production facility qualifies as a Renewable Fuel and therefore generates RIN credits. Our reasoning for this is as follows.

Our Response:

As described above, we have determined that any fuel product commercially known as heating oil may be valid for the generation of RINs if the fuel is made from renewable biomass. However, we have not conducted a lifecycle analysis of a pathway in which coproducts of a corn ethanol process, such as dewatered distillers solubles, are used to displace heating oil for the generation of process heat in the ethanol production facility. Therefore, the lookup table in §80.1426(f) does not include a pathway in which a D code is designated for such a renewable fuel. The petition process described in §80.1416 may be used for this purpose. However, based on the commenter's description of dewatered distillers solubles, we do not believe that this product could be sold commercially as heating oil, and thus may not be valid for the generation of RINs.

3.2.7 Biogas Used as Process Heat

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2081
Organization: Novogy, Inc.
Comment:
The commenter (2081) recommends that in the case where finished cellulosic biogas is injected into a pipeline network or sold directly to an industrial user on a pipeline network that serves intended users under RFS2, that the volume sold then be allowed to qualify for RINs. This recommendation is made on the basis that direct displacement of fossil derived natural gas with cellulosic biogas can be verified within a network serving intended transportation (and potentially home heating) users. The intended use is not in question when displacement can be verified against an offsetting PTD compliant sales contract. This is a unique opportunity available only to the most fungible forms of renewable fuels, such as cellulosic biogas where the methane molecule produced legitimately carries unique renewable characteristics. In summary, the commenter recommends suppliers of cellulosic gas be allowed to demonstrate the fuel has been irrevocably committed to its final use once it has been sold. [[Docket number 2081.1, p. 11]] [[Also see docket number 2081.1, p. 12 for suggested modification to 80.1429(b)(4).]]

The commenter also recommends that in the case where finished cellulosic biogas can be verified as being used as a direct displacement of fossil derived natural gas within a network serving intended transportation (and potentially home heating) users, that the volume sold then be allowed to qualify for RINs. [[Docket number 2081.1, p. 11]] [[Also see docket number 2081.1, p. 12 for suggested modification to 80.1429(b)(4).]]

Our Response:

The commenter suggests that biogas injected into a pipeline network or sold directly to an industrial user (such as a renewable fuel facility) on a commercial pipeline network should generate RINs provided that the fuel has been "irrevocably committed to its final use once it has been sold". We believe that portions of the suggested approach have merit. We agree that it does not make any difference in terms of the beneficial environmental attributes associated with the use of landfill gas whether the displacement of fossil fuel occurs in a fungible natural gas pipeline, or in a specific facility that draws gas volume from that pipeline. In fact, a similar approach is widely used with respect to electricity generated by renewable biomass that is placed into a commercial electricity grid. A party buying the renewable power is credited with doing so in state renewable portfolio programs even though the power from these sources is placed in the fungible grid and the electrons produced by a renewable source may never actually be used by the party purchasing it. In essence these programs assume that the renewable power purchased and introduced into the grid is in fact used by the purchaser, even though all parties acknowledge that use of the actual renewable-derived electrons can never be verified once placed in the fungible grid**.** We believe that adopting a similar approach in RFS2, with appropriate limitations related to the statutory scheme, will ultimately further the GHG reduction and energy security goals of EISA.

The final rule allows producers of biogas that meets the definition of renewable fuel and is introduced into a fungible pipeline as a result of a contract with a user of gas for transportation purposes to generate RINs for that fuel under specified conditions. There must be a contractual pathway that provides evidence that specific quantities of the renewable was purchased and contracted to be delivered to a specific transportation fueling facility.[1] In the final rule, we specify that the pipeline must ultimately serve the subject facility. We are also providing for those situations in which biogas is provided directly to the transportation facility, rather than using a commercial distribution system such as pipelines. For both cases—dedicated use and commercial distribution—producers must provide contractual evidence of the production and sale of such fuel, and there are also reporting and recordkeeping requirements to be followed as well. The final rule establishes similar procedures for renewable electricity ultimately used for transportation purposes that is introduced into a fungible grid. The final rule also allows renewable fuel facilities causing landfill gas to be introduced into a fungible gas pipeline to be allowed to claim those volumes in establishing the fuel pathway and appropriate D code for generation of RINs.

The final rule includes biogas as a potential renewable fuel type that qualifies as advanced biofuel with a D code of 5 when derived from landfills, sewage and waste treatment

[1] Note that biogas used for transportation fuel includes propane made from renewable biomass.

plants, and manure digesters. Produces who believe that their biogas should qualify as cellulosic biofuel can petition us to have it classified as such.

We do not agree with the commenter that RINs can be generated if the gas is ultimately used for home heating, as discussed above in section 3.2.6.

3.3 Renewable Biomass

3.3.1 Alternative Legislative Definitions of "Renewable Biomass"

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
The commenter (2140.1) believes that EISA's definition of "renewable biomass" is unduly constraining and could result in delays in development of alternative feedstock utilization for production of advanced biofuels. The commenter advocates a uniform and inclusive definition of renewable biomass that will enable achieving the RFS2 targets for advanced biofuels with a broad array of biomass feedstocks. (2140.1, pp.4-5)

Document No.: EPA-HQ-OAR-2005-0161-2139
Organization: EnerTech Environmental, Inc.
Comment:
The commenter (2139) requests that the RFS2 classify biosolids or sewerage sludge as an alternative fuel and that Section 211(o) of the CAA be amended to include biosolids as a renewable biomass. [[Docket number 2139.1, p. 2]] [[See docket number 2139.1, pp 1-2 for further discussion of this request.]]

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) believes that in the interest of maximizing the opportunity for production of renewable fuels, EPA should exercise its discretion in allowing biomass that is sustainably produced for conversion into fuels. The U.S. Department of Agriculture 2008 farm bill contains a definition of renewable biomass that may serve as a broader example. [[Docket number 2374.1, p. 3]]

Our Response:

We have made every effort to interpret EISA's definition of "renewable biomass" as broadly as possible without undermining the environmental protections the definition is meant to confer. The commenters correctly note that revised legislative definitions for "renewable biomass" have been considered – and, in the case of the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill), enacted -- by Congress. However, these definitions do not change the

EISA definition, and EPA is required to promulgate regulations based on the EISA definition. Therefore we are finalizing our regulations to implement the EISA definition of "renewable biomass."

3.3.2 Definitions of Terms

3.3.2.1 Planted Crops

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters support EPA's proposed definition of "planted crops," which makes eligible long-standing mixed natives, eliminating a perverse incentive for land-owners to rip up mixed grasslands to grow specific crops, such as on restored grasslands and expired CRP property. The commenters also support including as eligible renewable biomass plant materials removed for the purposes of invasive species control or fire management as long as they are harvested under terms of a conservation plan designed to protect natural resources and the environment. (2129.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter supports EPA's proposal to define "renewable biomass" to include all annual or perennial crops and supports the proposal that this definition would include all crops intentionally applied to the ground by humans or through "intentional natural seeding by mature plants left undisturbed for that purpose."

Document No.: EPA-HQ-OAR-2005-0161-2144
Organization: New York State Department of Agriculture and Markets
Comment:
The commenter disagrees with the EPA proposal to exclude planted trees from the definition of planted crops and crop residue, also contained in the above referenced section. While this distinction may be appropriate for the establishment of some types of tree plantations, the commenter feels that Short-Rotation Woody Crops (SRWC) such as willow should be included under Planted Crops and Crop Residues. (2144.1, p.3) (See Docket Number 2144.1, p.3 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:

With regard to the dedicated perennial energy grasses for use in the production of renewable biofuels, the commenter (2408.1) believes that EPA should recognize the wide variety of these types of feedstocks. To the extent possible, EPA should be as flexible and broad in its definition of these new types of feedstocks. Where appropriate, EPA should consider the inclusion of the term "other energy grasses" to qualify as a feedstock for use in the production of RFS2 fuels. [[See Docket Number 2408.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter thinks EPA should exclude row or close-grown annually planted feed stock planted on land that was pastureland at the date of enactment from the definition of renewable biomass.

Our Response:

EPA believes that its final definition of "planted crops" is sufficiently broad to encompass energy grasses. The final definition of "planted crops" includes all annual or perennial agricultural crops from existing agricultural land that may be used as feedstock for renewable fuel, such as grains, oilseeds, and sugarcane, as well as energy crops, such as switchgrass, prairie grass, duckweed and other species (but not including algae species or planted trees), providing that they were intentionally applied by humans to the ground, a growth medium, or a pond or tank, either by direct application as seed or plant, or through intentional natural seeding or vegetative propagation by mature plants introduced or left undisturbed for that purpose. Because EISA contains specific provisions for planted trees and tree residue from tree plantations, separate from those provisions concerning planted crops, our final definition of planted crops in EISA excludes planted trees, even if they may be considered planted crops under some circumstances as noted by one of the commenters.

We do not agree that row or close-grown annual crops planted on land that was actively managed as pastureland at the date of enactment should be excluded from the definition of renewable biomass. EISA provides that planted crops and crop residues must come from certain "agricultural land." EPA believes that pastureland is appropriately and traditionally considered within the scope of "agricultural land." Had Congress intended that planted crops only be considered renewable biomass if harvested from land that was managed as cropland as of the date of EISA enactment, as the commenter appears to suggest, then Congress would likely have used that term rather than the broader reference to "agricultural land" in the definition of renewable biomass.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:

The commenter (2137) states that there is no question that Brazilian sugarcane meets the EISA's statutory definition of a renewable biomass feedstock, as it is a "planted crop "that has been "harvested from agricultural land" that was under cultivation prior to December 2007 and remains "actively managed." [[Docket number 2137.1, p. 4]] [[See docket number 2137, pp. 4-6 for further information.]]

Our Response:

Even if it is clear that a planted crop used by a foreign producer meets the definition of renewable biomass, the foreign producer is still subject to requirements verifying that. As described in the preamble, we are finalizing an "aggregate approach" for renewable biomass verification for domestic producers using planted crops as feedstock, but are unable to adopt comparable measures for foreign producers at this time. Therefore foreign producers of planted crops and crop residue must provide the verification required of domestic producers for every other type of renewable biomass. EPA will consider expanding the aggregate approach to other countries if sufficient information and documentation becomes available.

Foreign producers of renewable fuel that is imported into the U.S., if they are generating RINs for that volume of fuel, must designate renewable fuel intended for export to the U.S. as such, segregate the volume until it reaches the U.S., post a bond to ensure that penalties can be assessed in the event of a violation, and comply with other requirements designed to facilitate enforcement, as discussed in Section II.D.2.b of the preamble. Similarly to domestic producers of renewable fuel other than planted crops and crop residue subject to the aggregate compliance approach, foreign producers must obtain and maintain written documentation from their feedstock providers that can serve as evidence that their feedstocks meet the definition of renewable biomass. For each feedstock purchase, producers must maintain documents that identify the type and amount of feedstocks and where the feedstock was produced, as well as documents that are sufficient to verify that the feedstock qualifies as renewable biomass. Specifically, renewable fuel producers must maintain maps and/or electronic data identifying the boundaries of the land where the feedstock was produced, product transfer documents (PTDs) or bills of lading tracing the feedstock from that land to the renewable fuel production facility, and other written records that serve as evidence that the feedstock qualifies as renewable biomass. Furthermore, foreign producers must report to EPA quarterly a summary of the types and volumes of feedstocks used throughout the quarter, as well as electronic data or maps identifying the land from which those feedstocks were harvested. Foreign producers may also develop a quality assurance program for their renewable fuel production supply chain, as described in Section II.4.c of the preamble.

If the importer is generating the RINs for the foreign-produced fuel (if the foreign producer has not already done so), then importers must obtain from the foreign producer and maintain in their records written documentation, as described above, that serves as evidence that the renewable fuel for which they are generating RINs was made from feedstocks meeting the definition of renewable biomass.

3.3.2.2 Crop Residue

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter supports that "crop residue" should be defined to include biomass removed for purposes of invasive species control or fire management. EPA's definition also should make clear that crop residue is defined to include biomass from crops or crop residue that is a co-product from industrial, commercial, or agricultural operations. "Renewable biomass" should be defined to include any biomass removed from agricultural land that facilitates crop management, whether or not the crop is part of the residue. [[Docket number 2383.1, pp. 14-15]]

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) disagrees with EPA's definition of crop residue as the residue left over from the harvesting of planted crops. They feel that it severely limits the types of feedstocks that may be used under the RFS. Crop residue such as husks, seeds, bagasse, and roots can be used as feedstock for cellulosic ethanol.

Our Response:

We agree that biomass removed from agricultural land for purposes of invasive species control and/or fire management could be considered a form of biomass residue related to crop production, whether or not derived from a crop itself, and therefore have modified the proposed definition of "crop residue" to include it. We believe that such biomass is typically removed from agricultural land for the purpose of preserving or enhancing its value in agricultural crop production. It may be removed at the time crops are harvested, post harvest, periodically (e.g., for pastureland) or during extended fallow periods. We also agree with the comments encouraging us to expand the definition of crop residue to include materials left over after the processing of the crop into a useable resource, such as husks, seeds, bagasse and roots, and we have altered the final definition to cover such materials. Thus our final definition of "crop residue" is the biomass left over from the harvesting or processing of planted crops from existing agricultural land and any biomass removed from existing agricultural land that facilitates crop management (including biomass collected from such lands in relation to invasive species control or fire management), whether or not the biomass includes any portion of a crop or crop plant.

3.3.2.3 Agricultural Land

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:

The commenter supports EPA's proposal to include CRP lands as "agricultural" lands. The commenter noted that management of these lands can be enhanced through periodic managed mowing and removal of biomass in-lieu of or in addition to prescribed burning. Biomass produced from these sites should be eligible under the RFS. Individual program rules will protect the conservation values of the lands enrolled. (2515.1, p.2)

The commenter noted that farmers and grazers that have maintained native grazing lands should be rewarded for good stewardship. Preservation of healthy grasslands will require expanding markets for grass based agriculture - rather than reducing economic opportunities. The commenter believes that the standards should include biomass harvested from rangelands that does not impair the ecological integrity of these sites. Disqualifying all "range land" is not appropriate and EPA should coordinate with USDA and its biomass programs to facilitate incentives and rewards for sustainable management of the nation's grasslands in the context of cellulosic biomass production. (2515.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters strongly support EPA's exclusion of rangeland from its definition of agricultural land. (2129.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) supports EPA's exclusion of rangeland from its definition of agricultural land.

Document No.: EPA-HQ-OAR-2005-0161-2446
Organization: Minnesota Farm Bureau Federation
Comment:
The commenter states that rangeland should be specified as agricultural land under the RFS2. The Agency's assertion that it is questionable whether any rangeland should qualify as actively managed under EISA is misguided. Ranchers vigorously manage rangeland for multiple agricultural purposes.

Document No.: EPA-HQ-OAR-2005-0161-2463
Organization: National Farmers Union
Comment:
The commenter believes rangeland should be included in the definition of existing agricultural land. Rangeland fits within the definition of renewable biomass in the RFS2 statute. As long as it can be established that the land was cleared and/or cultivated prior to 2007 and has been managed as a natural ecosystem since that point, it meets the letter of the law and should be eligible under the rule.

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) believes that EPA should delete the proposed rule's proposed restrictions on the use of "rangeland." The commenter believes that EPA should favor a presumption that rangeland is considered an eligible category of land for the production of biomass, unless specific types of such land are excluded for valid and specified reasons. (2502.1, p.4) (See Docket Number 2502.1, p.4 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
Supports EPA's interpretation that crop land, pastureland and Conservation Reserve Program land all meet this definition. Rangeland also should be included within the broad definition of "agricultural land." Rangeland is subject to active management in terms of controlled access through fencing and oversight and control of invasive species and grazing rates. [[Docket number 2383.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter also believes that EPA should include rangeland as agricultural land. The proposal to rule rangelands ineligible is inconsistent with the congressional intent and would likely intensify competition for lands better suited for food crop production. While there is no commonly accepted definition of rangeland, the USDA has published estimates for U.S. "grassland and range" to be as much as 600 million acres, which equates to approximately 66 billion gallons of corn derived ethanol. Hence this rangeland prohibition could have astonishing affects. [[Docket number 2374.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) does not believe sales and purchasing receipts are readily available to prove the management of rangeland. (Page 2)

The commenter (2150.1) asserts that rangeland should be specified as agricultural land under the RFS2. They note that ranchers vigorously manage rangeland for multiple agricultural purposes. Additionally, USDA's definition of agricultural land includes rangeland.

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter supports EPA's inclusion of CRP land as agricultural. They also encourage EPA to include rangeland as agricultural land, and to include abandoned agricultural land in the allowance for renewable biomass production. [[#2302 p.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2144
Organization: New York State Department of Agriculture and Markets
Comment:
While the commenter (2144.1) recognizes the need to include certain provisions to safeguard this specific land type, EPA by developing proposed rules around rangelands has effectively ruled out, by making ineligible, significant areas of land that could be used for the establishment and sustainable production of advanced biofuel feedstock in New York State, the Northeast and much of the lands east of the Mississippi River. (2144.1, p.1) (See Docket Number 2144.1, pp.1-2 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2023
Organization: New York Biomass Energy Alliance
Comment:
The commenter (2023) discusses the definition of renewable biomass, with particular reference to biomass produced on agricultural land. The commenter strongly disagrees with the interpretation that abandoned farmland should be excluded from producing renewable biomass. (2023.1.pdf, p1-5)

For additional data on agricultural land, see addendum on page 7-8 COMPARISON OF LAND AREA DATA FROM THE CENSUS OF AGRICULTURE AND THE NATIONAL RESOURCES INVENTORY (2023.1.pdf, p7-8)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) comments that CRP lands include millions of acres of planted native tree species in the South and much of these forests are over 20 years old and will eventually be forests of saw timber size. The commenter raises question of whether this land should be considered agricultural, as implied by the EPA proposed rules (2156.1.docx, p.3).

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter supports EPA's efforts to make the land restriction provisions on renewable fuel producers as consistent as possible with current industry practice and USDA interpretation. The commenter does not object to Conservation Reserve Program (CRP) land being included as "agricultural" land, but does not think rangeland should be considered agricultural land since, generally, it has never been under till. [[Docket number 2393.1, p. 42]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) supports EPA's efforts to make the land restriction provision on renewable fuel producers as consistent as possible with current industry practice and USDA interpretation. The commenter does not object to Conservation Reserve Program (CRP) land

being included as "agricultural" land, but does not think rangeland should be considered agricultural land since, generally, it has never been under till. [[Docket number 2130.1, p. 6-7

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) states that the definition of "fallow land" may be in line with terminology used within the United States Department of Agriculture (USDA), however marginal lands, lands that are not suitable for agriculture, represent potential areas for growing energy crops. The commenter encourages EPA to include marginal and rangelands as lands where renewable biomass may be grown and the subsequent carbon offsets or sequestration should be included in the GHG models. [[Docket number 2369.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes EPA improperly excluded rangeland.

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) believes it is critical EPA allow existing rangeland to quality as agricultural land under RFS2 which will make millions of acres of non-cropland, non-forested land qualify for renewable feedstock production. The commenter believes this is essential to support the rigorous renewable fuel production goals. As EPA references in the proposal, the inclusion of a land restrictions omitting existing rangeland may drive renewable fuel producers to use rangeland and simply forgo the benefits of qualifying for RINs. This would result in an undersupply of RINs which would drive RINs prices upward do to the supply/demand curve. [[Docket number 2425.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2120
Organization: Society for Range Management
Comment:
The commenter [[2120]] states that under the EISA language, biomass feedstocks may only be considered "renewable" if they were grown on agricultural land. EPA interprets agricultural land to include cropland and pastureland, but not rangeland. The Society for Range Management feels that this is a mistake.

The commenter states rangelands hold great potential for biofuels production. A number of important studies are exploring the feasibility and impact of production of cellulosic ethanol from switchgrass and other native grasses on the rangelands of the Great Plains. While environmental interests rightly point out that many of these prairie lands have large subsoil GHG deposits that would be released through conversion to cropland, switchgrass also sequesters significant amounts of carbon in the soil. A study by Frank et al. shows that in soil planted with switchgrass (which has a perennial root system) carbon increased at a rate of 1.01 kg C m-2 y(1.2 Another study by Lee et al. reported that switchgrass grown in the South Dakota

Conservation Reserve Program stored carbon at a rate of 2.4 to 4.0 Mg ha-1 y(l at the 0 to 90 cm depth-relatively deep soil. [[#2120.1 p.2]]

The commenter [[2120]] states that EPA has expressed concern about the difficulty of determining the boundaries of rangeland. The Chicago Climate Exchange, for example, uses the USDA Land Resource Regions selecting counties that qualify on the basis of precipitation levels and other factors. Satellite imaging technology, similar to those used by EPA in its attempts to project the indirect GHG effects of land use change, can also determine vegetation types with a high degree of accuracy, including those typical of rangeland. Much of the uncertainty revolves around the question of active management. To put it simply, where there is no evidence that forest cover grew on rangeland in the past, it is by definition "clear" and hence should qualify as "cleared." It should be a relatively simple exercise to verify, through third parties, that the land was clear of trees on December 19, 2007, based on plant growth and other evidence. [[#2120.1 p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2244
Organization: Altrius Group. LLC
Comment:
Regarding the inclusion of rangeland as qualifying agricultural land, the commenter notes that EPA interprets agricultural land to include cropland and pastureland, but not rangeland. The commenter feels that this is a mistake. [[Docket number 2244.1, p. 2]] [[See docket number 2244, pp. 2-4 for detailed discussion of this issue.]]

Our Response:

As proposed, and as generally supported by the comments, EPA is including lands enrolled in the CRP program in the definition of "agricultural land." However, as discussed in detail in Section II.4.a.i.of the preamble, EPA is not including rangeland in the final definition of existing agricultural land for a number of reasons. Under EISA, renewable biomass includes crops and crop residue from agricultural land cleared or cultivated at any time prior to the enactment of EISA that is either "actively managed of fallow" and nonforested. EPA believes that in interpreting the phrase "actively managed" in this definition, it is appropriate to consider the degree and type of management that is typically applied to planted crops and crop residue. Although EPA appreciates the comments suggesting that some degree of management does take place on rangeland, EPA believes that the level of "active management" that is typically associated with land dedicated to growing planted crops is far more intensive than the types of management associated with rangeland. Furthermore, since rangeland encompasses a wide variety of ecosystems, including native grasslands or shrublands, savannas, wetlands, deserts and tundra, including it in the definition of agricultural land would increase the risk that these sensitive ecosystems would become available under EISA for conversion into intensively managed mono-culture cropland. Finally, the conversion of relatively undisturbed rangeland to the production of annual crops could in some cases lead to large releases of GHGs stored in the soil which would be contrary to a principal EISA goal. Plowing up well-established grasslands, for example, would be expected to release a large pulse of stored CO_2. It is likely correct as suggested by one commenter, that soil CO_2 levels would then rise again if the area were planted with a perennial crop such as switchgrass and not re-cultivated. However, by including

rangeland as a type of "agricultural land" from which planted crops and crop residue may be harvested, EPA would be allowing any type of planted crop (including annuals) to be grown on the land, with the possibility of annual CO_2 releases from the soil.

For reasons similar to those articulated above with respect to rangeland, EPA has decided not to include "marginal lands" or "abandoned agricultural lands" that do not meet the definition of "fallow" within the definition of "agricultural land" for purposes of the renewable biomass definition.

One commenter asked whether CRP land that has been forested for twenty years should be included in the definition of "agricultural land" from which planted crops and plant residue may be obtained and qualify as renewable biomass. EPA has included CRP land in the definition of "agricultural land." However, for planted crops and crop residue from CRP land (or any other agricultural land) to be considered renewable biomass, the land must also have been nonforested as of the date of enactment of EISA. Therefore, the specific land referenced by the commenter would not appear to be eligible for the growth of planted crops or crop residue that would be considered renewable biomass under the final RFS2 rule.

3.3.2.4 Cleared or Cultivated and Actively Managed Agricultural Land

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) believes EPA has erroneously expanded on the EISA's existing cropland requirement by interpreting the phrase "that is actively managed or fallow, and nonforested" as meaning that land must have been actively managed or fallow, and nonforested, on December 19, 2007, and continuously thereafter in order to qualify for renewable biomass production. While the EISA defines existing cropland requirement from an historical perspective, EPA's definition is future oriented and will impede American agriculture's participation and our biofuels industry. The commenter states that the definition of renewable biomass contained in the Energy Independence and Security Act of 2007 (EISA) states that land used to grow biomass must be agricultural land cleared or cultivated at any time prior to December 19, 2007 that is either actively managed or fallow and nonforested. (Page 1)

Document No.: EPA-HQ-OAR-2005-0161-2446
Organization: Minnesota Farm Bureau Federation
Comment:
The commenter states that contrary to congressional intent, EPA has expanded on the EISA's existing cropland requirement; while EISA defines existing cropland requirement from an historical perspective, EPA's definition is future oriented and will impede American agricultures participation and our biofuels industry.

Document No.: EPA-HQ-OAR-2005-0161-2463

Organization: National Farmers Union
Comment:
The commenter states that the term "continuously" is not found in the statute. Imposing this standard requires that land not only have been in production on December 19, 2007, but that it has continued to be so. The plain language of the statute does not drive to this interpretation; instead setting a static baseline of what lands would be eligible as of December 19, 2007. The final rule should eliminate the concept of continuously managed as farmers were not given fair notice that this would be the potential requirement.

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter (2317) urges EPA to revise the proposed definition of "Renewable Biomass" to eliminate the "continuously" managed requirement. [[Docket number 2317.1, pp. 34-35]]

Document No.: EPA-HQ-OAR-2005-0161-2244
Organization: Altrius Group. LLC
Comment:
Regarding EPA's proposed requirement of documentation verifying that land was continuously managed since December 19, 2007, the commenter (2244) points out that the term "continuously" is not found in the statute and believes that imposing this standard requires that land not only have been in production on December 19, 2007, but that it has continued to be so. The plain language of the statute does not drive to this interpretation; instead setting a static baseline of what lands would be eligible as of December 19, 2007. The commenter believes final rule should eliminate the concept of continuously managed as farmers were not given fair notice that this would be the potential requirement. [[Docket number 2244.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters recommend that agricultural land should be defined as "cleared or cultivated at any time" prior to December 19, 2007, if it was actively managed as agricultural land or fallow (and non-forested) during the 5 years prior to December 19, 2007 and has, since December 19, 2007, been actively managed as agricultural land or fallow (and non-forested)**.**

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter believes that agricultural land should be defined as "cleared or cultivated at any time" prior to December 19, 2007, was continuously actively managed as agricultural land or fallow (and nonforested) during the 5 years prior to December 19, 2007 and has, since December 19, 2007, been continuously actively managed as agricultural land or fallow (and nonforested). (2508, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter feels that an ethanol facility producing advanced (sweet sorghum) or cellulosic (energy sorghum) biofuel produced from feedstock grown on land that was brought into production after December 19, 2007 should not be penalized on all produced gallons. (2119.1, p.4)

Our Response:

EPA has modified the definition of existing agricultural land so that the "active management" requirement is satisfied for those lands that were cleared or cultivated and actively managed or fallow, and non-forested on December 19, 2007. EPA believes that the goal of the EISA and RFS program, to increase the presence of renewable fuels in transportation fuel, will be better served by interpreting the "actively managed or fallow" requirement in the renewable biomass definition as applying to land actively managed or fallow on December 19, 2007, rather than interpreting this requirement as applying beginning on December 19, 2007 and continuously thereafter. This approach will also greatly ease compliance burdens, since parties will need only demonstrate active management as of one date (the date of EISA enactment) to satisfy the active management component of the requirements related to planted crops and crop residue, rather than having to demonstrate active management as of that date and continuously thereafter. This approach will also parties to suspend active management of qualifying lands for a period of time without fear of losing qualifying status under RFS2, which could have many benefits in terms of resource protection and wildlife management.

EISA, however, limits the eligibility of crops to those coming from agricultural land (cropland, pastureland, and CRP land) that was cleared or cultivated prior to December 19, 2007. Any crops coming from lands cleared after that date are not considered renewable biomass under EISA, and, therefore, under the RFS2 program, a producer may not generate RINs for any fuel made from those crops.

3.3.2.5 Fallow

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2144
Organization: New York State Department of Agriculture and Markets
Comment:
The commenter is concerned with the manner in which the term "fallow" is proposed to be defined under Section III(4)(a)(I) of the NPRM. Since the RFS2 only has purview over lands used for the production of biofuel feedstock crops, the decision to use a very narrow definition for fallow land could have significant unintended consequences. (2144.1, p.2) (See Docket Number 2144.1, p.2 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) does not believe it is plausible to require proof that land has been or is currently intentionally fallow. Further, the EPA should not specify a time period after which land that is not actively managed for agricultural purposes should be considered to have been abandoned for agriculture. (Page 2)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters believe that EPA should revise the definition of fallow land to include land that has been planted to cover crops for the purpose of erosion control or soil improvement, in accordance with USDA definitions of idle cropland. EPA should also set a time limit for land to qualify as fallow. EPA should expand the definition of actively-managed existing agricultural land to include land that has recently come out of a contract for the Conservation Reserve Program (CRP), rather than placing CRP in the definition of fallow as they have done.

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter encourages EPA not to set limits on fallow periods [[#2302 p.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2244
Organization: Altrius Group. LLC
Comment:
EPA has suggested that, for fallow land, "the decision to let land lie fallow is made deliberately and intentionally by a land owner or farmer such that there should be documentation of such intent." The commenter (2244) respectfully disagrees on this point. Quite often, farmers do not intend to leave fields fallow at all, but are forced to do so for economic, regulatory, climatic or water-related reasons. In addition, the commenter urges the EPA not to require farmers to produce documentation of the decision to leave fields fallow, as in many cases it does not exist and would disqualify a great deal of agricultural land that can and should contribute to the goals of the RFS2 program. Alternatively, if such proof were to be required, the commenter suggests that it would be far more reasonable for EPA to accept various alternative forms of evidence, including affidavits or other substantiating evidence. [[Docket number 2244.1, pp. 1-2]]

Regarding EPA's request for a time period for land management, the commenter believes that EPA's presumption is unreasonable and contravenes congressional intent. If the purpose of the statute is to use on land that was previously cultivated, an arbitrary time limit would unfairly exclude many farmers and ranchers from the program. Many farmers may be forced to leave land fallow against their will or may simply choose not to cultivate farmland for a period of time for economic or other reasons. Such a period of time absent substantial other evidence, should

not be sufficient basis to presume "abandonment" for purposes of the statute. It should not be the role of the statute or EPA to penalize farmers further by setting an arbitrary time limit after which their land is considered to be "abandoned." [[Docket number 2244.1, p. 2]]

Our Response:

We have decided not to include a time limit for land to qualify as "fallow" because we understand that agricultural land may be left fallow for many different purposes and for varying amounts of time. Any particular timeframe that EPA might choose for this purpose would be somewhat arbitrary. Further, EISA does not indicate a period of time that qualifying land could be fallow, so EPA does not believe that it would be appropriate to do so in its regulations. Therefore, EPA is finalizing its proposed definition of "fallow." Also, EPA believes that feedstock producers will be able to provide some written proof of their land being left fallow on December 19, 2007, such as a farm management plan, evidence of participation in CRP, or other such documentation.

While the decision to let land lie fallow may not always be the feedstock producer's first choice, even when it is in response to economic, regulatory or other stimuli, EPA believes is still a deliberate and intentional decision on behalf of the farmer not to plant crops on his land and to leave that land fallow. EPA believes that the documentation required to show that land is actively managed or fallow is sufficiently flexible to cover such situations, for example, one in which a feedstock producer decides that the economic circumstances are such that he must leave his land fallow for a period of time.

The definition of "fallow" specifies that for RFS2 purposes, fallow land must be cropland, pastureland or CRP land. These are the three land types that are also included in the definition of "existing agricultural land," and from which planted crops and crop residue may be harvested providing that other definitional criteria are satisfied. [[Although EPA believes that presence of land in the CRP program demonstrates "active management," such that there is no additional reason to qualify CRP land as "fallow,"]] EPA has retained the reference to CRP land in the definition of "fallow" to avoid the possible confusion that might arise if EPA were to list other qualifying agricultural land types but not CRP land.

Clean Air Task Force comments that the definition of fallow land should include land planted with cover crops. EPA believes that agricultural land planted with cover crops would be considered actively managed rather than fallow, as the farmer is actively managing the land for a specific purpose by planting cover crops for various reasons, including to reduce runoff or replenish soil nutrients, among others.

3.3.2.6 Planted Trees

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129

Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute

Comment:

The commenters encourage EPA to modify the definition of "planted trees" to ensure that this definition does not encourage the conversion of natural forests to plantations. The commenters urge EPA to limit the definition of "planted trees" to those that were established by human intervention.

Document No.: EPA-HQ-OAR-2005-0161-2173.1

Organization: National Association of Forest Owners (NAFO)

Comment:

The commenter supports EPA's inclusion of trees established by seeding by mature trees in the definition of planted trees. Also, the commenter recommends that EPA include other methods of tree regeneration, such as coppice or root suckers.

Document No.: EPA-HQ-OAR-2005-0161-2308

Organization: Environmental Defense Fund

Comment:

The commenter (2308.1) urges EPA to reconsider the breadth of the definition of "planted trees" as the currently drafted definition, which allows naturally regenerated trees to be harvested as a "plantation", could bypass the restrictions on harvests in ecologically sensitive forestland. (Page 2)

Document No.: EPA-HQ-OAR-2005-0161-2156

Organization: Georgia Forestry Commission

Comment:

The commenter recommends for the definition of "planted trees" that EPA provide exclusion in the definition of planted trees for trees that are not indigenous to the region (planted trees must be native) and provide that any non-native trees to be included as an agricultural crop.

Document No.: EPA-HQ-OAR-2005-0161-2349

Organization: Kentucky Division of Forestry

Comment:

The commenter (2349) support the interpretation of planted trees and recommends rewording the definition to "trees from stands established by planting, artificial or natural seeding or coppice" to include other methods of regeneration. (2349.pdf, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2494

Organization: Council of Western State Foresters

Comment:

The commenter suggests rewording the definition for the term Planted Trees to "trees from stands established by planting, artificial or natural seeding, or coppice."

Document No.: EPA-HQ-OAR-2005-0161-2472

Organization: Valero Energy Corporation (Valero)
Comment:
The commenter supports EPA's definition of "planted trees" and agrees with EPA that planted trees should include not only trees established by human intervention, but also trees established from natural seeding by mature trees left undisturbed for such a purpose.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter supports EPA's proposal to include in the definition of planted trees naturally regenerating trees left undisturbed from natural seeding by mature trees left undisturbed for such purpose.

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
NASF supports EPA's interpretation that "planted trees" include more than those planted by humans using nursery stock or artificial seeding. Forest management includes a variety of artificial and natural regeneration approaches. All of these techniques are necessary to successfully and sustainably manage the wide-variety of forest types in the United States. In addition to including trees established by natural seeding, NASF recommends the definition be broadened to include other applied methods of direct and natural regeneration including coppicing and sucker roots. We suggest rewording the definition to: "trees from stands established by planting, artificial or natural seeding, or coppice."

Our Response:

EPA agrees that the inclusion of natural reseeding in the definition of "planted trees" would make distinguishing between tree plantations and forests difficult or impossible, thus negating the separate restrictions that Congress placed on the two types of land, as noted by some of the commenters. On the other hand, EPA believes that trees that are naturally seeded and grown together with hand- or machine-planted trees in a tree plantation should not categorically be excluded from qualifying as renewable biomass. Such natural reseeding may occur after planting the majority of trees in a tree plantation, and may be consistent with the management plan for a tree plantation. EPA has decided, therefore, to modify its proposed definition of "planted tree" to be trees harvested from a tree plantation. The term "tree plantation" is defined as a stand of no less than 1 acre composed primarily of trees established by hand- or machine-planting of a seed or sapling, or by coppice growth from the stump or root of a tree that was hand- or machine-planted." The net effect is that as long as a tree plantation consists "primarily" of trees that were hand- or machine planted (or derived therefrom, as described below), then all trees from the tree plantation, including those established from natural seeding by mature trees left undisturbed for such a purpose, will qualify as renewable biomass.

EPA does not understand planted trees to be limited to native species. Furthermore, EPA disagrees that non-native tree species on tree plantations should be considered crops. Under EISA, planted crops and crop residue are only considered renewable biomass if they are

harvested from existing agricultural land. EPA's final definition of "tree plantation" is an area predominantly composed of planted trees.

3.3.2.7 Tree Residue

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) recommends that demolition wood waste, construction wood wastes and wood product manufacturing wood wastes in addition to backyard waste should be included in the definition of renewable biomass. (2156.1.docx, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter disagrees with EPA's proposal to subsume the definition of tree residue into "slash". The commenter believes that mill residues such as sawdust, bark, and black liquor should be considered residue as they are residual after processing (2515.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter agrees with EPA that the term "slash" is more descriptive than "tree residue," and yet in practice means the same thing. Using the term "slash" rather than "tree residue" makes sense and will be less confusing.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter believes that EPA may have overlooked several issues in proposing to simplify its regulations by including tree residues within its definition of slash and suggests that EPA either include unmerchantable trees within the definition of slash, or explicitly include them within the definition of planted trees. The commenter also states that merging the definition of tree residue into the definition of slash leaves mill residue outside of the definition of biomass and believes that this omission is a major oversight with significant unintended consequences. The commenter states that Congress clearly intended for tree wastes to be included, as demonstrated by its inclusion of separated yard waste, and that black liquor should also be included within the definition of tree residue.

Document No.: EPA-HQ-OAR-2005-0161-2081
Organization: Novogy, Inc.
Comment:

The commenter (2081) recommends that cellulosic biogas produced from waste sludge which is a residual of the pulp & paper and recycled paper making process, be allowed to generate RINs under RFS2. Like woodchips, saw dust and other derivatives qualifying as renewable biomass under §80.1401, the commenter believes residual waste sludge from renewable biomass materials should be allowed to generate RINs. Given the emphasis within EISA to focus on the full utilization of waste cellulosic feedstocks for renewable fuels production, the commenter would like to interpret the intent of the legislation to include waste paper sludge as a renewable biomass feedstock. An alternative to allowing all paper sludge would be to allow only those that can be shown to have been derived from eligible renewable biomass contained as defined in the current regulation. [[Docket number 2081.1, p. 14]] [[See docket number 2081.1, p. 14-16 for basis for this recommendation and suggested modification to 80.1401.]]

Our Response:

EPA has considered these comments and has expanded the definition of tree residue to include some wood product manufacturing wastes, including residues from processing planted trees at lumber and paper mills, but is limiting it to the biogenically derived portion of the residues that can be traced back to feedstocks meeting the definition of renewable biomass (i.e., planted trees and tree residue from actively managed tree plantations on non-federal land cleared at any time prior to December 19, 2007). RINs may only be generated for the fraction of fuel produced that represents the biogenic portion of the tree residue, using the procedures described in ASTM test method D-6866. Thus, if the tree residues are mixed with chemicals or other materials during processing at the lumber or paper mills, producers may only generate RINs for the portion of the mixture that is actually derived from planted trees.

For a discussion of demolition wood waste and construction wood wastes, see discussion of MSW and separated yard and food wastes in section 3.2 of this document.

3.3.2.8 Tree Plantations

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter notes that EPA proposed to define a tree plantation as a stand of no fewer than 100 planted trees of similar age and comprising one or two tree species, or an area managed for growth of such trees covering a minimum of 1 acre, and states that both the number of trees and minimum acreage are difficult to quantify without incurring a large expense.

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter states that EPA should expand the definition of "tree plantation," by adopting the Dictionary of Forestry definition, which is "a stand of trees composed primarily of trees

established by planted or artificial seeding." The definition should allow for a mixture of tree species, should allow for purposeful, "natural" regeneration, and should not require a minimum number of trees per acre.

Document No.: EPA-HQ-OAR-2005-0161-2417
Organization: Forest Landowners Association
Comment:
The commenter notes that tree plantations are typically stands of trees established by planting. However plantations may also include tree stands resulting from natural regeneration. Plantations can also be pure or mixed species with uniform or diverse structures and age classes and can be grown on rotations of varying length including an indefinite length for some values.

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter believes that the proposed EPA definition of tree plantation is overly restrictive and will undermine the formation of a cellulosic ethanol industry based on woody biomass. Excluding sustainably produced wood and discouraging ecological management of forest resources is not consistent with Congress' intent. The commenter suggests that EPA not narrow the definition established within the Dictionary of Forestry. (2515.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) comments that a stand of less than 100 trees per acre is common in managed hardwood stands and raises question that will this disqualify the forest stand for biomass harvest for next rotation? (2156.1.docx, p.2). The commenter also recommends that EPA either define tree plantations as areas where planted trees exist or simply not define tree plantations. (2156.1.docx, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter states that tree plantations are established by planting or artificial seeding and--depending on the management objectives—often include mixed species and understory components. EPA's definition of "Tree Plantation" should not arbitrarily be limited to one or two tree species, rather should allow for a mixture of tree species. NASF recommends EPA broaden their definition to include stands with trees or understory components that have resulted from natural regeneration. We suggest changing the definition to "A stand of no less than one acre in an area with trees of similar age."

The commenter strongly encourages EPA to recognize trees planted on surface-mined lands after Dec. 19, 2007 as eligible for RINs under EISA. Replanting surface-mined lands will enhance their management and reduce biomass harvest pressures from other natural systems.

Document No.: EPA-HQ-OAR-2005-0161-2494

Organization: Council of Western State Foresters
Comment:
The commenter comments that the term Tree Plantation should not be restricted to 1 or 2 species. The expected climate change impacts on forests require that we plant trees with a consideration for climate change, which may suggest planting multiple species rather than monocultures. The commenter suggests changing the definition to "A stand of no less than one acre in area with trees of a similar age."

Our Response:

In the final rule, EPA is not requiring a minimum number of trees per acre as part of the definition of tree plantation, or specifying that a tree plantation be restricted to a set number of species. We agree with those commenters who stated that such these proposed limitations were too restrictive. However, EPA is maintaining the minimum 1 acre designation because EPA believes that the statutory references to "plantation" indicate a commercial enterprise of significant size, and that one acre is a reasonable measure of such an enterprise.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) is not sure if the definition of non-forested land includes oil palm plantations. The commenter believes that the IPCC had an agreed-upon definition of forested land and therefore oil palm should be considered as tree plantation and not forest, so that biofuel feedstock may be legitimately obtained from it after December 19, 2007. (2361.1.pdf, p.2)

Our Response:

With respect to the categorization of oil palm plantations, we believe such plantations are more similar to orchards than to tree plantations referred to within the definition of renewable biomass in that they are planted and managed for the purpose of harvesting palm kernels and not for harvesting the trees themselves, in the same way that a fruit orchard is planted and managed to yield fruit and not woody biomass per se. Our final definition of forestland purposefully includes tree plantations but excludes orchards, as we believe orchards are more appropriately considered a type of agricultural land (cropland, specifically), and orchard fruits planted crops. With this reasoning, palm kernels would also qualify as planted crops under the EISA definition of renewable biomass, and oil palm plantations would have to meet the criteria for existing agricultural land in order for their kernels and residue to qualify as renewable biomass under RFS2.

3.3.2.9 Cleared and Actively Managed Tree Plantations

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters recommend that EPA verify forests as being "continuously actively managed" using the mechanisms listed in the proposed rule, and in addition consider income tax treatment of revenue from the property or enrollment in use value property tax programs. (2129.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter recommends that EPA expand the types of documents that demonstrate active management of a tree plantation.

Document No.: EPA-HQ-OAR-2005-0161-2417
Organization: Forest Landowners Association
Comment:
The commenter states that active management is a broad concept usually embodied in some kind of plan. A management plan is a "predetermined course of action and direction to achieve a set of results." Management plans are usually memorialized in writing, but a plan can take many forms. The commenter also recommends that EPA expand the documentation that shows evidence of active management.

Document No.: EPA-HQ-OAR-2005-0161-2507
Organization: Forest Landowners Association
Comment:
The commenter [[2507]] believes the following definition is appropriate from a forestry standpoint: "Actively managed tree plantations are forests managed for a predetermined outcome as evidenced by: 1) A written Management Plan; 2) Participation in or management in accordance with a certification program; 3) Harvest conducted by a logging professional that has, or is in the process of completing, a state approved Master Logger Program; 4) An agreement with a consulting forester; 5) Enrollment in a Landowner Assistance Program such as Forest Map or (spell out what CMP is) CMP; 6) Participation in a silvicultural, conservation, stewardship or other natural resource management program sponsored by a Federal, state or local government (e.g., FIP, SIP FLEP, CRP, EQIP); or 7) Any agreement or action requiring or implying active forest management, including harvest agreements, conservation easements, silvicultural expenditures or other similar agreements or actions. [[2507 p.2]]

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) comments that the requirement of documentation for tree plantations to meet the "actively managed" definition will not be the same as agricultural lands, stating that the

consideration of tree plantations as the same as agricultural lands is inappropriate, and noting that planted forests grow one, two, or three decades without a significant treatment to document. (2156.1.docx, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) recommends expanding the definition of "actively managed" land to include 1) harvest conducted by logging professionals 2) agreement with consulting forester 3) enrollment in landowner program 4) agreement implying active forest management 5) existence of road system with evidence of ongoing maintenance 6) evidence of skid trails indicating thinning with in the standard rotation period. (2349.pdf, p.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter believes the evidence list included in the "actively managed" definition is too narrow. Nationally, there are 10.4 million family forest owners in the U.S. who own an average of 25 acres. Many of these landowners actively manage their forests, but are not required (by state law or otherwise) to do so under a management plan. Further, many of these family forest owners may not have ready access to sales or purchase records from past management activities that can date back as many as 30-80 years. To avoid eliminating many family forest owners from participating, NASF recommends the list of management evidence be expanded to include:
- Harvests conducted by a logging professional that has, or is in the process of completing, a state approved Master Logger Program;
- An agreement with a consulting forester;
- Enrollment in a Landowner Assistance Program (e.g., ForestMap);
- An agreement or action requiring or implying active forest management, including a harvest agreement, conservation easement, a silvicultural expenditure or any other similar agreement or action;
- The existence of a road system or other physical infrastructure with evidence of ongoing maintenance; or
- Stumps, slash, or evidence of skid trails indicating thinning or other logging within the length of a standard rotation for the region.

The commenter also recognizes there may be other options available for demonstrating active management (e.g., evidence of fire breaks, boundary line maintenance) and encourage EPA to build in flexibility within the program to consider actual circumstances on the ground.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter believes that any number of records, including sales records, tax records, and insurance records, in conjunction with verification from a professional forester, would be appropriate for verifying that land was actively managed prior to December 19, 2007.

Our Response:

EPA has expanded the types of documents that can be used by a renewable fuel producer to show that the tree plantation from which their feedstocks were harvested was actively managed on December 19, 2007. Active management is evidenced by any of the following document that can be traced to the land in question: sales records for planted trees or slash; purchasing records for seeds, seedlings, or other nursery stock together with other written documentation connecting the land in question to these purchases; a written management plan for silvicultural purposes; documentation of participation in a silvicultural program sponsored by a Federal, state or local government agency; documentation of land management in accordance with an agricultural or silvicultural product certification program; an agreement for land management consultation with a professional forester that identifies the land in question; or evidence of the existence and ongoing maintenance of a road system or other physical infrastructure designed and maintained for logging use, together with one of the above-mentioned documents.

LFSA and the Clean Air Task Force comment that tax records should be considered sufficient evidence of active management of a tree plantation. We considered these comments and believe that the information these documents provide, income from sales of planted trees or tree residue, should be reflected in sales invoices or revenue receipts.

In response to the comment that in light of the duration of tree growth, that records evidencing management may be spaced decades or more apart, EPA notes that the regulations do not specify a particular date for the documentation in question. Thus, although the objective of the evidence should be to show that the plantation was actively managed as of the date of EISA, in many instances documents prepared well before or after the date of EISA enactment may accomplish this objective. For example, a management plan prepared in 2000 that calls for tree growth over a twenty year period would be evidence that a tee plantation was actively managed in 2007.

3.3.2.10 Slash

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
EPA's definitions should broadly interpret slash and pre-commercial thinnings to allow use of biomass materials that may be otherwise wasted for production of renewable fuels. Renewable biomass and slash should be defined to include tree bark and trees that are damaged and destroyed by natural disasters including floods.

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:

The commenter (2349) suggests the definition of slash to also include "materials from stands that have been rendered unmerchantable for logging due to degradation from natural and manmade disturbances resulting in loss of merchantability" (2349.pdf, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) recommends that the proposed definition of slash needs to include the understory trees and cull material. (2156.1.docx, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter states that according to the Dictionary of Forestry (1998, pp. 168), slash is "the residue, e.g., treetops and branches, left on the ground after logging or accumulating as a result of a storm, fire, girdling, or delimbing. NASF supports EPA's proposal to use the Dictionary of Forestry definition of "slash" in place of the term "residue" in an effort to simplify the RFS regulations and use a silvicultural term that is widely-used in the industry. We also support clarifying that slash can include tree bark and can be the result of any natural disasters, including (but not limited to) flooding. Nothing in the definition of slash should preclude the use of material from stands that have been rendered unmerchantable for logging due to degradation from natural and manmade disturbances resulting in loss of merchantability. Further, mill residues such as sawdust, bark and black liquor should not be excluded as an eligible source of renewable biomass for RIN credits.

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter believes the definition of slash should clarify that slash can include tree bark and can be the result of any natural disaster, including flooding.

Our Response:

We proposed to define slash according to the Dictionary of Forestry (1998, pp. 168), as "the residue, e.g., treetops and branches, left on the ground after logging or accumulating as a result of a storm, fire, girdling, or delimbing." We also proposed to clarify that slash can include tree bark and can be the result of any natural disaster, including flooding. In response to these comments in support of this additional inclusion, we are expanding the definition of "slash" to include tree bark and residue resulting from natural disaster, including flooding. EPA believes understory trees and cull are best considered "pre-commercial thinnings" under the renewable biomass definition.

3.3.2.11 Pre-Commercial Thinnings

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
With regard to pre-commercial thinnings, the commenters recommend that EPA should not use maximum tree diameter as a basis to define pre-commercial thinning, as this maximum tree diameter would need to vary greatly between forest type and location and thus one maximum diameter would not be accurate for all locations. Instead, the commenters recommend that EPA modify its definition of pre-commercial thinnings to include criteria which require biomass facilities to meet minimum on-site retention of a basal area along with maximum tree diameters appropriate to the forest type as determined by the United States Forest Service (USFS) silvicultural stock guidelines. EPA should work with the USFS and the U.S. Fish and Wildlife Service (FWS) to establish basal area retention rates for different forest types and regions and develop Memorandums of Understanding as appropriate with states that have developed rigorous biomass harvesting standards or forest management practices.

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter states that pre-commercial thinnings should include trees that are cut to concentrate growth of more desirable trees. Regarding EPA's requested comment on whether the agency should include a maximum diameter beyond which pre-commercial thinnings would no longer qualify as renewable biomass, the commenter notes that appropriate thinning and forest management practices will vary by geography and species, and states that any limitation on the diameter of a tree to qualify as biomass will be arbitrary, cumbersome to enforce, and provide no appreciable GHG or environmental benefit and therefore is not supported. [[Docket number 2383.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter agrees that financial returns should not be included in the determination of the category of pre-commercial thinnings. The commenter concurs with EPA's proposal to include removal of diseased trees as a component of thinning. This provision could be extended to forest health prescriptions that are designed to contain pest and disease outbreaks and infestations. The commenter further urges EPA to consider biomass generated by other silvicultural practices that broadly fall within the category of stand improvement as renewable. (2515.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) suggests the need to include insect infested trees to the definition of pre-commercial thinning. (2156.1.docx, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) mentions that the term "pre-commercial" is used inappropriately in the discussion of the eligibility of forest biomass derived renewable fuels for inclusion in RFS. (2143.2, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) does not agree with providing the maximum diameter for pre-commercial thinning but does support the proposed definition of pre-commercial. (2349.pdf, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter commends EPA's decision to remove any reference to "financial return" found in the definition of pre-commercial thinning. Further, state foresters support EPA's decision to include diseased or insect-infested trees, and recommend the agency include trees killed by other natural events such as by fire, flood, wind, hurricanes and other extreme events. In many cases, pre-commercial thinnings involve removing trees of different species, crown sizes, sizes and condition classes including the removal of diseased or infested trees to improve forest health.

The commenter also strongly recommends that EPA remove any reference to establishing arbitrary diameter limits as this would almost certainly complicate implementation.

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter agrees with EPA that reference to "having no commercial value" should be removed from the definition of pre-commercial thinning. The commenter recommends not having a diameter limit for this definition because the market situation needs to evolve to allow material to move between markets depending on local economic conditions. The commenter supports including diseased or insect-infested trees, trees killed by fire, flood, wind and other extreme events in the definition of pre-commercial thinning for the reasons contained in the proposed rules. They do not support a maximum diameter, as this would necessarily be an arbitrary limit and would unnecessarily complicate implementation. Pre-commercial thinning is conducted for numerous purposes and can target vegetation of different species, crown sizes, condition, stand position etc. Placing a diameter limit would not only be arbitrary, but could work at cross-purposes for the thinning itself, including removal of diseased or infested trees to maintain stand health. The commenter suggests the following definition for the term pre-commercial thinnings: "Removal of trees from a stand of trees in order to reduce stocking to improve overall stand vigor, concentrate future growth on more desirable trees, and in fire prone ecosystems, reduce the potential of stand loss to fire."

Document No.: EPA-HQ-OAR-2005-0161-2171
Organization: Mascoma Corporation
Comment:
The commenter believes that it is critical that EPA define "pre-commercial thinnings" and "slash" appropriately so that the rule does not unjustifiably limit the types and quantities of wood products–including whole trees and pulpwood–that can be harvested in a sustainable manner and used in the production of advanced biofuels. The commenter explains that generally, pulpwood is derived from trees that do not make good sawlogs such as heavily branched trees, diseased trees, and tops of trees harvested for sawlogs and should be included within the definition of "pre-commercial thinnings" and "slash." The commenter believes that pulpwood should be specifically included as an eligible feedstock in the final rule. The House of Representatives has passed the American Clean Energy and Security Act of 2009 which clarifies the definition of renewable biomass including eligibility of woody biomass from both private and federal forestlands and the commenter urges EPA to consider these modifications as it finalizes the RFS2 rule. [[Docket number 2171.1, p. 2]]

Our Response:

EPA agrees with the assessment that tree diameter varies greatly by forest type and location, making any diameter limitation EPA might set as a basis for defining pre-commercial thinnings arbitrary. We have therefore defined pre-commercial thinnings based on the Dictionary of Forestry, which contains commonly understood definitions of forestry terminology, as "the removal of trees not for immediate financial return but to reduce stocking to concentrate growth on the more desirable trees or other vegetative material that is removed to promote tree growth." EPA is not establishing basal area retention rates for different forest types and regions as one commenter suggests, as a case-by-case assessment of each forest type by a professional forester would be necessary, and such an assessment is impractical for purposes of RFS2.

Finally, EPA notes, EISA specifically prevents slash and pre-commercial thinnings from qualifying as renewable biomass if it is collected from federal forestlands. However, there is no such restriction regarding biomass from federal lands if it is taken from the immediate vicinity off buildings and other areas regularly occupied by people, or public infrastructure, at risk of wildfire.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter suggests that in issuing regulations to effectuate the EISA's definition of "renewable biomass," EPA should not overlook any important sources of forest biomass. For example, the commenter is concerned that EPA has overlooked intercropping as a potential source of renewable biomass. Intercropping is an innovative concept that forest landowners are exploring, whereby foresters are planting perennial plants (such as switchgrass) between rows of

young trees. These landowners hope to achieve annual harvests for at least ten years after establishment, before the crops are shaded out by adjacent trees.

The commenter notes that another important source of forest biomass is understory vegetation, including shrubs, brush, and other plants. Such vegetation is often removed to maintain desirable forest conditions and improve tree growth. The resulting biomass can and should be eligible for use as a fuel source along with eligible biomass from trees. Although not specifically identified in the definition of renewable biomass, the commenter believes it is reasonable to assume that Congress intended such material to qualify as eligible biomass, as it is a byproduct of ordinary forest operations producing brush, slash, and other types of forest residues. The commenter urges that EPA's regulations be drafted broadly so that the greatest array of forest vegetation, including crops produced through intercropping and understory plants, are eligible as renewable biomass.

Our Response:

Under EISA, renewable biomass may include "slash and pre-commercial thinnings" from non-federal forestlands, and "planted trees and tree residue" from actively managed tree plantations on non-federal land. EPA is including tree plantations as a subset of forestland in the final RFS2 regulations since it is commonly understood as such throughout the forestry industry, which will effectively allow pre-commercial thinnings and slash, in addition to planted trees and tree residue, harvested from tree plantations to serve as qualifying feedstocks for renewable fuel production. Thus because we have defined "pre-commercial thinnings" in the final regulations as "trees, including unhealthy or diseased trees, primarily removed to reduce stocking to concentrate growth on more desirable, healthy trees, or other vegetative material that is removed to promote tree growth," understory vegetation as described by the commenter would qualify as renewable biomass under RFS2.

However, although intercropping can help to diversify the types of feedstocks harvested from tree plantations as noted by the commenter, we do not believe that perennial plants or other planted crops can reasonably be considered planted trees, tree residue, slash, or pre-commercial thinnings, and therefore intercropped plants from tree plantations would not qualify as renewable biomass under RFS2.

3.3.2.12 Forestland and Nonforested Land

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) recommends that EPA should define forest land the same as the USDA Forest Service, Forest Inventory & Assessment (FIA). (2143.2, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2173.1

Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter (2173) recommends EPA amend its proposed definition of "forestland" to include tree plantations consistent with the use of the term among forestry professionals.

Document No.: EPA-HQ-OAR-2005-0161-2144
Organization: New York State Department of Agriculture and Markets
Comment:
The commenter has considerable concern regarding language regarding the proposed definition of "nonforested." The commenter noted that the intent of the last line in the definition is unclear. (2144.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter believes that EPA's proposal which defines forestland as any parcel of one acre or more with predominately tree cover will create eligibility problems. Restoring these sites to grass cover types and allowing those lands to supply renewable biomass will provide biomass and enhance the ecological value and function of the sites. The commenter believes it to be more appropriate to look at the landscape context to determine forest land status. Tools such as the Ecological Classification System can be employed to determine forest status. (2515.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) suggests that the term Forestland should be defined according to U.S Forest Service's Forest Inventory and Analysis (FIA) definition. (2349.pdf, p.1) The commenter (2349) also recommends that the EPA should adopt one of the two definitions of non-forest lands as described by: 1) RPA assessment definition of non-forest land 2) FIA definition of non-forest land. (2349.pdf, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) suggests that the definition of forestland seems appropriate, with the very obvious exception of the proposal to not include tree plantations as forestland. This is inappropriate and serves no purpose within the language. It could also result in unintended effects beyond the scope of this legislation. (2156.1.docx, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter comments that EPA's definition of forestland does not include plantations, which are a commonly-accepted type of forest land throughout the forest industry. Planted forests may differ from those of natural origin. In practice, however, there is no clear dichotomy between a tree plantation and a natural forest. In place of the proposed RFS2 definition, NASF

strongly recommends EPA defer to the commonly understood, widely used forest land definition developed by the U.S. Forest Service Forest Inventory and Analysis (FIA) program.

Similarly, the commenter notes that the FIA definition of non-forest land is commonly-understood in the forestry community and should be applied in EPA's RFS2 regulations.

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter suggests using the definition for non-forested land used by the US FS Forest Inventory and Analysis program and RPA Assessment.

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) is not sure if the definition of non-forested land includes oil palm plantations. The commenter believes that IPCC had an agreed definition of forested land therefore oil palm should be considered as tree plantation and not forest so that biofuel feedstock may be legitimately obtained from it after December 19, 2007. (2361.1.pdf, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) would like to confirm that the definition of "nonforested" land (page 249330) includes oil palm plantations. This means that oil palm is to be considered "tree plantation" and not "forest" so that biofuel feedstock may be legitimately obtained from it after December 19, 2007. (2016, p.2)

Our Response:

In response to many of these comments, EPA's final definition of forestland is similar to the FIA definition of forest, that is "generally undeveloped land covering a minimum of 1 acre upon which the primary vegetative species is trees, including land that formerly had such tree cover and that will be regenerated and tree plantations. Tree covered areas in intensive agricultural crop production settings, such as fruit orchards, or tree-covered areas in urban settings such as city parks, are not considered forestland."

In response to comments to broaden the definition of "forestland" to include tree plantations, we are including tree plantations as a subset of forestland since they are commonly understood as such throughout the forestry industry.

With respect to the categorization of oil palm plantations, we believe such plantations are more similar to fruit orchards than to tree plantations referred to within the definition of renewable biomass in that they are planted and managed for the purpose of harvesting palm kernels and not for harvesting the trees themselves, in the same way that a fruit orchard is planted and managed to yield fruit and not woody biomass per se. Our final definition of

forestland purposefully includes tree plantations but excludes orchards, as we believe orchards are more appropriately considered a type of agricultural land (cropland, specifically), and orchard fruits planted crops. With this reasoning, we believe that palm kernels would also qualify as planted crops under the EISA definition of renewable biomass, and oil palm plantations would have to meet the criteria for existing agricultural land in order for their kernels and residue to qualify as renewable biomass under RFS2.

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) states the proposal is not clear regarding the status of land that is currently not actively used for agriculture or forest. These lands, that might be "idle" well into the future and not used for activities that would interfere with the establishment of trees and forests for biomass production, should be recognized for their ability to contribute to the production of renewable biomass if and when action may be taken to establish forest growth. (2143.2, p.6)

Our Response:

EISA specifies not only the types of feedstocks that may be used to produce renewable fuel but also the types of land and status of the land from which many types of feedstocks may come. Tree plantations must have been cleared and actively managed as of December 19, 2007 in order for biomass taken from such lands to qualify as renewable biomass. Thus land that was "idle" on that date, unless intentionally so as a result of management decision, cannot be considered a tree plantation under the final RFS2 regulations.

However, if at any point in the future such idle land meets the definition of forestland, is non-federal land, and is not ecologically-sensitive land, then slash and pre-commercial thinnings taken from such land could qualify as renewable biomass under RFS2. In addition, land that was idle on December 19, 2007 could also potentially qualify for renewable biomass production if it includes buildings and other areas regularly occupied by people or public infrastructure at risk of wildfire or is used for production of non-cultivated feedstocks such as algae and animal wastes.

3.3.2.13 Ecologically Sensitive Forestland

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) suggests that the state forester should be responsible for defining "ecologically sensitive forest land" as it varies by state and the entire country does not fit into this definition. (2143.2. P.6)

Document No.: EPA-HQ-OAR-2005-0161-2349

Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) proposes that EPA should install a state-preferred method - in consultation by the state forester to define & delineate ecologically sensitive forest land state by state. (2349.pdf, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) suggests that more clarity is needed concerning the State Natural Heritage Program areas and globally ranked ecological community database. (2156.1.docx, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
EPA proposes to use data compiled by NatureServe to publish a special report to identify "ecologically sensitive forestland." The report would list all forest ecological communities in the U.S. with a global ranking of G1, G2, or G3, or with a State ranking of S1, S2, or S3, and would include descriptions of the key geographic and biologic attributes of the referenced ecological community. It is our understanding the report would identify those ecological communities from which slash and pre-commercial thinnings could not be used as feedstock and would be ineligible for RINs.

Ecological communities identified as critically imperiled, imperiled or rare by the Natural Heritage Program in one state may not mean the same ecological community has the same status in another state. EPA must be clear as they promulgate the final rule that designations as to the status of ecological communities is restricted to the state in which it resides. Blanket, nation-wide designations are not defensible and will further restrict the ability of meeting the goals set forth in EISA. Rather than publishing a special report, NASF recommends EPA install a state-deferred process whereby the State Natural Heritage Program—in consultation with the State Forester—delineate where ecologically sensitive forest lands reside. These decisions—alongside determinations for making information regarding the location of sensitive sites publicly available—best reside at the state level.

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter believes EPA's inclusion of G3 forests in the list of ecologically sensitive forests is flawed because the NatureServe rankings do not include a "rare" designation.

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter notes that NatureServe and State Natural Heritage databases are proposed by EPA for using these designations to identify "ecologically sensitive lands" where slash and pre-commercial thinnings could not be used as feedstock for production of renewable fuel. The

CWSF are concerned about land use restrictions for state and private lands included in the draft regulations that could put further restrictions on utilization of biomass from legal forest management activities conducted by private landowners and state forest managers. Furthermore, biomass removal may be fully consistent and appropriate for addressing conservation threats and restoration needs for some of the identified "ecologically sensitive" forest lands, especially where returning the system to a more traditional fire regime is part of the system's ecology and where fire suppression has contributed to the current condition. New bioenergy markets could help make restoration efforts on these lands more economical. The commenter recommends not automatically excluding Nature Serve areas from potentially contributing to renewable biomass.

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters recommend that EPA should not rely solely on state natural heritage programs to identify ecologically sensitive lands. Databases of sensitive lands maintained by non-profit organizations, such as NatureServe, should also be consulted in determining what ecologically-sensitive lands should not be eligible to provide biomass.

Our Response:

EISA explicitly excludes from its definition of renewable biomass slash and pre-commercial thinnings taken from forestland ecological communities ranked as critically imperiled, imperiled, or rare pursuant to a State Natural Heritage Program. Therefore we have finalized our regulations to exclude biomass from such areas, specifically those with Natural Heritage Programs global ranking of G1 or G2, or with a State ranking of S1, S2, or S3, and we are including in the docket lists of ecological communities fitting these descriptions. The lists consist of data compiled by NatureServe and are published in special reports to identify "ecologically sensitive forestland." These lists are specified on a state-by-state basis.

3.3.2.14 Old-Growth Forest

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters recommend that EPA should not use a single age of 200 years to define old growth and late-successional forests as this would not be appropriate for all locations and ecosystems. Rather, research funding should be provided to accomplish nation-wide mapping of

these ecosystems in order to exclude old growth and late-successional forest harvests from the definition of renewable biomass.

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) suggests that the definition of Old-Growth trees should be based on various characters as described in the Dictionary of Forestry (1998, p.127) published by American Society of Foresters and not based on absolute measure of 200 years of age. (2349.pdf, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
EPA proposes that ecologically sensitive forestland, which is excluded from the EISA definition of renewable biomass, be defined to include forest that is characterized by trees at least two hundred years old. This definition requires greater refinement due to its regional applications.

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) recommends that older trees must be predominant in a forest to trigger the old-growth and late successional forests classification. (2156.1.docx, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter holds that old growth, late-successional and many of the forest communities ranked by NatureServe are the same forests at greatest risk to insect, disease and catastrophic wildfire threats. In fact, NatureServe often calls for the active management of these areas. We strongly recommend EPA avoid further restricting the type and amount of biomass that can be removed from these areas as they are the same forests that can benefit most from forest health treatments and are already protected by federal requirements for threatened and endangered (T&E) species. Access to new biomass markets—such as those likely to be created by a RFS—can help cover the costs associated with restoring these areas. A narrowly interpreted EISA biomass definition will preclude these markets from developing in many areas.

NASF disagrees with EPA's proposition to characterize old-growth and late-successional forests as including trees at least 200 years old. As indicated in the dictionary of forestry, old-growth forests are characterized more by structural characteristics (e.g., live trees, canopy conditions, snags, down logs, etc.) and less by the age of the trees found in the stand. Old-growth conditions vary by forest type, climate, site conditions and disturbance regime. Using an age-related definition disregards other structural characteristics that more accurately identify old growth conditions. NASF recommends EPA adopt the following definition of old-growth developed by the US Forest Service: "Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size,

accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function."

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter comments that EPA should use the US Forest Service definition of old-growth (see below) and provide for biomass removal that helps achieve ecological restoration or that helps maintain ecological integrity of these forests. The definition should not include reference to tree age (200 year old) or "virgin" forests.

Our Response:

While EPA understands that there are a number of criteria that professional foresters may use in determining whether a forest is old growth and that the criteria differ depending on the type of forest, for purposes of the RFS2 rule, EPA seeks to use definitive criteria that can be applied by non-professionals. We have therefore finalized the proposed definition of "old growth" as characterized by trees at least 200 years old.

3.3.2.15 Areas at Risk of Wildfire

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters would like EPA to use Community Wildfire Protection Plans and Wildland Urban Interfaces in order to decide which materials should be removed and used to reduce wildfire instead of assessing distance to vegetated land to determine eligible areas. (2129.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter recommends all fuel wood within 200 ft of a given structure be eligible for biomass (the maximum distance for eligible wood). Limiting material eligible for fuels reduction to 100 ft is unnecessarily restrictive. Additionally, the commenter believes eligible biomass from fuel wood reduction should not be limited to communities with Community Wildfire Protection Plans (CWPPs). (2515.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:

The commenter (2349) does not support the definition of biomass obtained from communities at risk being within 100 feet; however they do support immediate vicinity within 200 ft of buildings, campgrounds, public infrastructure to be eligible for RIN. Also, the commenter (2349) recommends that EPA use the existing definition of wildland urban interface as defined in the Healthy Forests Restoration Act of 2003 to be eligible for RIN credits. (2349.pdf, p4)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter notes that the EISA definition of renewable biomass includes biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire. EPA proposes that under RFS2, the term "immediate vicinity" would mean within 200 feet of a given structure or area. NASF supports EPA's proposition to allow biomass within 200 feet of buildings, campgrounds, and other areas regularly occupied by people, or of public infrastructure to be eligible for RINs.

EPA has called for comments on two implementation alternatives for identifying "areas at risk of wildfire" including the use of biomass from priority areas identified in Community Wildfire Protection Plans (CWPPs) and any area within the Wildland Urban Interface (WUI). NASF recommends these should not be considered "implementation alternatives" rather biomass from both the WUI and from priority areas identified in CWPPs should be eligible for RIN credits. We recommend EPA use existing definitions of WUI already defined in statute under the Healthy Forests Restoration Act of 2003 (PL 108-148 and HR1904).

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter states that woody material removed to reduce fire risk to communities must be included in the definition of "renewable biomass". The definition should be consistent with the definition of WUI and areas at risk of wildfire that are currently in legislation, specifically the Healthy Forests Restoration Act of 2003.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter believes that EPA's alternative approach for identifying biomass from areas at risk of wildfire would ease recordkeeping requirements and would be more readily verifiable. [[Docket number 2310.1, pp. 7-10]]

Our Response:

EPA believes that the statutory definition of WUI from the Healthy Forests Restoration Act (Pub. L. 108-148) is too vague to use directly in implementing the RFS2 program. If EPA used this WUI definition, individual plots of land would have to be assessed by a professional forester on a case-by-case basis in order to determine if they meet the WUI definition, creating an expensive burden for landowners seeking to sell biomass from their lands as renewable fuel

feedstocks. In light of these comments and the need for a relatively simple way for landowners and renewable fuel producers to track the status of particular plots of land, for the final rule we are defining "areas at risk of wildfire" as those areas in the "wildland-urban interface," where humans and their development meet or intermix with wildland fuel. The SILVIS laboratory at the University of Wisconsin maintains a website that provides a detailed map of areas that meet this criteria at: http://www.silvis.forest.wisc.edu/projects/US_WUI_2000.asp. The electronic WUI map is a readily accessible reference tool that was prepared by experts in the field of identifying areas at risk of wildfire, and is thus an ideal reference for purposes of implementing RFS2.

3.3.2.16 Animal Wastes and Byproducts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) noted that the definition of renewable biomass is not clear as to whether animal byproducts include all the rendered fats and oils, and believes that this section should expand the definition of animal byproducts or reference that these include animal tallows, pork fat, chicken grease, fish oil, etc. The commenter also believes that the list of renewable biomass should include an eighth category called waste greases that includes waste cooking oil (called yellow grease) and brown grease. (0994.1, p.3), stating that these greases are significant renewable biomass feedstocks and are not identified by any of the other seven items listed. (0994.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2305
Organization: The Soap and Detergent Association
Comment:
The commenters [[2305]] expressed concern with the inclusion of animal waste material and animal byproducts within the definition of renewable biomass, noting that tallow and other byproducts have many uses and that the price per barrel for tallow is similar to and at times higher priced than a barrel of crude oil. SDA believes that they should not to be included in the definition of renewable biomass. [[#2305.1 p.4]]

Our Response:

In the definition of renewable biomass, EISA and our final RFS2 regulations specifically list separated food waste, "including recycled cooking and trap grease" and "animal waste material and animal byproducts." EPA believes these listings cover the materials specified by the first commenter. Because the category "animal wastes and animal byproducts" is included in the statutory definition of renewable biomass, EPA cannot exclude this category from its regulatory definition as the second commenter suggests.

3.3.2.17 Other Comments on Definitions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA's definition of "Existing Agricultural Land" is inconsistent with the statute and could leave land out of the program that would meet the definition established by Congress. (2329.1, p.74) [[See Docket Number 2329.1, pp. 74-77 for a detailed discussion on this issue]]

The commenter supports the definitions used by EPA to define cropland and forested land to the extent those definitions are consistent with USDA and generally used definitions. The commenter also believes that EPA's definitions of fallow, planted crops and crop residues, and forestland are too limiting. The commenter believes that EPA should use USDA definitions that are well-known and understood by the agricultural community, rather than create new definitions that are likely to raise confusion and that may restrict the lands Congress sought to allow for biofuel feedstock production. (2329.1, pp.77-79) [[See Docket Number 2329.1, pp.77-79 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter holds that EISA overly restricts the ability of the nation's forests to contribute biomass, and that a narrow interpretation from EPA will further inhibit the ability to meet the RFS2 goals.
Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) states that EPA's definitions and requirements for feedstocks and energy sources must maximize the availability of renewable fuel consistent with the text and purpose of EISA. In implementing the RFS2 program, EPA should adopt definitions of key terms that are consistent with terms defined by Congress, support the purpose of the RFS2 program to increase the production and use of renewable fuels, and avoid creation of unnecessary burdens, restrictions, or costs that impede the use of renewable feedstocks or fuels. [[Docket number 2383.1, p. 12 and 2380.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2342
Organization: Burack Environmental Law Offices
Comment:
The commenter (2342) believes that "Biomass" is broadly defined in RFS2 (within the definition of "Renewable Biomass") as "organic matter that is available on a renewable or recurring basis" and that biomass is already listed as a feedstock for process heat in conjunction with one of the corn ethanol pathways. The commenter also notes that "cellulosic biomass" does not appear to

be specifically defined in RFS2, but has a reasonably clearly understood meaning within the agency and regulated community. (2342, p.2)

Our Response:

EISA's renewable biomass definition includes a number of terms that require definition. We have made every attempt to define these terms as consistently with other federal statutory and regulatory definitions as well as industry standards as possible, while keeping them workable for purposes of program implementation. We have also attempted, within the statutory confines of EISA, to interpret them broadly in order to further the goal of the EISA and RFS program, to increase the presence of renewable fuels in transportation fuel, without at the same time compromising the environmental protections Congress intended through adopting the renewable biomass restrictions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) suggests that the definition of renewable biomass should include material that is available from actively managed native or natural forests as well as from plantations. The commenter (2143) suggests that participation in a federal, state or locally sponsored "conservation" program, including the USDA Forest Service Forest Stewardship Program (as well as the certification programs mentioned on page 24934 of the preamble) be incorporated in the definition. (2143.2, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter strongly urges EPA to add a new category of renewable biomass, "8. Plant material, including invasive species, removed for habitat restoration, fire mitigation, or as a result of natural disaster". They further suggest that this new category be excluded from predictive assessments. They also encourage EPA to include the possibility that new forms of renewable biomass may emerge that are not specifically designated in the rule.

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) encourages the establishment of biomass plantations on surfaced mined lands and including them regardless of the time of establishment. (2349.pdf, p.1)

Our Response:

EISA restricts the materials that can be considered renewable biomass under RFS2, so EPA cannot add additional categories of biomass. However, where possible without

undermining the environmental objectives of the statute, EPA has broadly defined EISA's terms related to renewable biomass. For example, EPA has included biomass from agricultural land removed for purposes of invasive species control or fire management in the definition of crop residue. Additionally, the definition of slash has been clarified to include biomass resulting from natural disaster, including flooding.

In response to the last comment, we emphasize that EISA specifically limits the land that renewable fuel feedstocks may come from. We have interpreted the "cleared or cultivated" requirement in the renewable biomass definition as requiring that agricultural lands and tree plantations be cleared prior to EISA's enactment on December 19, 2007 and actively managed on that date. EPA cannot allow for clearing of additional lands after December 19, 2007 for purposes of RFS2 and cannot include lands as tree plantations that were not actively managed tree plantations as of the date of EISA enactment.

3.3.3 Requiring a Demonstration that Feedstocks Meet the Renewable Biomass Definition Prior to Generating RINs

3.3.3.1 General Comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that they have found no data source that will tell how to determine the value of land (all types) that may be used for renewable fuels, regardless of the feedstock type. The commenter believes that without this data, it is without merit to expect small business to spend fortunes to chase numbers that have not been determined to be relevant to the process. [[Docket number 2510.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter (1015) asks for a delay in the certification for feedstock land restrictions regulation until a cost benefit analysis is conducted on behalf of the biofuel producer and feedstock producer to implement this section. As EPA correctly concludes, no current data is collected from agricultural land owners, producers, and forest owners for assessing the status of agricultural land, forest land, and other types of land that could be used for renewable fuel feedstock production. The commenter has not identified any federal or state agency or third party that collects such data in a timely and meaningful way. [[Docket number 2123.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:

The commenter (2010) asks for a delay in the certification for feedstock land restrictions regulation until a cost benefit analysis is conducted on behalf of the biofuel producer and feedstock producer to implement this section. As EPA correctly concludes, no current data is collected from agricultural land owners, producers, and forest owners for assessing the status of agricultural land, forest land, and other types of land that could be used for renewable fuel feedstock production. The commenter has not identified any federal or state agency or third party that collects such data in a timely and meaningful way. [[Docket number 2010.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Comment:
The commenter (2011) asks for a delay in the certification for feedstock land restrictions regulation until a cost benefit analysis is conducted on behalf of the biofuel producer and feedstock producer to implement this section. As EPA correctly concludes, no current data is collected from agricultural land owners, producers, and forest owners for assessing the status of agricultural land, forest land, and other types of land that could be used for renewable fuel feedstock production. The commenter has not identified any federal or state agency or third party that collects such data in a timely and meaningful way. [[Docket number 2011.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC
Comment:
The commenter (2013) asks for a delay in the certification for feedstock land restrictions regulation until a cost benefit analysis is conducted on behalf of the biofuel producer and feedstock producer to implement this section. As EPA correctly concludes, no current data is collected from agricultural land owners, producers, and forest owners for assessing the status of agricultural land, forest land, and other types of land that could be used for renewable fuel feedstock production. The commenter has not identified any federal or state agency or third party that collects such data in a timely and meaningful way. [[Docket number 2013.1, p. 5]]

Our Response:

EPA is required by law to promulgate regulations to implement the language contained in EISA, including the definition of renewable biomass which restricts renewable fuel feedstocks and the land from which they may come. We believe that there is sufficient data, as well as documentation on historic and current use of land, for all renewable fuel producers to be able to meet the renewable biomass provisions contained in the final RFS2 regulations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) encourages EPA to develop a system by which feedstocks used for biofuels production are tracked with some specificity at the facility level. Lifecycle emissions

depend on the location and method of feedstock production, collection so this information would be helpful in program evaluation.

Our Response:

In the final RFS2 regulations we are requiring renewable fuel producers to report the types and volumes of feedstocks used in each batch of renewable fuel for which RINs are generated. We are also requiring producers who are not subject to the aggregate compliance approach for renewable biomass to submit on a quarterly basis documentation that links their feedstocks to their source. This information will be at the facility level.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2243.1) recommends that EPA be more prescriptive in defining renewable biomass and modify the regulations as proposed under §80.14151 (b)(6)(I) to include the following language "must show title evidence of ownership or lawful right of use of lands upon which the biomass was produced." This qualifying criteria builds upon established land title practices and will assure that EPA can administer the program as proposed. (2243.1, p.2)

Our Response:

EPA does not believe that it is necessary to adopt the specific recommendation of the commenter. EPA believes that implementation of the renewable biomass provisions requires some traceability of the feedstock to the land from which it was harvested. Therefore, our final regulations contain a requirement that feedstock verification documents be traceable to the land in question. EPA believes it is unlikely that producers will collect biomass unlawfully when required to report to EPA the location of such collection. In addition, EPA has no reason to believe that these or other producers would obtain feedstocks illegally, and existing state and local laws and procedures are in place to rectify such activities if they do occur.

3.3.3.2 Direct Regulation of Feedstock Producers/Suppliers

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) is concerned about EPA's proposed requirements that renewable fuel producers must obtain and keep records and documents demonstrating that feedstock meets the definition of "renewable biomass," and must certify that all biomass used meets this definition,

are unnecessarily burdensome. The feedstock producers will have greater knowledge of the historical use of land where feedstock is produced, the production of feedstocks, and will hold the primary records necessary to support such certification. The feedstock producers, rather than the renewable fuel producers, should be the entities that are required to maintain primary records regarding whether biomass meets the definition of "renewable biomass" and to certify that such biomass meets this definition.. [[Docket number 2383.1, p. 59]]

Our Response:

We understand that in many, if not most, cases, feedstock producers will have a better knowledge of the historical and current use of land used for growing renewable fuel feedstocks than a renewable fuel producer will. RIN generation responsibilities, however, remain with renewable fuel producers. For this reason, our approach for implementing the renewable biomass provision of EISA requires renewable fuel producers to obtain documentation from the feedstock producer (in the case of planted crops and crop residue and planted trees and tree residue). In order for EPA to be able to properly enforce against invalid RIN generation, the burden of proof for demonstrating that feedstocks do or do not meet the definition of "renewable biomass" must also reside with the renewable fuel producer.

3.3.3.3 Agricultural Land

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2488
Organization: Kansas Corn Growers Association
Comment:
The commenter (2488) believes that by requiring proof that feedstocks used for ethanol production came from cropland which was in production prior to 2007, the proposed rule has the potential to place a great burden on corn growers. (2488, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2189
Organization: Technical Consultant for Enzyme Development Corporation and Genencor International
Comment:
The commenter believes that the EPA proposal would put a heavy and unwarranted burden on feedstock providers. EPA's proposal requires proof that croplands used to create biofuel feedstock were in existence prior to EISA becoming law in 2007. But there's no risk that new lands will be cleared for feedstock for biofuel production —and the rule would mean extra costs and inconveniences for feedstock providers. (2189, p.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2120
Organization: Society for Range Management
Comment:
The commenter [[2120]] feels that the evidence EPA requires of producers in order to verify that their feedstock is eligible for RINs should be kept to a minimum. This is particularly true in the

case of rangelands, where most landowners have been documenting their land management activities for a much shorter time than is generally the case for America's farmers. EPA should cite examples of forms of evidence that would be acceptable, but not limit its approval to those kinds of records, in order to grant maximum flexibility to producers to demonstrate their claims. [[#2120.1 p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2446
Organization: Minnesota Farm Bureau Federation
Comment:
The commenter believes that EPA's definition of existing cropland creates onerous land use rules and record-keeping requirements that would bar many farmers from growing crops used for biofuel production and in so doing would reduce the value of a great deal of American farmland.

The commenter also states that EPA makes several assumptions about the management of agricultural land that are not borne out by commonly accepted practices. For instance, the agency asserts that sales and purchasing receipts should be available to indicate that pastureland is being managed. Many farmers maintain their pastures even when the land is not actively being grazed. This maintenance may include mowing to reduce noxious weeds or fire hazards. There are not normally sales receipts or records for these routine practices.

The commenter states that a farmer may leave land fallow for a myriad of reasons. These decisions are rarely documented. It is also unreasonable to expect that records such as sales receipts will be transferred when land is sold to new owners. For example, following a landowners' death land may lie fallow while estate issues are resolved. These issues can often take years to resolve.

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) is concerned with the unnecessary and unworkable feedstock certification requirements that EPA has proposed. This would create a whole new trading group on the Chicago Board of Trades and other world markets for beans and oils before the implementation date and those after the date. Those crops and oils raised and sold before the date would be more valuable because of the duel use of food or fuel and those after the date would only be used for food. It will be impossible for the farmer, grain elevator, bean crusher, storage facilities, oil transporters etc. to keep this product from getting mixed without billions of dollars of new storage capacity which will have a negative effect on what we are trying to do. The amount of tracking and paperwork to keep records and proof will be a nightmare for both producers, sellers, storage facilities, traders and consumers. (2549.1, pp.1-2).

Document No.: EPA-HQ-OAR-2005-0161-2300
Organization: Dow AgroSciences
Comment:
The commenter is concerned with the unnecessary and unworkable feedstock certification requirement that EPA has proposed. (2300, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) believes that EPA's requirements (records of sales, written management plans, participation in state, local or federal management agency, or certified program) for proving cropland has been "continuously actively managed as agricultural land or fallow" as are unnecessarily burdensome and unclear. (Page 2)

Document No.: EPA-HQ-OAR-2005-0161-2353
Organization: Iowa Soybean Association
Comment:
The commenter [[2353]] states that most Iowa farmers have extensive on-farm grain storage facilities. Overflow grain is usually trucked to local grain elevators for temporary storage before being commingled with grain from other farms and shipped by rail or truck to processing or export facilities. It would be very difficult to identify (and maintain the identity of) the originating land of any amount of production. USDA programs are in place to identify farm acreages, provide cropping histories and monitor environmental practices, and almost all Iowa farmers participate in these programs. Iowa soybean producers believe EPA should eliminate the impractical and nearly impossible burden of certification of production from existing and eligible cropland. [[#2353 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) believes that the tracking requirements associated with existing agricultural land as proposed by EPA are unrealistic and unenforceable. The commenter believes that a system that exempts grain sorghum and other grain feedstocks is reasonable and enforceable. The new system, however, should track other feedstocks, including sweet sorghum and energy sorghum, since these other advanced and cellulosic feedstocks will be grown in much closer proximity to the ethanol producing facility and will not be traded via arbitrage. (2119.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) noted that EPA is proposing an overly burdensome administrative requirement for traceability that will have little, if any, benefit. EPA's proposed feedstock certification provisions effectively require renewable fuel producers to segregate or identify preserve commodity crops.

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA improperly placed a substantial and undue burden of proving renewable biomass requirement on renewable fuel producers. The statute does not impose an affirmative duty on renewable fuel producers to use renewable biomass. The

commenter noted that RINs are not a statutory requirement, and no where in the statute does Congress indicate an intent to impose such stringent regulations on renewable fuel producers. Renewable fuel producers do not have access to the type of information needed to determine compliance with the existing cropland definition. Renewable fuel producers will need to rely on the feedstock providers, who are either likely to impose substantial costs to obtain and provide the information or are not likely to provide the information at all, unless EPA requires them to do so. (2329.1, p.79)

The commenter also noted that the majority of feedstock is obtained from grain elevators or other centralized locations. These terminals receive feedstock from numerous sources, which are mixed together, and sell the feedstock to numerous sources. A recent study showed that 62 percent of corn from Iowa farms went to a grain elevator. Tun-Hsiang (Edward) Yu and Chad Hart, Impact of Biofuel Industry

Expansion on Grain Utilization and Distribution: Preliminary Results of Iowa Grain and Biofuel Survey, at 5 (2009), available at ttp://ageconsearch.umn.edu/bitstream/46847/2/Impact%20of%20Ethanol%20Industry%20Expansion%20on%20Corn%20Utilization%20and%20Distribution-Final.pdf. The commenter believes that EPA's proposal does not address the crucial fact that would make it virtually impossible for renewable fuel producers to seek and obtain the required documentation. The commenter believes that EPA has failed to consider this important aspect of the problem, which renders the proposal arbitrary and capricious. (2329.1, p.79) [[See Docket Number 2329.1, pp.79-81 for a detailed discussion of this issue]]

The commenter believes that EPA cannot impose such substantial regulatory requirements on these producers. RFS does not give EPA broad authority to regulate renewable fuel producers, just to implement the requirements for the fuels under the program. EPA must justify its regulation under other Clean Air Act authority, but EPA has no such authority under the Clean Air Act. (2329.1, pp.81-82)

The commenter believes that the proposal unfairly treats crop-based renewable fuel. EPA needs to apply a similar presumption as it did for other types of renewable fuel. While the RFS mandates place sufficient incentives on renewable fuel producers to ensure that the feedstock used meets the definition of renewable biomass, the feedstock suppliers are the only ones in a position to confirm that their feedstock meets the Act's requirements, and renewable fuel producers should be able to rely on their representations. Except for an incorrect reading of the statute, EPA provides no explanation as to why renewable fuel producers should not be allowed to rely on certifications by feedstock producers for the existing cropland and planted tree requirements, as with other feedstocks. At a minimum, the commenter believes that EPA should provide a good faith defense for ethanol producers. (2329.1, p.83)

The commenter (2329.1) believes that EPA should provide a presumption that domestic crops used as biofuel feedstock in the Final Rule, focusing its enforcement actions against those with knowledge that they are using feedstock that does not meet the definition. (2329.1, p.84) [[See Docket Number 2329.1, pp.84-85 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) noted that the recordkeeping requirements concerning demonstration that feedstocks meet the definition of renewable biomass appear to be very onerous. The sheer volume of documentation that would have to be passed from feedstock producers to renewable fuel producers is staggering. EPA should give serious consideration to ways to simplify this requirement, particularly for domestic feedstocks. (2154.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2529
Organization: National Grain and Feed Association
Comment:
The commenter (2529) is not aware that the proposed record keeping system presently exists and believes that any requirement mandated by EPA to create such a system is unjustifiable and would place an unreasonable administrative burden on renewable fuel feedstock suppliers.

The commenter particularly emphasizes that due to RIN and supplier recordkeeping requirements, grain elevators simply could choose not to participate in the renewable biomass program, denying the use of these stocks to the renewable fuels market. This is because such facilities receive feedstock from numerous sources, which are commingled together, and then sell the feedstock to numerous sources. Such segregation would be extremely costly and burdensome because it would require identity preserved storage, and would be necessary to ensure that the grain elevator could lawfully sell its commingled feedstock as a renewable biomass to a fuel ethanol producer.

Instead of imposing costly and burdensome inefficiencies on biofuels producers and their suppliers, the NGFA urges EPA to work with USDA to ensure that substantial amounts of new land are not being cleared to comply with the EISA requirements.

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (Docket number 2249.2) believes that the proposal related to the EISA renewable biomass definition is arbitrary and capricious and should be eliminated. The commenter does not support EPA's proposal to address the "existing cropland" requirement nor is EPA's definition of "existing agricultural land" consistent with the statute. In addition, EPA's approach ignores important aspects of the problem and therefore is arbitrary and capricious and the proposal also creates unnecessary and overly burdensome administrative requirements. The Agency's approach essentially seeks to "identify preserve" crops and should be rejected. The commenter suggests alternative proposals to address "existing agricultural land" including establishing baseline production of eligible. [[Docket number 2249.2, pp. 17-26]]

[[See docket number 2249.2, pp. 17-26 for the commenters" comprehensive discussion of EPA's proposal related to definitions of "existing cropland." Also see docket number 2249.1, pp. 3-4 and docket number 2232.1, Attachment 3 for additional discussion.]]

The commenter also believes that EPA should allow renewable fuel producers to rely on certifications by feedstock providers for all renewable biomass, including planted crops and crop residues and planted trees and tree residues. [[Docket number 2249.2, p. 28]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the recordkeeping requirements concerning demonstration that feedstocks meet the definition of renewable biomass are very onerous. Some simplifying assumptions should be made and applied that would significantly reduce the recordkeeping burden. The commenter noted that there are certain types of feedstocks that could be declared renewable by list. These would include those that clearly come from agricultural lands such as corn and soybeans. The burden of having every farmer provide documentation that then must get passed along to the renewable fuel producer seems great when essentially all of certain types of crops would fall into the renewable biomass category. The commenter encourages EPA to consider ways to reduce the burden associated with demonstrating feedstock classification. (2124.1, p.32)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter believes that Section 80.1451 contains onerous documentation requirements for renewable fuel producers. For each batch of renewable fuel produced, the renewable fuel producer would be required to maintain records to establish that the feedstock used meets the definition of renewable biomass as that term is defined in section 80.1401. [[Docket number 2393.1, p. 42]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) strongly encourages EPA to consider ways to reduce the burden associated with demonstrating feedstock classification. The proposed recordkeeping requirements concerning demonstration that feedstocks meet the definition of renewable biomass are very onerous. Some simplifying assumptions should be made and applied that would significantly reduce the recordkeeping burden. For example, certain types of feedstocks should be declared renewable by list. The burden of having every farmer provide documentation that then must get passed along to a grain elevator or the renewable fuel producer seems great when essentially all of certain types of crops would fall into the renewable biomass category. [[Docket number 3472.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2343
Organization: Osage Bio Energy
Comment:
The commenter (2343) states that the proposed rule requiring producers to certify feedstock as renewable biomass is cumbersome, at best, and will create a difficult administrative burden. The commenter believes that EPA should consider revising the rule to either eliminate or simplify the

requirement to certify feedstock as renewable biomass, or; establish an exemption for biofuels produced from winter grain crops. [[Docket number 2343, pp. 5 and 7]] [[See docket number 2343, pp. 5-7 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) recommends that instead of requiring mass amounts of paperwork, audits and segregation for the 99% of the biomass produced for renewable fuel production in compliance with the "non-native" and "actively managed" standards, EPA should instead focus on the 1% that might not be in compliance. The commenter states that renewable fuel producers and grain handlers could be supplied an inventory of land in their region/or nationwide that has been determined to not be in compliance or at risk. EPA can use satellite information and presently available maps to identify virgin lands in the United States. Owners of such land are also easily identified and could be notified. Similarly, renewable fuel producers could be given such maps and ownership records. The commenter believes that such information would be sufficient to warn the system not to take biomass from the operator of such land unless he or she verifies that they have segregated the harvest from such non-compliant land. [[Docket number 2363.1, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-2487
Organization: Abengoa Bioenergy Corporation
Comment:
The commenter (2487) believes that the proposal puts a heavy and unwarranted burden on feedstock providers by requiring proof that croplands used to create biofuel feedstock were in existence prior to EISA becoming law in 2007. But there's no risk that new lands will be cleared for feedstock for biofuel production and the rule would mean extra costs and inconveniences for feedstock providers. [[Docket number 2487, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-1975
Organization: Canadian Bioenergy Corporation
Comment:
The commenter (1975) believes that EPA should delay the "chain of supply" certification until a less burdensome tracking program is available. Allowing a delay in this chain of supply certification for feedstock land restrictions regulation until a cost benefit analysis is conducted on behalf of the biofuel producer to implement this section. The primary feedstock used for biodiesel production has been a fungible commodity. According to EPA's proposed rule, feedstock would suddenly be required to be containerized and not blended or mixed with the same grain from different fields from, perhaps, the same farm as part of the tracking program. This cost burden is prohibitive to the entire supply chain and is a regulatory structure that would stifle production agriculture. [[Docket number 1975, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment:

The commenter (2526) urges the EPA to adopt an inclusive and attainable approach towards the Renewable Biomass Definition and recordkeeping requirements. This will allow the cellulosic biofuels industry to fully achieve its potential for reducing greenhouse gases. The commenter makes the following points:

- EPA should opt for the least onerous approach towards enforcement of the land-use requirement - voluntary certification combined with satellite surveillance.
- Land use should allow innovations that enhance land's carbon sequestration. [[Docket number 2526.1, pp. 1-2]] [[Also see docket number 2526.1, pp. 9-11 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2244
Organization: Altrius Group. LLC
Comment:
Regarding verification of eligible renewable biomass, the commenter (2244) is concerned that by limiting the options for verification to a small set of accepted records, farmers in some sectors will benefit, while others may be unable to qualify because they do not have the right types of evidence. This is particularly true in the case of rangelands, which have fewer formal management practices in place and, therefore, fewer and different forms of evidence than cultivated lands. Furthermore, the types of documents EPA specifies may not be commonly used overseas, which would unfairly disadvantage producers in foreign countries who should receive equal treatment with respect to verification. The commenter supports the alternative approach EPA raises in its Proposed Rule, in which producers certify on their production reports that their feedstocks meet (or do not meet) the definition of renewable biomass and are required to maintain records to support their claims, but without specifying what those records would have to include, in order to grant maximum flexibility to producers to demonstrate their claims. [[Docket number 2244.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2612
Organization: Citizen (*sample of 478 comment letters received from mass comment campaign sponsored by American Soybean Association*)
Comment:
The commenter believes the proposed feedstock certification requirements are unnecessary and onerous.

Our Response:

In light of the comments received on the proposed renewable biomass recordkeeping requirements and implementation options, EPA sought assistance from USDA in determining whether existing data and data sources might suggest an alternative method for verifying compliance with renewable biomass requirements associated with the use of domestic crops and crop residue for renewable fuel production. Taking into consideration extensive publicly available data on agricultural land available from USDA and USGS as well as expected economic incentives for feedstock producers, EPA has determined that an aggregate compliance approach is appropriate for planted crops and crop residue from the United States.

Under the "aggregate compliance approach," EPA is determining for this rule the total "existing agricultural land" in the U.S. at the enactment date of EISA. EPA will monitor total agricultural land annually to determine if national agricultural land acreage increases above this 2007 national aggregate baseline Feedstocks derived from planted crops and crop residues will be considered to be consistent with the definition of renewable biomass and renewable fuel producers using these feedstocks will not be required to maintain specific renewable biomass records as described above unless and until EPA determines that the 2007 national aggregate baseline is exceeded. If EPA finds that the national aggregate baseline is exceeded, individual recordkeeping and reporting requirements as described below will be triggered for renewable fuel producers using crops and crop residue. We are confident that the aggregate approach will effectively implement the EISA renewable biomass provisions related to crops and crop residue, while also easing the burden for certain renewable fuel producers and their feedstock suppliers vis a vis verification that their feedstock qualifies as renewable biomass.

There are four main factors supporting the aggregate compliance approach we are taking for planted crops and crop residue. First, EPA is using data sets that allow us to obtain an appropriately representative estimate of the agricultural lands in the U.S. that are available under EISA for the production of crops and crop residue as feedstock for renewable fuel production. Second, USDA data indicate an overall trend of agricultural land contraction. These data, together with EPA economic modeling, suggest that 2007 aggregate baseline acreage should be sufficient to support EISA renewable fuel obligations and other foreseeable demands for crop products, at least in the near term, without clearing and cultivating additional land. Third, EPA believes that existing economic factors for feedstock producers favor more efficient utilization practices and bringing existing agricultural land into crop production rather than converting non-agricultural lands to crop production. Fourth, if, at any point, EPA finds that the total amount of land in use for the production of crops including crops for grazing and forage is equal or greater than 397 acres (i.e., within 5 million acres of EPA's established 402 million acre baseline), EPA will conduct further investigations to evaluate whether the presumption built into the aggregate compliance approach remains valid. Lastly, EPA has set up a trigger mechanism such that in the event that EPA finds in the future that there are more than the baseline amount of acres of cropland, pastureland and CRP land, then renewable fuel producers will be required to meet the same individual or consortium-based recordkeeping and reporting requirements applicable to other feedstocks used in the RFS2 program. Taken together, these factors give EPA high confidence that the aggregate compliance approach for domestically grown crops and crop residue will effectively implement the statutory obligation that feedstock volumes used to meet the renewable fuel requirements also comply with the definition of renewable biomass.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that EPA stated in the proposed rule the possibility of requiring a certification program for feedstocks that are used in renewable fuel production. However, EPA

did not provide a clear method to implement this certification despite the significant challenges it would present. (2360.1, p.6)

Our Response:

EPA agrees that the proposal lacked specificity regarding certain elements of the proposed feedstock verification requirements. In response to comments, and upon further deliberation within EPA, EPA has modified the proposed requirements considerably for the final rule, and has established detailed regulations explaining the types of documents and certifications to be obtained, the parties who must generate them, how and when reports related to feedstock verification are provided to EPA, as well as associated recordkeeping requirements.

3.3.3.4 Tree Plantations and Forestland

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) is most concerned about the proposed idea of certifying renewable biomass. The commenter disagrees that documentation of tree plantations already exist on the many forestland tracts involved in the supply chain, as suggested by EPA and recommends that monitoring land use at regional/state level on yearly/biannually may provide the best quality assurance. The commenter (2156) also recommends additional thought, research, and discussion on this topic. (2156.1.docx, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter believes that a true chain-of-custody tracking system is an overly burdensome verification option for forest-derived biomass.

Document No.: EPA-HQ-OAR-2005-0161-2349
Organization: Kentucky Division of Forestry
Comment:
The commenter (2349) does not believe that chain-of-custody tracking system would be efficient. The commenter suggests EPA to engage forest industry to develop a flexible tracking system based on state approved management plan to track use of slash associated with logging residues. (2349.pdf, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter feels responsibility of verifying biomass should reside with the renewable fuel producer and should include flexibility for producers and suppliers to choose among different

verification tools. The system should take into consideration that most forest land ownership in the U.S. is fragmented and held in small, private ownerships, and that brokers will aggregate supply from multiple sources, often in the form of chipped material, making a chain-of-custody system difficult to implement.

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
Regarding EPA's proposed tracking requirements for renewable biomass the commenter does not believe that renewable fuel producers should be required to track and document the origin of woody biomass and whether a particular tree plantation has been "actively managed." EPA should consider the use of satellite imagery to verify that current tree plantation land has been actively managed since December 19, 2007, and that renewable fuel is indeed produced using "renewable biomass" as defined by EPA (planted trees and slash from tree plantations located on non-federal land that have been actively managed since December 19, 2007). Alternatively, if EPA requires renewable fuel producers to verify qualified renewable biomass from planted trees, the commenter agrees with EPA's proposal to allow substantiation of "active management." [[Docket number 2472.1, pp. 11-12]]

Our Response:

EPA does not believe that the use of satellite imagery would effectively implement EISA's renewable biomass requirements with respect to woody biomass. Satellite imagery cannot identify the location from which a particular load of feedstock is derived. Although the final rule establishes an aggregate compliance approach for domestic planted crops and crop residues, EPA was not able to identify a comparable approach that would provide assurance regarding compliance with renewable biomass requirements for woody biomass that does not require tracking and documentation of the type that the comments disapprove of. However, the final rule does provide an option for renewable fuel producers to utilize an alternative tracking system involving the use of an independent third party to conduct comprehensive annual compliance surveys. EPA believes that this alternative approach could facilitate compliance for some producers, and is prepared to assist interested parties in developing a plan for such an alternative approach.

3.3.3.5 Verification Requirements for Non-Cultivated Feedstocks

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) believes that any approach EPA settles on to ensure that RINs are properly generated should only be applied for feedstocks directly cultivated from land. The four approaches described by EPA for ensuring that RINs are properly generated are discussed in the context of the land restrictions. However, there are feedstocks that qualify as renewable biomass

that are not cultivated from land, such as animal fats and waste yellow grease. The commenter believes that EPA should make it clear that these feedstocks and others not directly cultivated from land are not subject to the requirements under the verification program. (2149.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) believes that any approach EPA settles on to ensure that RINs are properly generated should only be applied for feedstocks directly cultivated from land. The commenter noted that the four approaches described by EPA for ensuring that RINs are properly generated are discussed in the context of the land restrictions. However, there are feedstocks that qualify as renewable biomass that are not cultivated from land, such as animal fats and waste yellow grease. The commenter believes that EPA should make it clear that these feedstocks and others not directly cultivated from land are not subject to the requirements under the verification program. (2364.1, p.4)

Our Response:

While EISA is more explicit about the origins of feedstocks cultivated from land than it is about non-cultivated feedstocks, it nonetheless limits renewable fuel feedstocks to those listed under the definition of "renewable biomass." For this reason, both the final RFS2 regulations require renewable fuel producers to obtain certifying documentation from their feedstock suppliers for any non-cultivated feedstocks, including animal fats and waste grease, that they claim qualifies as renewable biomass. This approach will help to ensure that RINs are properly generated for renewable fuel produced from all types of feedstocks, not just those cultivated from land.

3.3.3.6 Alternative Compliance Approaches

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) supports the proposal whereby the chain of custody requirement is eliminated by creating instead a baseline of land use. The commenter noted that the record keeping requirements outlined under §80.1451(6) will either eliminate most small biofuel producers or prevent any biofuel producer that uses an agriculture crop product that is widely traded in the market to be able to meet the recording requirements. The commenter believes that the Recordkeeping Requirements must be modified or few to no biofuel producers will be able to meet the requirements. (2549.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:

The commenter states that EPA should recognize that soybeans produced inside the U.S. by U.S. soybean growers are being grown on land cultivated for over 100 years. It is unreasonable to believe that land under cultivation for well over 100 years will cause new land use change.

Document No.: EPA-HQ-OAR-2005-0161-2100
Organization: American Soybean Association
Comment:
The commenter believes data from USDA should demonstrate that no new acres are being planted in the United States. There are laws and regulations already in place that prevent farmers from breaking new land if they participate in the federal crop programs administered by USDA. These conservation compliance and enforcement mechanisms already exist at USDA. The existing USDA rules, and the information collected by USDA in their administration of those rules, should be sufficient for EPA to ensure that the domestic feedstock being used in biodiesel production is from existing and eligible cropland.

Document No.: EPA-HQ-OAR-2005-0161-2463
Organization: National Farmers Union
Comment:
NFU does not believe that this level of burden is required to ensure new lands are not being converted to crop production. Farmers already have to report planted acres to USDA's Farm Service Agency. EPA should use existing USDA data to establish a baseline level of production that can be compared against the eligible lands established on December 19, 2007. On a yearly basis, EPA can compare actual feedstock usage for ethanol, as reported by renewable fuels producers against USDA data of feedstock production. This will validate that new domestic lands are not being cleared to produce feedstocks such as corn for fuel production.

Document No.: EPA-HQ-OAR-2005-0161-2516
Organization: Imperium Renewables
Comment:
The commenter believes the EPA requirements to comply with the existing cropland requirement is overly burdensome. Given U.S. land use requirements, increasing yields and production efficiencies, and the availability of existing cropland, it is highly unlikely that new lands in the U.S. will be cleared for purposes of RFS.

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter views the enforceability of land restrictions as particularly problematic and states that considerable flexibility must be afforded renewable producers to keep such restrictions from preventing the production of renewable fuels with RINs. The commenter suggests that the agricultural community and renewable fuel producers may want to consider something akin to the RFG Association Survey approach to demonstrate to EPA that such restrictions are being followed. A representative survey of feedstock deliveries could be audited on a periodic basis to confirm general adherence to the land restrictions without having to require the pedigree of each and every feedstock delivery to a renewable producer to be proved. The commenter believes the latter approach to be unworkable and likely to result in the production of significant amounts of

renewable fuel that will not be able to generate RINs simply due to a lack of documentation on feedstock pedigree. This will frustrate not only renewable producers, but also obligated parties and EPA in terms of having a workable RFS2 program. [[Docket number 2393.1, p. 43]]

The commenter suggests that EPA provide a phase-in period of several years where-in current renewable feedstock sources are deemed to be compliant with the feedstock land restrictions. This period will provide the agricultural community and renewable producers with adequate time to design and implement a survey program that meets the land restriction requirement to EPA's satisfaction. Without such a phase-in period, EPA may be forced to disqualify RINs and renewable fuels that were purchased in good faith. [[Docket number 2393.1, p. 43]]

[[See docket number 2393.1, pp. 42-44 for detailed discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter supports the alternative of bringing together renewable fuel producers and feedstock suppliers to develop a reliable and efficient quality assurance program.

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) believes that renewable fuel producers should not be required to track renewable biomass. The commenter strongly supports shifting the responsibility for land use and "renewable biomass" verification from renewable fuel producers to the regulating agency (EPA). The commenter suggests that EPA consider the use of satellite imagery to verify that current land use has not changed substantially from December 19, 2007, and that today's renewable fuel is indeed produced using "renewable biomass" as defined by EPA (biomass produced from land cultivated before December 19, 2007). [[Docket number 2472.1, p. 6]]

The commenter explains that currently in the U.S., very little land that was not previously cultivated is being used. Or is likely to be used in the future, to generate feedstock for renewable fuels. The majority of deforestation in the U.S. is due to the expansion of urban areas into uncultivated or forested areas. Moreover, the majority of new land being farmed is land coming out of the CRP program. The commenter finds it nearly impossible to envision a case where the vast majority of renewable fuel produced in the U.S. would not be produced from renewable biomass. Furthermore, EPA fails to take into account com growers' ability to continually produce a larger supply of com, even on shrinking acreage, through increased yields. The commenter adds that alternatively, if this is not acceptable to EPA, then EPA should consider other options to facilitate the ability of renewable fuel producers to demonstrate that the fuels that they produce meet the definition of "renewable biomass." [[Docket number 2472.1, p. 6]] [[See docket number 2472.1, pp 6-7 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:

The commenter (2136) supports Congressional intent that biofuels feedstock should not come from virgin prairie and similar lands; however, a workable and cost-effective system to ensure this requirement is met must be incorporated into the final rule. The commenter urges the Agency to work with the USDA to use an acreage baseline in which feedstock verification is only required if the baseline acreage is exceeded. Even in that case, the Agency should take a state-by-state or regional approach so that only the area realistically impacted would have to verify the lineage of its feedstocks. [[Docket number 2136.1, pp. 8-9]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that EPA should provide clear guidance to producers that propose certain documentation or records to demonstrate that their fuel meets the qualifying criteria. There are likely various existing forms of documentation upon which EPA can rely and, thus, limit the potential documentation burden created by EISA and the proposed RFS2 regulations. (2471.1, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) supports the proposal whereby the chain of custody requirement is eliminated by creating instead a baseline of land use. Marginal and strip mine lands should be taken into consideration in the baseline. The commenter adds that record keeping requirements outlined under §80.1451(6) will either eliminate most small biofuel producers or prevent any biofuel producer that uses an agriculture crop product that is widely traded in the market to be able to meet the recording requirements. The commenter believes that creating such a requirement is untenable and it will be overly expensive to create multiple crushing and processing facilities. Alternatively, the chain of custody requirement will most likely cause the price of feedstocks to increase, thereby having the effect of creating higher energy costs. The commenter contends that the requirement is tantamount to a closed loop biomass system of which very few have ever been successfully and economically or sustainably maintained. [[Docket number 2369.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter (1015) states that the primary feedstock used for biodiesel production has always been a fungible commodity. To overlay an extensive certification process for purposes of EISA's definition of "renewable biomass", will necessitate a procedure that may require feedstock to be containerized and not blended or mixed with the same grain from different fields from perhaps the same farm. The increased cost will rule out market competitiveness and facilitate a regulatory structure that would stifle production agriculture. [[Docket number 2123.1, p. 5]]

The commenter adds that a second approach that would simplify and yet ensure compliance is to construct new data points between known data points, interpolation. In this case, the known data

points are the total production acreage by feedstock and the RFS2 gallon requirements. The number of acres needed for fuel feedstock production, taking into account waste oils, can then be calculated. Measures can then be taken if the number of fuel feedstock acres exceeds land restriction criteria. [[Docket number 2123.1, pp. 5-6]]

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:
The commenter (2010) states that the primary feedstock used for biodiesel production has always been a fungible commodity. To overlay an extensive certification process for purposes of EISA's definition of "renewable biomass", will necessitate a procedure that may require feedstock to be containerized and not blended or mixed with the same grain from different fields from perhaps the same farm. The increased cost will rule out market competitiveness and facilitate a regulatory structure that would stifle production agriculture. [[Docket number 2010.1, p. 5]]

The commenter adds that a second approach that would simplify and yet ensure compliance is to construct new data points between known data points, interpolation. In this case, the known data points are the total production acreage by feedstock and the RFS2 gallon requirements. The number of acres needed for fuel feedstock production, taking into account waste oils, can then be calculated. Measures can then be taken if the number of fuel feedstock acres exceeds land restriction criteria. [[Docket number 2010.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Comment:
The commenter (2011) states that the primary feedstock used for biodiesel production has always been a fungible commodity. To overlay an extensive certification process for purposes of EISA's definition of "renewable biomass", will necessitate a procedure that may require feedstock to be containerized and not blended or mixed with the same grain from different fields from perhaps the same farm. The increased cost will rule out market competitiveness and facilitate a regulatory structure that would stifle production agriculture. [[Docket number 2010.1, p. 5]]

The commenter adds that a second approach that would simplify and yet ensure compliance is to construct new data points between known data points, interpolation. In this case, the known data points are the total production acreage by feedstock and the RFS2 gallon requirements. The number of acres needed for fuel feedstock production, taking into account waste oils, can then be calculated. Measures can then be taken if the number of fuel feedstock acres exceeds land restriction criteria. [[Docket number 2011.1, pp. 5-6]]

Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC
Comment:
The commenter (2013) states that the primary feedstock used for biodiesel production has always been a fungible commodity. To overlay an extensive certification process for purposes of EISA's definition of "renewable biomass", will necessitate a procedure that may require

feedstock to be containerized and not blended or mixed with the same grain from different fields from perhaps the same farm. The increased cost will rule out market competitiveness and facilitate a regulatory structure that would stifle production agriculture. [[Docket number 2010.1, p. 5]] The commenter adds that a second approach that would simplify and yet ensure compliance is to construct new data points between known data points, interpolation. In this case, the known data points are the total production acreage by feedstock and the RFS2 gallon requirements. The number of acres needed for fuel feedstock production, taking into account waste oils, can then be calculated. Measures can then be taken if the number of fuel feedstock acres exceeds land restriction criteria. [[Docket number 2013.1, pp. 5-6]]

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) requests that any certification system must not be administratively burdensome. The suggestion to have a baseline level is worth further consideration if it can reduce the administrative burden. (2016.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) suggests having a baseline if it reduces the burden and suggests that the requirements imposed on foreign producers should not be more onerous than those imposed on local producers. Foreign producers whose raw material is not for generating RINs must have an option not to provide documentary evidence of compliance or certification. Similarly, local renewable fuel producers should not be compelled to demonstrate origin of feedstocks if such biofuels are not intended to generate RINs. (2361.1.pdf, p.2, 3)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) proposes that EPA set a Renewable Biomass Allowance for Renewable Fuel Producers prior to the start of each calendar year in much the same way that they set a Renewable Volume Obligation (RVO) for Obligated Parties. Since each Renewable Fuel Producer is expected to submit a Production Forecast on an annual basis to assist EPA in determining the RVO for each category of renewable fuel, the volume and type of Renewable Biomass expected to be used in the production of the fuel would be known to EPA prior to the beginning of each calendar year. (1033.1, p.1)

The commenter believes that for situations where the volume of Renewable Biomass forecasted to be consumed is greater than the amount that could be reasonably produced on Existing Agricultural Lands, then a rationing or allocation of the allowances would have to be implemented and any purchase of feedstock in excess of the Renewable Biomass Allowance would be subject to the documentation procedures identified by EPA at that time. (1033.1, p.2)

Our Response:

After considering these comments and engaging in extensive dialogue with USDA, we are finalizing reporting and recordkeeping requirements comparable to those in the approach we discussed in the proposed rule for all categories of renewable biomass with the exception of planted crops and crop residue from agricultural land in the United States, which will be covered by the aggregate compliance approach discussed in Section II.B.4.c.iii of the preamble. Under the aggregate compliance approach, EPA has determined the total amount of "existing agricultural land" in the U.S. at the enactment date of EISA, which is 402 million acres. EPA will monitor total agricultural land annually to determine if national agricultural land acreage increases above this 2007 national aggregate baseline. Feedstocks derived from planted crops and crop residues will be considered to be consistent with the definition of renewable biomass and renewable fuel producers using these feedstocks will not be required to maintain specific renewable biomass records as described below unless and until EPA determines that the 2007 national aggregate baseline is exceeded. If EPA finds that the national aggregate baseline is exceeded, individual recordkeeping and reporting requirements will be triggered for renewable fuel producers using crops and crop residue. EPA believes that the aggregate approach, though different in details than some other alternatives suggested by commenters, will address the commenters' primary concerns that verification procedures for domestic planted crops should be substantially simplified from those that EPA proposed.

EPA has not identified similar simplified mechanisms that would be applicable to feedstocks other than domestic crops and crop residues, and is therefore finalizing an individual verification process that is similar in many respects to that proposed. However, EPA is also finalizing as an option an alternative approach in which EPA allows renewable fuel producers and renewable fuel feedstock producers and suppliers to develop a quality assurance program for the renewable fuel production supply chain, similar to the model of the Reformulated Gasoline Survey Association. While individual renewable fuel producers may still choose to comply with the individual renewable biomass recordkeeping and reporting requirements rather than participate in a quality assurance program, we believe that this preferred alternative could be less costly than an individual compliance demonstration, and it would add a quality assurance element to RFS2.

3.3.4 Requiring a Demonstration that Feedstocks Do Not Meet the Renewable Biomass Definition Prior to Producing Renewable Fuel Without RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the regulations should limit the ability of producers and importers to produce or import renewable fuel that does not have RINs. The RFS2 regulations should also take into account the existence of "RIN-less" renewable fuel in the RFS2 program. The commenter understands that the EPA is considering removing the requirement that renewable fuel producers and importers demonstrate that renewable fuel was not made from renewable biomass. If this is done, demonstrating that renewable fuel was made from renewable

biomass will in effect be optional and there will be renewable fuel with no associated RINs or "RIN-less" renewable fuel in the RFS2 program. (2124.1, p.36) [See Docket Number 2124.1, pp.36-37 for a more detailed discussion of this issue]

Document No.: EPA-HQ-OAR-2005-0161-2173.1
Organization: National Association of Forest Owners (NAFO)
Comment:
The commenter believes the proposed requirement for the renewable fuel producer to trace the source of their feedstock even if they do not generate RINs for that fuel is unnecessarily burdensome and impossible to satisfy.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
EPA proposes to require that all renewable fuel producers document the origin of their feedstocks regardless of whether they plan to generate RINs, reasoning that all eligible fuel will be needed to meet RFS2 mandates. While the commenter (2310) agrees that all producers that want to generate RINs for their fuel should be required to document the origin of their feedstocks, they believe that the market price for RINs should be a sufficient inducement to encourage all fuel producers that produced their fuel with eligible feedstocks to generate RINs for those volumes. [[Docket number 2310.1, p. 17]]

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter (2317) urges EPA to streamline the requirements for verification of renewable biomass feedstock and the requirements that apply to feedstocks used to generate non-RIN fuel. [[Docket number 2317.1, p. 36]] [[See docket number 2317.1, pp. 36-43 for extensive discussion of this issue.]]

Our Response:

EPA realizes that the implication of these proposed requirements is that renewable fuel producers would be caught in the untenable position of being forced to participate in the RFS2 program (register, keep records, etc.) even if they are unable to generate RINS because their feedstocks do not meet the definition of renewable biomass. After considering the comments received, EPA has determined that this requirement would be overly burdensome and unreasonable for producers. The burden stems from the requirement that producers prove that their feedstocks do not qualify if they are not generating RINs. If the data did not exist or could not be obtained, producers could not produce the fuel, even if no RINs would be generated. Thus, for the final rule, EPA is requiring only that producers that do generate RINs have the requisite records (as discussed in section II.B.4.c.i. of this preamble) documenting that their fuel is produced from feedstocks meeting the definition of renewable biomass. Non-RIN generating producers need not maintain any paperwork related to their feedstocks and their origins.

3.3.5 Use of Data from USDA Programs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] states they strongly encourage EPA to allow USDA to certify renewable biomass feedstocks. [[#2302 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter believes that certification of land that has been cleared or cultivated prior to enactment should be documented by USDA or other governmental agencies such that individual producers should not be required to have a document for every load of grain that is received into the facility. (2511.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2087
Organization: Ag Partners
Comment:
The commenter [[2087]] states that EPA already knows that 99 percent or more of the biomass produced for renewable fuel production will meet the "non-native" and "actively managed" standards of the law. EPA states that the onerous feedstock verification regimes proposed could be streamlined and simplified if they had access to USDA information already collected from producers. Surely the various bureaucracies of government can find a way to share what they already know. [[see docket#2087 p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2000
Organization: Galva Holstein Ag, LLC
Comment:
The commenter [[2000]] states that EPA already knows that 99 percent or more of the biomass produced for renewable fuel production will meet the "non-native" and "actively managed" standards of the law. EPA states that the onerous feedstock verification regimes proposed could be streamlined and simplified if they had access to USDA information already collected from producers. Surely the various bureaucracies of government can find a way to share what they already know. [[see docket#2000 p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) noted that EPA already knows that 99 percent or more of the biomass produced for renewable fuel production will meet the "non-native" and "actively managed" standards of the law. EPA states that the onerous feedstock verification regimes proposed could be streamlined and simplified if they had access to USDA information already collected from

producers. The commenter believes that surely the various bureaucracies of government can find a way to share what they already know. (2348, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
EPA states that the onerous feedstock verification regimes proposed could be streamlined and simplified if they had access to USDA information already collected from producers. The commenter (2363) suggests that the government bureaucracies find a way to share what they already know. S imilarly, at the renewable fuel level, the IRS already performs audits plant to make sure we produced the fuel for which tax incentives are applied.

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter noted that the intent of the statutory language and supporting proposed rules to limit biomass production to existing agricultural lands is good. However, NRCS land use categories are not intended for this purpose. A better mechanism would be to build on existing farm program mechanisms. If land cover is converted on lands subject to Sodbuster or Swamp Buster provisions of the farm program, then these acres should be excluded from the RFS market. This strategy would in fact better preserve those lands by creating a new market for the forage-type biomass produced on those lands. (2515.1, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters noted that land use and cropping history data will be needed to verify land eligibility. U.S. Department of Agriculture (USDA) can verify this land use and cropping history for EPA or for the renewable biomass purchaser without violating producer privacy by implementing a system similar to the one USDA has proposed to use with IRS to verify producer compliance with the adjusted gross income requirements in the Farm Bill. If USDA determines that it cannot share the needed information with EPA due to data privacy concerns, then EPA must require all landowners who wish to produce renewable biomass to sign a limited data privacy release waiver to allow EPA or the renewable biomass purchaser access to only the data needed to determine eligibility. (2129.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter [[2104]] states that EPA does not provide a clear method to implement this feedstock certification, and they must recognize the challenge it would present. These conservation compliance and enforcement mechanisms already exist at USDA. The existing USDA rules, and the information collected by USDA in their administration of those rules,

should be sufficient for EPA to ensure that the domestic feedstock being used in biodiesel production is from eligible cropland. EPA's proposal on the existing cropland requirement does not have practical application and will not work in practice as part of the day-to-day operation of producing biodiesel. Additionally, given U.S. land use requirements, increasing yields and production efficiencies, and the availability of existing cropland, it is highly unlikely that new lands in the U.S. will be cleared for purposes of the RFS. [[#2104.1 p.5-6]]

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) acknowledges that Congress inserted a provision into EISA that requires renewable fuels to be produced from biomass harvested from agricultural land cleared or cultivated at any time prior to EISA's passage, essentially prohibiting corn or other feedstocks from new cultivation to be used in ethanol production. The commenter is concerned about the bureaucratic red tape that may be associated with enforcement of this provision for both farmers and ethanol producers, in addition to the limits this provision places on land owners. This provision, while perhaps a well-intended if imperfect effort to achieve land conservation goals, is unworkable and unenforceable. The commenter encourages EPA to rely upon reporting tools currently used by USDA instead of creating a new set of regulations and reports to comply with this provision. (2101.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA should defer to existing USDA programs for farm use verification instead of suggesting new crop identity demonstration systems. The recommendation by EPA that a renewable fuel producer must be able to demonstrate that their renewable fuel was derived from renewable biomass has the potential to add significant cost to the renewable fuels channel. For the EPA to consider any other option for determining whether or not non-agricultural land is being utilized outside of existing USDA procedures for farm use verification, will add both cost and uncertainty to the channel. (2245.1, pp.29-30)

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that several agricultural organizations have recommended that EPA accept USDA data, regulations and existing laws to demonstrate that no new acres are being planted in the U.S. and that further certification requirements are unnecessary. While the

commenter supports simplifying this requirement, it could have the unintended consequence of drawing a distinction between, for example, U.S. and Canadian feedstocks used in similar production. (2360.1, p.6)

The commenter supports using USDA data for meeting feedstock certification requirements in the U.S., but is concerned this could lead to significant NAFTA implications. (2360.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) is concerned about the monitoring and enforcement of land conversion prohibitions. The commenter recommends that the USDA certify to EPA those lands that met the definition of actively managed agricultural land on the date of enactment using existing Common Land Unit and cropping history data. The commenter also recommends that EPA, in consultation with USDA, develop a process for renewable fuel feedstock producers who have not participated in USDA Farm Service Agency programs to register their land. (2508, p.2)

Our Response:

In light of the comments received on the proposed renewable biomass recordkeeping requirements and implementation options, EPA sought assistance from USDA in determining whether existing data and data sources might suggest an alternative method for verifying compliance with renewable biomass requirements associated with the use of crops and crop residue for renewable fuel production. Taking into consideration extensive publicly available data on agricultural land available from USDA and USGS as well as expected economic incentives for feedstock producers, EPA has determined that an aggregate compliance approach is appropriate for certain types of renewable biomass, namely planted crops and crop residue from the United States.

3.3.6 Third-Party Programs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2243.1) recommends that EPA adopt a qualification approach for the renewable biomass whereby a third party certifies the feedstock pathway from the field to the production facility through a documented chain of title, similar to the tracking approach utilized for the renewable fuel under RFS. (2243.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:

The commenter (2361) agrees that there is no existing third party certification system that exactly fits the requirements of RFS 2 and requests that any certification system must not be burdensome and other international standard (e.g., EU Directive on renewable energy sources and RSPO P&C) should be taken into account and not created double burden.

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should consider other options to facilitate the ability of renewable fuel producers to demonstrate that the fuels that they produce meet the definition of "renewable biomass." EPA should require producers to make a one time demonstration to EPA during the registration process to establish the typical source of feedstocks and the process at the facility. Thereafter, rather than requiring each producer to amass the records that EPA proposes for each feedstock for each batch, EPA should recognize certifications from third party organizations such as the Roundtable for Sustainable Palm Oil, the Roundtable for Responsible Soy, the Better Sugarcane Initiative, and the Roundtable for Sustainable Biofuels, as sufficient. (2505.2, p.11) (See Docket Number 2505.2, pp.11-12 for a discussion on the third party organizations mentioned above)

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) states that EPA has presented a number of options for verification of feedstock origins and encourages EPA to leverage existing programs in implementing the RFS2 as both the agricultural and forestry sectors are familiar with existing programs that independently verify collection and accounting practices. The commenter believes that an industry-run quality assurance program, taking advantage of existing third-party certification programs that include inspections of feedstock suppliers, facilities, and accounting practices, would be an effective and efficient means of ensuring that feedstocks qualify as renewable biomass. [[Docket number 2310.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) noted that EPA did not audit or require third party verifications under RFS1 and it should not under RFS2. The commenter believes that EPA should do spot audits or rely on IRS audits. (2348, p.2)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter also believes that renewable fuel producers should not be required to administer a Quality Assurance Program. This should administered by EPA. Renewable fuel producers do not necessarily have the expertise to set up and administer such a program. In addition, feedstock producers are more likely to comply with federal requirements. (2329.1, p.84)

Document No.: EPA-HQ-OAR-2005-0161-2493
Organization: American Forest & Paper Association
Comment:
The commenter (2493) feels that in regards to RINs, the approaches outlined in the Proposal are all impractical and ignore, or underplay, the extremely large volumes of very low value biomass which will be involved in production of renewable fuels. The commenter states that current pulp mill operations give some sense of the scale at which renewable biomass supply operations may operate once the technology becomes commercially viable. Pulp mills consume wood generally from within a 50 mile radius, on average consuming over 4,100 tons of pulpwood per day. This translates to roughly 164 truckloads delivered daily. [[see docket#2493.1 p. 8]]

The commenter states that Recognized third party certification systems provide a means of assuring that wood fiber used to produce pulp, paper, and wood products come from sustainably managed forests. Requiring compliance with one of these programs, including use of an auditable wood procurement system, can easily be matched up to the proposed rules registration (§80.1450) recordkeeping (§80.1451), reporting (§80.1452), and attest agreement (§80.1463) requirements to provide an assurance that fiber being converted into renewable fuels meets the requirements of the EISA mandates. [[see docket#2493.1 p. 9]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) encourages EPA to recognize certifications of third party organizations such as the RSPO, or the RSB, as sufficient to meet EISA's requirements concerning the definition of "renewable fuel." At a minimum, in lieu of the burdensome recordkeeping and certification requirements that EPA proposed, the commenter believes that EPA should provide renewable fuel producers the opportunity to establish a third party organization similar to the RFG Survey Association to audit compliance with the Act to ensure that biofuels are in fact made from "renewable biomass" without imposing requirements on individual producers to track every kernel of corn, bean of soy, or cane of sugar used to produce biofuels. (2505.2, p.14)

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter [[2494]] states that chain of custody tracking system, records and documents proving that woody feedstocks meet the criteria for renewable biomass will be problematic because most of these materials are not part of an existing commodity market. This will be particularly challenging because there will be a large portion of available woody material within any selected supply shed that is excluded from the definition of renewable biomass.

The commenter agrees with EPA that there is currently no third-party forest certification system that incorporates all of the complexities of the highly restrictive RFS2 renewable biomass definition. However, there are forestry certification systems available that represent accepted sustainable forestry practices. [[see docket #2492 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2124

Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that EPA should consider other options to facilitate the ability of renewable fuel producers to demonstrate that the feedstocks they use meet the definition of "renewable biomass." The commenter stated that EPA should require producers to make a one time demonstration to EPA during the registration process to establish the typical source of feedstocks and the process at the facility. Thereafter, rather than requiring each producer to amass the records that EPA proposes for each feedstock for each batch, EPA should recognize certifications from third party organizations. At a minimum, EPA should provide renewable fuel producers the opportunity to establish a 3rd party organization similar to the RFG Survey Association to audit compliance with the Act to ensure that biofuels are in fact made from "renewable biomass" without imposing requirements on individual producers to track every kernel of corn, bean of soy, or cane of sugar used to produce biofuels. (2124.1, p.23)

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter concurs with EPA's conclusion that existing third-party certification systems are not currently well-suited to verify that biomass from forests qualifies as renewable under the EISA definition. However, some certification systems are undergoing reviews of their standards to address the removal of biomass from forests, and that certification standards will be available once biomass markets have fully matured.

Our Response:

In the NPRM, we proposed not to solely rely on any existing third-party verification program to implement the land restrictions on renewable biomass under RFS2 for several reasons. These programs are limited in the scope of products they certify, the acreage of land certified through third parties in the U.S. covers only a small portion of the total available land estimated to qualify for renewable biomass production under the EISA definition, and none of the existing third-party systems had definitions or criteria that perfectly match the land use definitions and restrictions contained in the EISA definition of renewable biomass.

While the requirements of third party programs may not encompass all of the restrictions and requirements of EISA's renewable biomass definition at this time, as noted by some commenters, EPA agrees that it is possible that some third-party programs may alter their criteria in the future to parallel EISA's requirements. Therefore in the future we will consider the use of these programs in order to simplify compliance with the renewable biomass requirements. We encourage fuel producers to work to identify changes to such programs that could allow them to be used as a viable compliance option.

EPA is also finalizing an option to allow renewable fuel producers and renewable fuel feedstock producers and suppliers to develop a quality assurance program for the renewable fuel production supply chain, similar to the model of the successful Reformulated Gasoline Survey Association. While individual renewable fuel producers may still choose to comply with the individual renewable biomass recordkeeping and reporting requirements rather than participate

in a quality assurance program, we believe that this preferred alternative could be less costly than an individual compliance demonstration, and it would add a quality assurance element to RFS2. Those participating renewable fuel producers would be presumed to be in compliance with the renewable biomass requirements unless and until the quality assurance program finds evidence to the contrary. Under this rule, renewable fuel producers must choose either to comply with the individual renewable biomass recordkeeping and reporting described above, or they must participate in the quality assurance program.

3.3.7 Treatment of Foreign Renewable Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2329
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports requiring foreign producers to provide evidence regarding land use. Requiring such information can assist EPA in gathering data to further developing its lifecycle emissions analysis. (2329.1, p.84)

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) suggests having a baseline if it reduces the burden and suggests that the requirements imposed on foreign producers should not be more onerous than those imposed on local producers. Foreign producers whose raw material is not for generating RINs must have an option not to provide documentary evidence of compliance or certification. Similarly, local renewable fuel producers should not be compelled to demonstrate origin of feedstocks if such biofuels are not intended to generate RINs. (2361.1.pdf, p.2, 3)

Document No.: EPA-HQ-OAR-2005-0161-2012
Organization: Caribbean Basin Ethanol Producers Group
Comment:
The commenter (2012.1) recommends that the traceability requirements be modified to reflect the nature of how hydrous alcohol is collected, shipped, discharged, processed and stored. (2012.2, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2020
Organization: European Commission
Comment:
The commenter (2020) is concerned about the difference in treatment between materials moving within and outside U.S. The commenter (2020) argues that the chain of custody requirement for foreign fuels is lot more burdensome than the “mass balance” or book and claim” method used for U.S. based fuels. (2020.1, p, 2)

The commenter also notes that the proposal excludes the crops from converted grassland that has not been previously cultivated. The EC is aware that while the U.S. has a large stock of previously cultivated land not currently under cultivation, and good records to enable producers to demonstrate compliance with this criterion, the same is not true of all regions of the world. It is not clear that such a blanket ban can be justified either in terms of effects on carbon stocks or in terms of other environmental, social or economic impacts. The burdensome character of the proposed methods of verification of compliance (pp. 84-88) adds to the EC concern. Hence, the EC would like the U.S. authorities to clarify if they carried out any impact assessment that assessed the merits of this provision against alternatives and if so, if this analysis could be made available to the EC. (2020.1, p2)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
With regards to the foreign refiner/producer certification, the commenter (2132.1) appreciates the approach EPA is proposing to use to assure compliance, including the use of bonds. The commenter is concerned that the complexity of the system combined with the distant origins of the fuels may lead to a high risk of fraud, given the unproven nature of the proposed safeguards. The commenter believes that EPA should consider a more direct and active approach to certification to prevent non-uniform standards, misrepresentations and disparate impacts on domestic and foreign producers. (2132.1, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
Referring to EISA's definition of "renewable biomass" and the creation of a requirement for biofuel producers to verify that the source of their feedstock meets the requirements, the commenter (2137.1) believes that there is no need to establish additional requirements for the enforcement of the renewable biomass provision in EISA. The commenter believes that the nature in which the sugarcane feedstock must be produced facilitates compliance to identify the origin of the feedstock, one needs only to identify the mill, as its feedstock must come from nearby areas. [[Docket number 2137.1, p. 37]]

The commenter is pleased to work on established agreed-upon protocols for verification. In Brazil the verification process can be simplified by using remote sensing tools. The proposal advocated by Poet on July 21 concerning the establishment of Renewable Biomass Allowance for biofuel producers may present a reasonable solution. Alternatively, nearly every mill in Brazil must renew its operating license every two years with state authorities; the commenter recommends EPA consider using this regulatory process as part of its compliance mechanism. [[Docket number 2137.1, pp. 37-38]]

The commenter states that two areas of the "expanded" facility registration process need clarification in the Final Rule. First, EPA should permit the required independent engineering review to be conducted by an independent third party who is based in and licensed by foreign countries. Second, EPA should facilitate facility registration by allowing the registration of mills by holding companies or cooperatives. [[Docket number 2137.1, p. 38]]

Regarding the Proposed Rules prohibition of commingling of similar foreign-produced renewable fuel until it enter the U.S. market, the commenter (2137.1) is concerned about possible trade law violations and generation of additional costs for exports. The commenter recommends that EPA reconsider its approach and follow the example set by the European Union in the Renewable Energy Sources Directive by considering a mass balance approach. In addition, the U.S. IRS is working with U.S. agencies to harmonize import, production, and distribution codes in order to better track fuels; the commenter suggests that EPA explore how this effort might serve the Agency's compliance requirements. [[Docket 2137.1, pp.38-39]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that because of the substantial risk EPA is imposing on renewable fuel producers, they are likely to be unable to seek feedstock from outside the United States. EPA should implement a workable program to allow imports of feedstock, particularly in the case where there is a drop in U.S. production based on natural causes. [[Docket number 2249.2, p. 28]]

The commenter (2249.2) suggests that EPA implement a "baseline" proposal for feedstock imported from overseas and provides suggestions for how such a baseline proposal might work. The commenter believes that in instances where U.S. biodiesel facilities must import feedstock, imposing certification requirements on imported feedstock may unduly restrict the market. [[Docket number 2249.2, p. 27]]

Although the commenter believes that information may be available or can be obtained to determine baseline levels for other countries to assess whether imported feedstock meets the renewable biomass definition, the commenter recognizes that EPA does not have the same authority or ability to conduct oversight over foreign renewable fuel producers. In these cases, EPA should require foreign renewable fuel producers to provide additional evidence regarding land use. [[Docket number 2249.2, p. 28]]

Similarly the commenter supports EPA's proposal to require foreign producers to provide the location of land from which they will or have acquired feedstocks, along with historical satellite or aerial imagery demonstrating that feedstocks from these lands meet the definition of renewable biomass. [[Docket number 2249.2, pp. 28-29]]

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter comments that a Brazilian landowner can clear land and plant sugarcane for the production of ethanol to be exported to the U.S. and the ethanol will qualify for an advanced biofuel, yet forestland owners in the U.S. who do not have documented proof of "actively managed plantations" cannot plant native species of trees in forestlands to produce cellulose for conversion to any category of biofuels proposed by EPA (cellulosic biofuel, advanced biofuel,

renewable biofuel). The interpretation has provided incentive for land conversion in Brazil and a dis-incentive for regenerating forests in the U.S.

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) believes that the bond requirement should be limited to smaller companies without U.S. assets. EPA should look to its bonding requirements under last year's Phase III Nonroad Spark Ignition and Equipment Rule. There, EPA allowed companies that meet a U.S. asset test to avoid the increased cost and burden of obtaining a bond. The commenter recommends that EPA adopt a similar approach under the RFS2 program. [[Docket number 2310.1, p. 17]]

Document No.: EPA-HQ-OAR-2005-0161-2312
Organization: LyondellBasell Industries
Comment:
The commenter (2312.1) strongly supports EPA's proposal for "an alternative that would provide foreign renewable fuel producers an option of ... not participating at all in the RFS2 program." The commenter's support is based on the belief that the proposed restrictions on imported biofuels will cause more renewable fuels to be used in non-RFS2 markets, thereby reducing the supply of RINs available for satisfying RFS2 obligations and likely resulting in raising the market price of RINs. Since exported biofuels in various forms are expected to be a large non-RFS2 use of biofuels in the near future, the commenter also believes that relief from the requirements for "RIN retirement for exported renewable fuels" also needs to be applied to the non-certified, foreign biofuels that are imported for non-RFS2 purposes. (2312.1, p.3)

The commenter believes that these non-qualifying foreign biofuels should not be burdened with added RFS2 verification costs. In the U.S. market, the added verification and supply chain segregation cost for the renewable fuels required and sold in the RFS2 program will be captured and compensated in the associated RIN prices. Since obligated parties under RFS2 are required to obtain RINs to meet their Renewable Volume Obligations (RVOs), they anticipate absorbing the extra costs of the RINs program. The global biofuels market will not compensate or pay for any verification costs that are otherwise not required in global markets. (2312.1, pp.3-4) [[See Docket Number 2312.1, pp.5-7 for a detailed discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
Based on the preamble, the commenter (2345) states that EPA believes that a significant number of foreign producers will become subject to all aspects of the RFS2 program. The commenter believes that such action is unlikely and notes as with other fuel programs, foreign producers/suppliers typically rely on U.S. importers to comply with EPA regulatory regimes. In addition EPA is proposing only to allow U.S. importers to enter foreign-sourced renewable fuels and generate RINs if the renewable product comes from a registered foreign producer. The commenter believes that there will be few such producers and foreign-produced renewable fuel will become scare. The result is greater demand for RINs, more difficult and costly compliance,

and increased prices for transportation fuels for consumers. The commenter believes the RFS2 should not be administered in a manner that effectively forecloses foreign-sourced renewable fuels and offers recommendations to ensure that foreign-sourced renewable fuels remain available to the market. [[Docket number 2345.1, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that EPA should work with foreign renewable fuel producers and their importers to determine how best to meet the requirements related to the Renewable Biomass definition. The commenter agrees with EPA that the foreign producer is in the best position to verify certain criteria with high accuracy, such as feedstock, land-use and production processes. The commenter noted that EPA is working with certain foreign producers and stakeholders. The commenter encourages EPA to continue these discussions, and to include renewable fuel importers, to determine how best to meet these requirements. The commenter also believes that EPA should determine what documentation is currently required by its sister agencies and could be utilized under RFS2. (2471.1, pp.13-14) (See Docket Number 2471.1, pp.13-14 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2513
Organization: Institute for Agriculture and Trade Policy
Comment:
The commenter (2513) believes imported ethanol and biodiesel should not be allowed to contribute toward the RFS2 production mandates, because our dependence upon imported fossil fuels would be replaced by a dependence on imports. It is proving difficult to judge the environmental merits of our domestically produced biofuels. The U.S. is not ready to evaluate the climate and environmental performance of imported biofuels. A clear prohibition on imported biofuels in the RFS2 would help reduce direct land use changes abroad, while keeping the rural development benefits of biofuels development in the U.S. [[docket #2513.1 p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2514
Organization: Western Organization of Resource Councils
Comment:
Conversion [[2514]] of land to agro-fuels crops outside the borders of the U.S. is an issue that needs to be dealt with forcefully and directly. The obvious approach is by not permitting imports of ethanol and biodiesel. [[#2514.1 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
All requirements for foreign producers of renewable fuels related to “renewable biomass” should be comparable to those required of domestic producers, with the caveat that such provisions must ensure the same degree of certainty and provide the same opportunity for review and compliance assurance as requirements applicable to domestic producers. EPA must make sure that its regulations provide additional measures necessary to afford the same degree of enforceability

and certainty that renewable feedstocks from foreign countries meet the definition of renewable biomass as those from American biomass suppliers. [[Docket number 2383.1, p. 16]]

Our Response:

EPA is not at liberty to prohibit imported biofuels under the RFS2 program, as some commenters suggest. Since imported renewable fuels will be included in the program, EPA must ensure that the imported fuels conform to the same standards as domestic fuels. With regard to renewable biomass requirements, EISA does not distinguish between domestic renewable fuel and fuel feedstocks and renewable fuel and fuel and feedstocks that come from abroad. Thus, EPA must apply feedstock verification requirements to both domestic and foreign feedstocks. EPA believes that the renewable biomass recordkeeping and reporting provisions are necessary in order for EPA to ensure that RINs are being generated for fuel that meets EISA's definition of renewable fuel. Just as for domestic producers, foreign producers must maintain evidence that the fuel meets the GHG reduction requirements and is made from renewable biomass.

For the final rule, EPA is requiring that importers may only generate RINs for renewable fuel if the foreign producer has not already done so. The foreign producers must be registered with EPA under the RFS2 program, and must have conducted an independent engineering review. Furthermore, we are requiring that importers obtain from the foreign producer and maintain in their records written documentation that serves as evidence that the renewable fuel for which they are generating RINs was made from feedstocks meeting the definition of renewable biomass. The foreign producer that originally generated the fuel must ensure that these feedstock records are transferred with each batch of fuel and ultimately reach the RIN-generating importer. A requirement that importers maintain these renewable biomass records is consistent with the renewable biomass recordkeeping requirements imposed on domestic producers of renewable fuel.

Foreign producers that intend to generate RINs would be required to designate renewable fuel intended for export to the U.S. as such, segregate the volume until it reaches the U.S., and post a bond to ensure that penalties can be assessed in the event of a violation, as discussed in Section II.D.2.b. This ensures that the volume of fuel for which the RINs were generated ultimately is imported into the U.S. and not used elsewhere. Similarly to domestic producers of renewable fuel, foreign producers must obtain and maintain written documentation from their feedstock providers that can serve as evidence that their feedstocks meet the definition of renewable biomass. Foreign producers may also develop a third-party quality assurance program for their renewable fuel production supply chain, as described in the preamble. However, while domestic renewable fuel producers using crops or crop residues may rely on the aggregate compliance approach described below to ensure that their feedstocks are renewable biomass, this approach is not available at this time to foreign renewable fuel producers. EPA does not, at this time, have sufficient data to make a finding that non-domestically grown crops and crop residues used in renewable fuel production satisfy the definition of renewable biomass. Nevertheless, if, in the future, adequate land use data becomes available to make a finding that, in the aggregate, crops and crop residues used in renewable fuel production in a particular country satisfy the definition of renewable biomass, EPA is willing to consider an aggregate compliance approach for renewable biomass on a country by country basis, in lieu of the individual recordkeeping and

reporting requirements. We note that the Brazilian Sugarcane Industry Association suggests that a simplified feedstock verification system may be possible in Brazil, and we are willing to work with them and the Brazilian government to analyze this possibility.

With regard to the EC's comment that biomass should not be excluded from converted grassland that has not been previously cultivated, we note that the statute specifically imposes this limitation and EPA is not authorized to modify it. Accordingly, EPA has not conducted an impact assessment comparing the merits of this requirement and any alternatives. In general, these restrictions eliminate an incentive for converting native grasslands and other undeveloped lands to biofuel production, with the consequent carbon releases, loss of habitat for native species, and loss of biodiversity that would follow. EPA has attempted to fashion the feedstock verification mechanisms in a workable manner, and in general requires no more of foreign producers than of domestic producers. The one significant exception is with respect to planted crops and crop residues, for which the aggregate approach has been adopted for domestic feedstocks, but not for those grown overseas, for the reasons noted above.

In response to the comment that EPA's proposed feedstock certification program would make it difficult for producers to import feedstock, EPA notes that in general the same requirements apply for imported feedstocks as for domestic feedstocks (with the exception of domestic feedstocks qualifying for the aggregate approach.) Thus, parties importing feedstocks should develop similar arrangements with foreign feedstock producers for documents verifying feedstock origin as will be needed for producers using domestically-grown biomass as feedstock. EPA understands that there will be considerable initial effort needed to understand the new requirements and to develop standard operating procedures for providing needed documentation, but we expect that the process can run smoothly, without significant effort, once established. EPA will monitor the process during initial implementation, and is prepared to make modifications that prove to be necessary so as to facilitate and promote renewable fuel production that complies with statutory requirements.

With respect to the comment that foreign renewable fuel producers should not be required to participate in the RFS2 program, we note that the final rule only allows the generation of RINs for domestic or imported renewable fuel if a party demonstrates that the fuel is made from renewable biomass. If that demonstration is not made, RINs cannot be generated, but the biofuel may still be sold and used in the United States.

EPA disagrees with the commenter who expects that imports of RIN-generating renewable fuel will decrease as a result of implementation of the RFS2 program. EPA believes, on the contrary, that RFS2 will provide a level of certainty in renewable fuel demand in the U.S. that will stimulate additional renewable fuel imports.

With respect to UNICA's comment concerning the registration process and independent engineering review for foreign facilities, EPA is allowing them to be conducted by a licensed professional engineer or foreign equivalent that works in the chemical engineering field, provided the engineer provides EPA with proof of appropriate license. EPA is requiring each foreign production facility to be registered in order ensure from the beginning of the RFS2 program that the correct types of RINs are being generated by facilities.

UNICA's comment expresses concern about the proposed prohibition against commingling of similar foreign-produced renewable fuel until it enters the U.S. market. For the final rule, EPA is allowing renewable fuel produced at foreign facilities to be comingled prior to entry into the U.S. market if the importer is generating the RINs for the fuel, provided the importer has documentation that tracks the volume of fuel from the foreign production facility to the U.S. port of entry. However, EPA is maintaining the requirement that, in the situation in which it is the foreign producer that generates RINs for a batch of renewable fuel, that foreign producer must segregate that volume of fuel as it travels to the U.S. This requirement is necessary to ensure that the volume of fuel for which the RINs were generated actually makes it to the U.S.

NBB comments that EPA should use a "baseline" approach for imported feedstocks similar to the aggregate compliance approach EPA is applying to biomass from U.S. agricultural land. At this time, EPA does not have sufficient data to apply an aggregate compliance approach to foreign feedstocks. However, EPA will consider expanding the aggregate compliance approach to other countries if sufficient information and documentation becomes available.

LCSFA suggests that EPA should limit the bond requirement for foreign facilities to smaller companies without U.S. assets. EPA feels that the bond requirement is necessary for all foreign producers in order to ensure any judicial judgments against the companies for violations of the Clean Air Act can be satisfied.

3.3.8 Effect of "Renewable Biomass" Proposal on Achieving RFS Goals

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2388
Organization: Oglethorpe Power
Comment:
The commenter (2388.1) is concerned that the proposed rules, which provides for a narrow interpretation of the term "renewable biomass," does not adequately promote the policy goals upon which the EISA legislation is based and will not be sufficiently compatible with developing technologies aimed at reducing both our dependence on foreign oil and GHG emissions. The commenter noted that the term "renewable biomass" incorporates a number of key terms whose proposed definitions demonstrate that EPA has given insufficient consideration to the purposes of the RFS amendments and the potential impact of the proposed regulations. (2388.1, p.2) (See Docket Number 2388.1 pp.2-3 for a detailed discussion of the issues with the renewable biomass definition)

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) noted that the definition of "fallow land" may be in line with terminology used within the United States Department of Agriculture (USDA), however

marginal lands, lands that are not suitable for agriculture represent potential areas for growing energy crops. Given the large volumes of biofuel that will be required to fulfill RFS2, all land and resources possible, including MSW, will be required unless or until there are major advancements with algae oils or cellulosic biofuels. (2549.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2493
Organization: American Forest & Paper Association
Comment:
The commenter states the definition of renewable biomass is extremely limited and would severely restrict the availability of renewable fuel and the ability of the nation to achieve the RFS targets in EISA. As just one example, the fuels produced in the Old Town, Maine, cellulosic biofuels project included in the Proposal at Table V.B.23 (74 Fed Reg. 24990), might not qualify as renewable fuel because the hemicellulose from which the renewable fuel is derived may not have come from biomass that meets the statutory definition.[[see docket#2493.1 p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter supports the concept of sustainability criteria, but they are concerned that the regulatory structure that EPA has proposed will be unworkable. EPA's proposed approach will require elaborate new processes for biofuel producers to ensure that the feedstocks that they are using meet the definition of "renewable biomass" and it will likely discourage imports of biofuels, which could make the advanced biofuel mandate unworkable. (2505.2, p.14)

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter (2515.1) believes that the proposed definitions exclude many sustainable biomass resources from the nation's biomass mix. This will likely result in one or more of the following: 1) the industry fails to achieve Congress' goal of 16 billion gallons of cellulosic biofuel; 2) eligible resources, such as crop residues, are exploited well beyond sustainable limits; or 3) landowners will respond to perverse incentives to remove land from environmentally beneficial land uses. (2515.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2446
Organization: Minnesota Farm Bureau Federation
Comment:
EPA's definition of existing cropland creates onerous land use rules and record-keeping requirements that would bar many farmers from growing crops used for biofuel production and in so doing would reduce the value of a great deal of American farmland. The commenter states that contrary to congressional intent, EPA has expanded on the EISA's existing cropland requirement; while EISA defines existing cropland requirement from an historical perspective, EPA's definition is future oriented and will impede American agricultures participation and our biofuels industry.

Our Response:

We have made every effort to interpret EISA's definition of "renewable biomass" as flexibly as possible and in such a way that will allow the mandated renewable fuel volumes to be met without undermining the environmental protections the definition is meant to confer. We believe that the final regulations' requirements for verifying that feedstocks used in the production of renewable fuel meet the definition of "renewable biomass" provide sufficient flexibility for renewable fuel producers and feedstock producers/suppliers to comply with the requirements at minimal cost and administrative burden once the procedures are understood and become accepted operating practice in the industry.

One commenter took issue with EPA's proposal to require that planted crops and crop residue be eligible as renewable biomass only if taken form land actively managed as farmland on the date of EISA enactment and consistently thereafter. EPA has modified this provision in the final rule, requiring only that the land be actively managed on the date of EISA enactment.

We understand, as some commenters have noted, that the renewable biomass restrictions may effectively preclude some biofuel from participation in the RFS2 program. EPA has no discretion under the statute to waive or modify these requirements.

With respect to the comment that "marginal lands" should qualify for the production of renewable biomass, EPA responds that the renewable biomass requirements are specified in the statute, and EPA is not at liberty to modify them. EPA considered and rejected the concept of including rangeland in the definition of "existing agricultural lands" from which planted crops and crop residue may be obtained for renewable fuel production. EPA's rationale for this decision is described in the preamble to the rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) states that EPA's estimates of feedstock availability do not account for competitive uses of feedstock for electricity generation under most versions of a Renewable Electricity Standard. The commenter is concerned that feedstock constraints may inhibit the development of biofuels, and notes that diversion of biomass to energy production is an inefficient use of biomass. The commenter believes that EPA should provide an analysis of the most efficient use of biomass in the final rulemaking. Such an analysis would inform policymakers of the need to prioritize biomass availability among competing policy mandates. [[Docket number 2310.1, pp. 5-6]]

Document No.: EPA-HQ-OAR-2005-0161-2493
Organization: American Forest & Paper Association
Comment:
The commenter (2493.1) states that utilities and independent power generators are likely to increase their use of wood biomass in response to state and national mandates/incentives

regarding renewable energy and carbon emissions, and that this would present significant challenges in terms of woody biomass supply and forest sustainability. [[See Docket Number 2493.1, p. 6]]

Our Response:

We acknowledge that there could be competing needs for renewable biomass feedstocks as other requirements are put in place at the National, State, or local level for renewable electricity. However, we believe our projections of cellulosic biomass for producing renewable fuels are supportable even with such future competition. Although the idea of studying the most efficient uses of biomass has merit, such an undertaking is beyond the scope of this rulemaking.

3.3.9 Sustainability and Renewable Biomass Production

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters comment that EPA should include additional safeguards to limit the amount of crop residue that can be considered renewable biomass to only that amount that can be removed without damage to soil and water resources. The commenters also urge EPA to allow materials from stands planted to restore rare or historic native forest types within their historic range, as many of these forest types benefit from the incentive for active management created by the market for renewable biomass.

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512.1) supports the intent to restrict any clearing of natural habitat, and thus limit potential GHG emissions, as well as loss of biodiversity habitat and other ecosystem services. However, only allowing feedstock production on existing cropland will have the effect of placing biofuel feedstocks in direct competition with feed crops, and potentially push food and fiber crops onto newly-cleared land. The commenter suggests this risk be mitigated in two ways:
1) Create incentives to produce feedstocks on degraded or underutilized land without a current land-use that would be displaced (i.e., grazing livestock, shifting crops);
2) Allow limited clearing of new lands, providing an independent assessment of carbon stocks, ecosystem service value, biodiversity, and current land use is carried out. (2512.1, pp.1-2)

The commenter also believes that the issue of monitoring the cut-off date also needs to be examined. The commenter questions how compliance will be monitored, especially for

feedstocks such as corn, soy, and palm oil which are traded in the market, and which may have multiple uses beyond biofuels. (2512.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2513
Organization: Institute for Agriculture and Trade Policy
Comment:
The commenter (2513) says that based on current scientific assessments of feedstock impacts in these areas, the following preferences should be established in determining feedstock eligibility: Preferences for perennial feedstocks over annual feedstocks, preferences for non-genetically modified feedstocks, required conservation plans for biomass production, similar to the newly developed Conservation Measurement Tool, preferences for non-irrigated feedstocks, preferences and promotion of locally-owned, locally-supplied production facilities. [[docket # 2513.1 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2515
Organization: Minnesota Department of Natural Resources (MnDNR)
Comment:
The commenter does not want to incent the conversion of existing grass-based CRP, pasture, or rangeland acres to dedicated woody biomass production within the prairie biome. The commenter encourages EPA to explore rules that allow the use of trees in the context of ecosystem restoration, but do not contribute to the conversion or degradation of native plant communities. (2515.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) believes that in the interest of maximizing the opportunity for production of renewable fuels, EPA should exercise its discretion in allowing biomass that is sustainably produced for conversion into fuels. The U.S. Department of Agriculture 2008 farm bill contains a definition of renewable biomass that may serve as a broader example. [[Docket number 2374.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:
The commenter (2491) believes that the definition of renewable biomass should not preclude the land that would become carbon neutral or a net carbon sink and would not adversely impact biodiversity when biomass is grown and harvested. While the commenter recognizes that some portion of rangeland should not be used for crop production to maintain biodiversity and prevent soil erosion, they believe some portion of rangeland can potentially be used to grow crops while improving soil C-sequestration. The rangeland as a whole should not be precluded from the definition of renewable biomass. Even if a part of the rangeland that is suitable for growing biomass in a sustainable way is available, it should be eligible for biofuel production. Therefore, in addition to the land types that are eligible for growing renewable biomass according to the standard definition, the commenter believes that other types of land parcels that allow sustainable

production of biomass should also be included in the definition of renewable biomass. [[Docket number 2491.1, p. 3]]

The commenter (2491) notes that the RFS2 does not explicitly use sustainable criteria to regulate biomass production and processing and requests explicit provisions in the RFS2 that ensure that biomass is produced and processed in a sustainable way. Sustainable criteria similar to those of the UK Renewable Transport Fuel Obligation can be included in RFS2. [[Docket number 2491.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) suggests that more emphasis should be placed on the sustainability of biofuel feedstock production including environmental quality and land use change concerns. The commenter (2143) would like to see a greater emphasis on setting sustainability principles (for example, water quality and availability, soil conservation, and biodiversity), evaluation of management practices (for example, cropping management practices such as no-till and no-till plus cover crops) within the proposed rulemaking.

The commenter (2143) mentions that the EPA should not provide incentives for increased crop production on Conservation Reserve Program lands without sustainability principles in place and suggests a tracking method to verify environmental sustainability of all biofuel feedstock sources. (2143.2, p,4-5)

Document No.: EPA-HQ-OAR-2005-0161-2497
Organization: Wisconsin Department of Natural Resources
Comment:
The commenter (2497.1) noted that if rangeland is to be included, harvest of plant materials must be according to approved management plan that ensures sustainable harvest and management practices. Sustainable management planning should in fact be emphasized throughout the rule. Further suggestions for doing this are included below. The commenter also would suggest broader consideration of biomass harvesting on all lands (e.g., State and/or Federal lands) and management systems. The commenter believes that this should be conditional upon the development and use of sustainable harvest guidelines by each state. (2497.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter would like EPA to include additional safeguards that limit the amount of crop residue that can be considered renewable biomass to only that amount of crop residue that can be removed without damage to soil and water resources. Renewable fuel producers should be required to certify sustainability of harvesting in order to determine whether crops and crop residue may be considered renewable biomass. (2508, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata

Comment:
We commend the EPA in following EISA guidance on defining Renewable Biomass with the land use restrictions. However we are concerned that the land use restrictions may be too confining to currently known agricultural and forestry management practices. For instance, some forestry land owners are experimenting with inter-cropping of energy crops within the active forest plantation.

This type of land management encourages land productivity while also enhancing the carbon sequestration potential of the forest land. We are concerned that such innovative land management techniques may not be encouraged with the restriction on the type of land on which a crop must be grown. We urge the EPA to make a specific allowance for land use and non-food biomass production innovations that would enhance the carbon sequestration profile of existing land. [Docket number 2526.1, pp. 9-11.]

Our Response:

EPA appreciates the interest expressed by several commenters in incorporating requirements or incentives for sustainable feedstock production into RFS2 to protect water and soil quality and to promote other environmental considerations. Indeed, EPA is also interested in ensuring that increased renewable fuel production spurred by EISA's volume mandates does not lead to degradation in water, soil, or air quality. We also appreciate the comments suggesting that in some instances allowing additional biomass collection from certain areas would promote good stewardship of those lands and could help alleviate feedstock shortages or shortages of farm products that could otherwise be grown on agricultural lands devoted to feedstock production. We have made every effort to interpret EISA's definition of "renewable biomass" in such a way that will allow the renewable fuel volumes to be met while maintaining the environmental protections the definition is meant to confer. EISA's lifecycle greenhouse gas reduction threshold requirements for different types of renewable fuel will also help ensure that increasing renewable fuel production will not lead to increased greenhouse gas emissions.

However, beyond these provisions, EISA amendments to CAA 211(o) do not constrain the production of renewable fuel or its feedstocks, and therefore it would be beyond EPA's current authority to institute additional sustainability criteria, per se, such as those suggested by some commenters. Furthermore, EPA is not at liberty to make exceptions to the renewable biomass restrictions imposed by statute, even to promote beneficial environmental results. Commenters should note that EISA Sec. 204 (Environmental and Resource Conservation Impacts) instructs EPA, in consultation with USDA and DOE, to assess and report to Congress every three years on the impacts of RFS2 on environmental and conservation issues such as air quality, soil conservation, water availability, and ecosystem health, and to make recommendations for action to address any identified adverse impacts.

3.4 Renewable Fuel Exempt from 20 Percent GHG Threshold (Grandfathering)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) offers the following remarks related to §80.1403. Which Fuels are not subject to the 20% GHG thresholds? The language in this section is exclusive to ethanol and the commenter opposes this perspective. The commenter supports the inclusion and replacement of the word ethanol with renewable fuel producer. They feel this term would be consistent with the proper use of the intended provisions identified by the EISA. [[Docket number 1044.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter supports EPA's proposal that GHG grandfathering applies only to the general RFS, and not advanced biofuels, biomass-based diesel or cellulosic biofuels. (2124.1, p.26)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) agrees with EPA that any ethanol plant that is fired with natural gas, biomass or any combination thereof for calendar years 2008 and 2009 should be considered grandfathered and should be treated like grandfathered ethanol facilities for as long as they continue to burn natural gas, biomass or any combination thereof. (2124.1, p.25)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) understands EPA's proposed approach to grandfathering conventional biofuels to be that any fuel produced at the grandfathered facilities will qualify as a renewable fuel under the RFS2, provided it is within the original facility capacity (plus reasonable tolerances as below) and it is used to meet the conventional biofuel target. The commenter supports this interpretation as consistent with Congressional intent. Should the indirect land use modeling be applied and result in biobutanol not meeting the minimum 50% GHG threshold for an advanced biofuel, then biobutanol can only enter the market as a grandfathered conventional renewable fuel in the case of these facilities. (2146.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) urges EPA to apply the 20 percent lifecycle GHG reduction requirement to production volumes from existing facilities that exceed that facility's baseline volume and believes that the requirement must ultimately be applied to the baseline volumes of existing facilities.

The commenter (2143) suggests setting a date (such as 15 years from the enactment of EISA) that meets the definition of reconstructed in 40 CFR 60.15 on which baseline production volumes will be subject to the 20 percent lifecycle greenhouse gas reduction requirements. The

commenter (2143) supports separate analyses for each process type as there are a few process plant types subject to this provision. (2143.2, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) believes that while the statute governing the expansion of the renewable fuel standard allowed some fuels to be exempt from reducing greenhouse gases compared to gasoline or diesel fuel, similar to the original renewable fuel standard program, the changed program should still provide incentives for the exempt biofuels and biofuel production facilities to improve their environmental footprint. The benchmark appears to be primarily in the form of greenhouse gases, however, the commenter believes that improvements in overall emissions and/or reducing water consumption and pollution should also be recognized and rewarded, possibly by providing a greater number of RINs per gallon of biofuel produced [[Docket number 2369.1, p. 2]]

Our Response:

The exemption from the 20% GHG requirement applies to all renewable fuel – not just ethanol—from facilities which commenced construction prior to December 19, 2007 per the language in EISA. For those facilities which commenced construction *after* December 19, 2007 but prior to December 31, 2009, the language in EISA provides an exemption from the 20% GHG for facilities "deemed compliant" with EISA (i.e., they must consume only natural gas and/or biofuel). GEN-X commented that the exemption for "deemed compliant" facilities should include all renewable fuels, not just ethanol. The language in EISA specifically names ethanol rather than "renewable fuel" for "deemed compliant" facilities; therefore, EPA's regulations limit the exemption only to production of ethanol from such facilities.

New Generation Biofuels suggests that facilities that are grandfathered should be given credit for improving their "environmental footprint", so that reducing water consumption and water pollution, for example are recognized and rewarded, possibly by allowing a greater number of RINs per gallon of biofuel produced. The language in EISA provides for the exemption from the 20% GHG threshold for renewable fuel, as discussed above. It does not provide for awarding additional credits for improving environmental performance.

3.4.1 Definition of Commence Construction

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports using PSD definitions for commence construction. The commenter believes that EPA's addition of language to address multi-phased projects creates confusion, and EPA did not adequately explain what it meant by a multi-phase project. The

commenter also believes that foreign facilities should be required to certify compliance with these requirements, including having obtained all necessary permits, and should be required to provide documentation to support the certification, such as an affidavit or legal opinion. EPA cannot determine whether a foreign entity has obtained all necessary permits under foreign law. (2329.1, pp. 70-71)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) recommend that "new facility" for purposes of the RFS be defined as any renewable fuel production plant or renewable fuel production unit at any stationary source, including any renewable fuel production unit at an existing renewable fuel production plant, for which construction or reconstruction commenced after December 19, 2007. A "stationary source" is defined at CAA Section 111(a)(3) as "any building, structure, facility, or installation which emits or may emit any air pollutant." (2129.1, p.11)

The commenters recommend that "grandfathered" facilities must have all necessary preconstruction approvals completed and begun a continuous program of actual on-site construction that goes beyond land-clearing. For multi-phased projects, the commenters suggest that the commencement of construction of one phase does not constitute commencement of construction of any later phase, unless each phase is "mutually dependent" on the other as a technical matter (not just economically). The EPA must also put some limitations on the definition of construction. EPA should also establish a concrete obligation to begin or complete actual construction within a reasonable time frame, such as five years. Additionally, EPA should stipulate that if a proposed facility's pre-construction approval lapses or is withdrawn, it loses its existing source status. (2129.1, p.11)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) suggests that EPA identify "commencement of construction" by reference to the start of "beneficial operations", i.e., first commercial product shipped. (2146.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2419.1) noted that Table 1.5-15 on page 129 of the DRIA does not include the ethanol plant expansion volume for the Blair, NE facility in the under construction column. PSD permits from 7/7/05 and 9/8/06 are included that clearly signify that the expansion project meets the definition of Commence Construction as outlined in the proposed regulation. [[See Docket Numbers 2419.3 & 2419.4]] (2419.1, p.1)

The commenter (2511.1) proposes that the "commence construction" language shall encompass expansions at existing grandfathered facilities that commence construction prior to enactment provided the expansion is completed by 12/19/2009. These types of expansions should be "deemed compliant" if the construction is completed prior to enactment and operations are started within the "deemed compliant" period up and until 12/19/2009. (2511.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter agrees with EPA that the definitions of "commence" and "begin actual construction" specified in the Prevention of Significant Deterioration ("PSD") regulations, which draw upon definitions in the Clean Air Act, provide a clear designation that is broad enough to avoid facility-specific issues. Yet narrow enough to prevent new facilities (post-December 19, 2007) from being grandfathered. Furthermore, the commenter agrees with EPA's additional proposed language with respect to multi-phase projects. [[Docket number 2472.1, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) also believes that the grandfathered production levels should be based on permitted capacities even in cases where portions of a project may have been slowed or temporarily stopped, and even if the stoppage exceeds 18 months and the project cannot be completed within 36 months. (2360.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) offers the following recommendations:
-The definition of commenced construction contained in the PSD regulations is familiar to most people and is probably acceptable and should be easily documented through the air construction permitting process that facilities are subject to.

Our Response:

Commenters generally agreed with EPA's proposed definition of "commence construction". Renewable Fuels Association stated that the definition of multi-phase construction is confusing. The definition of "commence construction" is taken from the PSD definition, including the language on multi-phase construction. The definition has been in effect since the early 80's and the language on multi-phase construction is straightforward and has not caused confusion. Furthermore, there is sufficient precedent and guidance on the subject of "commence construction" to answer any questions that may arise concerning the definition. Since qualification for the exemption from the 20% requirement is contingent upon commencing construction prior to Dec 19, 2007, (or December 19, 2009 for some ethanol facilities) we do not believe it necessary to provide a separate definition of "new facility" as the Clean Air Task Force et al suggested.

The Clean Air Task Force et all suggests that if air permits lapse or are withdrawn, then the facility should no longer be considered an existing facility. The definition of "commence construction" requires that owners have all necessary preconstruction permits. In light of this comment we have specified in the definition of "commence construction" that the owner did not discontinue construction for a period of 18 months or more and completed construction within a reasonable time, not to exceed 36 months. Renewable Fuels Association states that the requirement for preconstruction permits to have been obtained should also apply to foreign facilities. We agree, and are requiring that owners of foreign facilities demonstrate that they have all necessary preconstruction permits required by the governmental entities as appropriate.

The Clean Air Task Force et al, states that the "reasonable time for completion of construction" should be specified in the regulations and they suggest five years. We have added a provision in the regulations that specifies that construction should be completed within three years of commencement, to qualify for completion of construction within a "reasonable amount of time". We are including the three year requirement in the regulation itself. We believe that three years is an adequate period of time to account for economic downturns that may cause disruptions in construction schedules.

Cargill suggests that for facilities in "deemed compliant" status, construction should be completed by December 31, 2009. We are requiring that facilities are "deemed compliant" if they commence construction after December 19, 2007 but prior to December 31, 2009, are fired by natural gas, biofuel or combination thereof, and produce only ethanol. We do not require that construction be completed prior to December 31, 2009, and in fact, we allow the same 36 month period as discussed above, as qualifying for a "reasonable period of time" in which construction should be completed. Since the regulation has not gone into effect, we believe it would be unfair to require facilities in "deemed compliant" status to have completed construction by the end of 2009.

Clean Air Task Force, et al suggested that on multi-phased projects, construction of one phase does not constitute commencement of construction of any later phase, unless each phase is "mutually dependent" on the other as a technical matter. The definition of "commence construction" specifies that "for multi-phased projects, the commencement of construction of one phase does not constitute commencement of construction of any later phase, unless each phase is mutually dependent for physical and chemical reasons only," We believe this language satisfies the commenter's concern.

Cargill noted that Table 1.5-15 on page 129 of the DRIA does not include the ethanol plant expansion volume for the Blair, NE facility in the under construction column and included copies of their PSD permits to show that construction commenced prior to December 19, 2007. We acknowledge this and have made changes which are reflected in Section IV.B.1.a of the preamble as well as Sections 1.5.1.1 and 1.5.1.4 of the RIA.

3.4.2 Basic Approach: Grandfathering Limited to Baseline Volumes

3.4.2.1 Limitation on Baseline Volumes

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) agrees with the definition of "nameplate capacity." (2132.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports EPA's proposed definition of the baseline volume to be the greater of the permitted capacity or annual peak capacity. The commenter believes that the full capacity provided for in the permit should be used. EPA should also eliminate its conversion factor, and add a tolerance level. A tolerance level allows facilities to become more efficient, which would provide additional GHG benefits. Ten percent is a reasonable tolerance value for EPA to apply. (2329.1, pp.69-69)

The commenter opposes using 2006 production as a potential alternative to define the baseline volumes. Production in 2006 is not representative of a facility's potential capacity, but only reflective of the demand that particular year. Nor does it recognize the improvements that can be made to increase production without expansion of the facility. (2329.1, p.69)

The commenter also supports EPA's proposal to treat "deemed compliant" facilities as grandfathered facilities. EPA should make clear that other types of facilities existing on the date of enactment (e.g., a chemical plant) that may be retrofitted to produce renewable fuel after enactment or a refinery that co-process renewable biomass with petroleum would not be eligible for deemed compliant status.(2329.1, p..73)

Document No.: EPA-HQ-OAR-0161-2383.1
Organization: Growth Energy
Comment:
The commenter states (pp. 4-6) that EISA does not permit EPA to limit participation by facilities that were in production or under construction when Congress passed EISA. The 20 percent GHG performance standard of section 211(o)(2)(A)(i) applies to only renewable fuel facilities that are "new." The GHG performance standard does not apply to renewable fuel from those facilities that ***are*** "already existing," on which construction commenced prior to the enactment of EISA. EPA impermissibly tries to cause existing facilities (those that commenced construction prior to December 19, 2007) to ***become*** subject to the GHG performance standard based on either changes to those existing facilities, changes in the volume of production at such facilities, or the passage of time. Nowhere does EISA provide that EPA may require facilities to meet the GHG performance standard if existing facilities are modified, do not complete construction within a certain duration, exceed certain volumes of production, or operate for a specified duration. The proposed rule would require any facility, new or existing, to meet the GHG performance standard based on increased production volumes, changes at existing facilities, or the passage of time. However, the only factor specified by Congress in the RFS 2 as

determinative of whether the GHG performance standard applies to renewable fuel from a facility is whether the facility is "new," with construction beginning after enactment of the RFS 2. EPA thus "takes other factors into account" than those to which Congress limited it—the proposed rule exceeds statutory authority. EPA cannot change the statute with additional limitations not present on the face of the text.

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) supports the basic option, but they believe further clarification is required to determine exactly how the baseline volumes would be calculated, and the ability of a company to challenge the revoking of a facility's "grandfathered" status if the EPA determined that the modifications had increased its GHG emissions. (2079.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) believes it is appropriate that EPA's RFS2 rule determines that ethanol plants that commenced construction before the EISA enactment date are grandfathered into the GHG reduction provisions, and that for calendar years 2008 and 2009, any ethanol plant that is fired with natural gas, biomass, or any combination thereof is deemed to be in compliance with the 20 percent threshold. As a result, there is a strong likelihood that the 15 billion gallons of corn ethanol per year called for under the RFS2 program will be deemed to comply with the GHG reduction requirement. (2101.1, p.2)

The commenter also believes that EPA has done a thorough analysis of grandfathering options under RFS2 for the 20 percent GHG compliance threshold, and believes the basic, proposed approach is workable although the commenter prefers indefinite grandfathering with no limitations placed on volume. If EPA proceeds to enforce the proposed approach, which provides indefinite grandfathering of the base volume of fuel from the plant, the commenter recommends that EPA allow ethanol plants, on a case-by-case basis, be granted permission for additional or new ethanol capacity or volume to be grandfathered if the production methods enable the plant to maintain its 20 percent GHG reduction threshold. (2101.1, p.17)

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) believes there is ample support for EPA to essentially grandfather existing facilities by deeming these facilities to be in compliance with the 50 percent reduction requirement. [[Docket number 1051.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2012
Organization: Caribbean Basin Ethanol Producers Group
Comment:
The commenter 92012.1) recommends that their organization be grandfathered as an eligible producer of advanced biofuels. (2012.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) believes that the commence construction provision is intended to help corn ethanol plants in the U.S. The commenter feels it should also apply to overseas facilities in Malaysia producing biodiesel from palm oil. Whatever expiration dates decided for such facilities in the U.S. should also be extended to foreign facilities. (2016.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that grandfathering should only apply to originally approved baseline volumes. The commenter believes that any new volume production, no matter how small, should be required to meet the minimum 20% GHG emissions reduction threshold. The commenter does not agree with EPA extending any tolerance to this baseline volume. (2124.1, p.25)

The commenter opposes any effort to apply grandfathering indefinitely or to allow any production increases above the approved baseline to be considered to be covered under the grandfathering provisions. (2124.1, p.26)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) agrees with EPA's choice to provide an "indefinite time period for grandfathering status but with restrictions to the baseline volume of renewable fuel that is grandfathered." The commenter suggests using the indefinite exemption option. EPA estimated the entire 15 billion gallons of Renewable Fuel as corn ethanol that will come from "grandfathered" or "deemed compliant" plants, so an indefinite exemption should not raise the overall amount of grandfathered fuel. If EPA believes some time limit is needed, the commenter recommends allowing 30 years or more; by contrast, we think 15 years is too short and may limit investments for improving operations or technologies. (2132.1, p.11)

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
The commenter (2140.1) believes that it is critical that historical financial investments made before enactment of EISA be protected. The commenter believes that EPA should appropriately grandfather existing ethanol production in recognition of these significant investments underway. The commenter believes that national renewable fuels policy must continue to recognize and support investments made under current regulations and technologies and recognize appropriate lead times in developing successive generations of regulations to which these facilities may be subject. (2140.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2146

Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) noted that many plants operate with only 10-20 days of downtime, therefore the 95% conversion rate would be the preferred choice. The commenter also noted that the term "new expansion" should be clarified to mean material spending on new assets which directly results in substantial additional output of product volume. (2146.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2168
Organization: First United Ethanol, LLC
Comment:
While the commenter (2168) is encouraged that the proposed RFS2 would grandfather all operating plants, they have to wonder about the application of that exception in the near future as well as compliance issues that they will ultimately face. (2168, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) generally supports the proposed grandfathering approach. The commenter agrees that EPA's proposal is a reasonable compromise to the greenfield approach (Alternative 5) to address the potential for unlimited expansions of a particular facility, while still giving facilities flexibility in their operations to include new feedstocks and to maintain and improve their equipment. This approach also is practical and provides a bright line definition that makes clear when the 20 percent requirement is triggered. [[Docket number 2249.2, pp. 33-34]]

Document No.: EPA-HQ-OAR-2005-0161-2304
Organization: Gevo Inc.
Comment:
The commenter (2304) supports EPA's basic approach on grandfathering of baseline volume of any renewable fuel. This basic approach would provide an indefinite extension of grandfathering and deemed compliant status but with a limitation of the exemption from the 20% GHG threshold to a baseline volume of renewable fuel. This approach is similar to how EPA has treated small refiner flexibilities under other fuel rules. Other proposed approaches create significant complexity and administrative burdens to the overall program with little to no benefit. The commenter recommends that EPA keep it simple to regulate and administer and thus simple to comply. [[Docket number 2304.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2337
Organization: California Air Resources Board
Comment:
The commenter (2337.1) agrees with the U.S. EPA recommendation that the baseline volume of renewable fuel exempt from the 20 percent GHG threshold requirement be the maximum volumetric capacity of the facility as allowed in any applicable state air permit or Federal Title V operating permit. The production of volumes greater than this amount should be subject to the twenty percent GHG reduction requirement.

Document No.: EPA-HQ-OAR-2005-0161-2363

Organization: Ag Processing Inc.
Comment:
The commenter (2363) recommends that the baseline volume should be the greater of the nameplate capacity or the permitted capacity of the facility. There may be situations where the facility is not permitted for the full nameplate capacity, but the nameplate capacity more fully represents the volume to which capital investment has been committed. [[Docket number 2363.1, p. 11]]

In addition, the commenter states that where air permit limitations on capacity are expressed in hourly, daily maximums, it is proposed that those numbers are extrapolated to an annual basis using only 7884 hours per year (90% of the total 8760 hours available in a year). The total 8760 hour per year should be used unless the permit limits the total days of operation to some number less than 365 days per year. While most facilities take an annual shutdown for some maintenance or repairs, the timing of the shutdown usually does not occur on the same days every year. Thus a facility may operate 365 days (8760 hours) in a row in between shutdowns. There are some situations where the annual peak production of a facility is proposed as the avenue for determining the baseline capacity. This may not fully represent the true capacity of the facility due to operational constraints such as market conditions or operating capital during the early years of operation. [[Docket number 2363.1, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) is generally supportive of the basic approach to the proposed grandfathering provisions. [[Docket number 2384.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
Regarding the time period that should accompany grandfathering, the commenter (2393) believes that without a time limit on grandfathering, there may be little incentive to further reduce GHG emissions from existing bio-refineries. The commenter also states that EPA has extended the definition of "grandfathering" far beyond what Congress intended. EPA should be using a 12 month time period after December 19, 2007 instead of a 36 month time period. [[Docket number 2393.1, pp. 40-41]]

The commenter agrees with the EPA interpretation of EISA that any ethanol plant that is fired with natural gas, biomass or any combination thereof for calendar years 2008 and 2009 should be considered grandfathered and should be treated like grandfathered ethanol facilities for as long as they continue to burn natural gas, biomass or any combination thereof. However, the commenter believes that grandfathering should only apply to originally approved baseline volumes. Any new volume production, no matter how small, should be required to meet the 20% GHG threshold. The commenter does not agree that EPA should extend grandfathering to any volumes above this baseline volume. [[Docket number 2393.1, pp. 40-41]]

Document No.: EPA-HQ-OAR-2005-0161-2419

Organization: Cargill Incorporated
Comment:
The commenter (2511.1) supports EPA's basic approach that would provide an indefinite extension of grandfathering and deemed compliant status, but with a limitation of the exemption from the 20% GHG threshold to a baseline volume of renewable fuel. The commenter also supports uniformly applying the grandfathering provisions to both the existing biodiesel and ethanol facilities relative to their individual GHG reduction targets in the EISA. (2511.1, p.4)

The commenter believes that facilities which are "deemed compliant" should retain their grandfathered status for the same length of time as grandfathered facilities. The commenter does not support the alternative in which after 2009, "deemed compliant" plants must meet the 20% threshold in order to generate RINS for renewable fuel produced. (2511.1, p.4)

The commenter supports the provision that changes to the renewable fuel production mix would remain grandfathered at grandfathered facilities and deemed compliant at deemed compliant facilities, including those facilities that have expansions which bridge the 12/19/07 - 12/19/09 timeframe provided the overall volume produced does not exceed the baseline production volume. (2511.1, p.4)

Finally, the commenter suggests that reporting information regarding process fuel, feedstock use and product volumes could be sourced from current reporting requirements including state compliance reports, federal Alcohol Tax and Trade Bureau reporting and Energy Information Administration reporting. (2511.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) supports EPA's basic approach in the Proposed Rule of providing an indefinite extension of grandfathering for facilities that commence construction on or before December 19, 2007. This approach is consistent with previous approaches established in the CAA and other EPA regulations. [[Docket number 2472.1, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-1052
Organization: Pennsylvania Energy Resources Group (ERG)
Comment:
The commenter (1052) requests that existing biodiesel production plants be grandfathered under EPA regulations as in compliance with the 50 percent reduction requirement. Because existing feedstock sources are already meeting production levels and capable of increases, there are no land use changes involved, and no significant emissions from any changes can be associated with existing production. All lifecycle analyses, including EPA's without international land use changes, show well over 50 percent reduction in emissions. The commenter believes there is ample support for EPA to grandfather existing facilities by deeming these facilities to be in compliance with the 50 percent reduction requirement. [[Docket number 1052.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-1005
Organization: Cotner Consulting Services

Comment:
While the commenter supports having the RFS2 regulations enforceable beginning January 1, 2010 so that the biomass-based diesel requirements are implemented, EPA should use its regulatory authority to exempt biodiesel facilities that were placed in service prior to December 19, 2007. (1005.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter believes that existing production of biodiesel should be deemed to meet the 50 percent GHG reduction requirement for biomass-based diesel. [[Docket number 2435.1, p. 2]] [[See docket number 2435.1, pp. 2-3 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2519
Organization: Canada, Foreign Affairs and International Trade
Comment:
The commenter (2519) notes that EPA has proposed a grandfathering provision for existing biofuels production facilities. Specifically, EPA has proposed that the production from plants which commenced construction in 2008 or 2009 and are fired with natural gas or biomass will be deemed to be in compliance for a 20% reduction in GHGs. The commenter points out that it is currently unclear whether foreign plants are included in this ruling. The commenter requests clarification and would like assurance that existing Canadian production and plants that are under construction will be granted the same opportunities. [[Docket number 2519.1, p. 2]]

Our Response:

Generally, commenters supported the basic approach in which the volume of renewable fuel from facilities qualifying for an exemption from the 20% GHG reduction requirement was limited to baseline volume. Growth Energy objected to the basic approach and argued that the statute's use of the word "new" and the phrase "after December 19, 2007" provided evidence that facilities which commenced construction prior to that date would not ever be subject to the threshold regardless of the volume produced from such facilities. We note first that the statute does not provide a definition of "new facility," and it is appropriate for EPA to define that term. For reasons described in the preamble, we believe that in interpreting this term an appropriate balance between providing an incentive to industry to build new facilities, including expansions, to modern environmental standards and protecting recent investments from the hardship that might be imposed as a result of the new program is to view increases above baseline volume of renewable fuel from a facility that qualifies for the exemptions to be deemed produced from a new facility that is not subject to the exemption. .

Growth Energy also states that EPA's interpretation of EISA is contrary to Congressional intent because the "statute induced ethanol manufacturers (and manufacturers of other renewable fuels) to invest in plants and equipment designed to meet the renewable fuels mandate. Congress, in passing EISA, sought to protect these investments by not making existing plants subject to new GHG performance standards that were not in effect when such plants were funded, designed, and built." The commenter argues that our regulations as proposed fail to

offer such protection by retroactively penalizing early-stage renewable fuel producers. We believe that the discussion in the NPRM makes clear that this comment is not correct. We stated in the NPRM that a guiding principle in drafting these regulations was to offer protection for historical business investments that were made prior to the enactment of EISA. We conducted a survey of ethanol plants in operation, as well as those not yet in operation but which commenced construction prior to December 19, 2007. The results of our survey indicated that it is likely that production capacity of ethanol from all facilities that qualify for this exemption will likely equal or exceed 15 billion gallons--the amount of renewable fuel that is not advanced biofuel or cellulosic ethanol which is required to be added to transportation fuel per the new RFS requirements. Since the baseline volume of the facilities qualifying for the exemption is very likely to be 15 billion gallons, we do not agree with the commenter that subjecting increases above the baseline volume could retroactively penalize early-stage renewable fuel producers. Furthermore, facilities will seek to ensure that the desired and realistically planned capacity of their facilities will be reflected in applicable environmental permits. Our final rule provides that baseline volume is to be determined by reference to such permits, rather than actual past production, unless this is not feasible. Therefore, the regulations do not have any retroactive punitive effect, but instead are designed to establish the exemption at a level that will provide appropriate protection to past investments.

Ag Processing stated that the baseline volume should be the greater of the nameplate capacity of the permitted capacity of the facility. We had proposed in the NPRM that nameplate capacity be defined as permitted capacity, but that if the capacity was not stipulated in any federal, state or local air permit, then the actual peak output should be used. We have decided that since permitted capacity is the limiting condition, by virtue of it being an enforceable limit contained in air permits, that the term "nameplate capacity" is not needed. Thus, baseline volume will be based on 105% of the permitted capacity, and in its absence, 105% of the actual peak output. The 105% represents a tolerance which is discussed in Section 3.4.3.3.

We are defining actual peak capacity to be the maximum annual volume produced for any of the five calendars prior to 2008 for facilities for which construction commenced prior to December 19, 2007. For "deemed compliant" facilities, the actual peak capacity is based on the maximum output achieved during the any calendar year during the first three years after startup.

We had solicited comment on how to convert volume output to annual if the permit expresses maximum rated volume output on an hourly basis. Ag Processing commented that although there is downtime, it doesn't always occur on an annual basis, and thus recommended using the full 8,760 hours per year. We understand that there may be years that there is downtime, but such an approach would not account for those years in which downtime does occur. Typically uptimes for ethanol production facilities average 95% per year. Thus, we used a 5% downtime and will require that the hourly output be multiplied by 8,322 hours per year to obtain the annual output, when such is not specified in permits.

Pennsylvania Energy Resource Group (ERG), R.W. Heiden, and Cotner Consulting Services commented that existing biodiesel production plants be exempt under EPA regulations from the 50% GHG reduction requirement applicable to biomass-based diesel. We believe that the language of the statute is clear that the exemption applies only to the 20% GHG reduction

requirement. Thus, the final rule does not provide exemptions for the GHG reduction requirements specified for cellulosic biofuel, biomass-based diesel or advanced biofuel.

3.4.2.2 Changes at Facilities that Increase GHG Emissions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) noted that while EPA's regulation of expansions at existing facilities may be reasonable, Congress intended to grandfather entire plants and did not intend to regulate modifications to the existing equipment. The Act provides incentives to promote improvements and efficiency to reduce GHG emissions, and regulating modifications would create a disincentive for facilities to seek to become more efficient or to add equipment that would reduce GHG emissions. EPA should not limit a facility's flexibility to adjust its operations and maintain its grandfather status. (2329.1, pp.69-70)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:

The commenter notes that the only example EPA provides as potentially troublesome from a GHG emission perspective is a facility switching from natural gas to coal. This, however, would require substantial investment and is not likely to occur. Also, EPA indicated that the opposite would occur, noting plants will "transition from conventional boiler fuels to advanced biomass-based feedstocks" and pursue combined heat technology. Thus, the commenter believes EPA should not limit a facility's flexibility to adjust its operations and maintain its grandfather status. [[Docket number 2249.2, p. 35]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter recommends that changes or process improvements which improve or decrease GHG emissions, whether the changes facilitate achievement of the 20% GHG reduction threshold or not, should not cause a revocation of the grandfathered or deemed compliant status of a facility. (2511.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2337
Organization: California Air Resources Board
Comment:
The commenter recommends that facilities lose their grandfathered status if they modify their operations resulting in an increase in GHG emissions. Moreover, "grandfathered" and "deemed compliant" status should expire on December 31, 2022. Following this date, all facilities should

be subject to the 20 percent threshold requirement in order to generate Renewable Identification Numbers (RIN). (Page 3)

Out Response:

Generally, commenters did not support a provision that would result in facilities losing their exemption status if modifications they made to their operations resulted in an emissions increase in GHG emissions. RFA pointed out that this would amount to regulating modifications and could result in a disincentive for facilities to increase efficiency or to add equipment that would reduce GHG emissions. We believe the comment has merit and also believe there are many variations within a plant that cannot be adequately captured in a table of fuel and feedstock pathways as we proposed (see 74 FR 24927). Implementing such a provision would create questions of accounting and tracking that would need to be evaluated on a time-consuming case-by-case basis. For example, a facility that switched from natural gas to coal, but increased the efficiency of operation elsewhere, may argue that that the increased efficiency offset the decrease due to the fuel switch. National Biodiesel Board commented out that it is not common for such fuel switches to occur. Facilities that fire natural gas will tend to keep using natural gas, rather than switching to coal. For the reasons discussed above, we have decided not to implement that option. We note, however, one exception to this, in the case of deemed compliant facilities. Such facilities are deemed compliant if they burn only natural gas, biomass or a combination of both. Switching to coal would terminate their exemption status, because by definition they would no longer meet the definition of "deemed compliant".

3.4.2.3 Comments on Allowing Tolerance Limit on Baseline Volume

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter would support a tolerance on baseline volume that is the greater of 120% of nameplate capacity, demonstrated maximum annualized capacity or annualized volume as permitted on current air permit. The commenter also supports the grandfathered status being valid for an indefinite time period, for the original volumes plus reasonable tolerances as described above. Volume above and beyond the tolerance amounts would be subject to the 20% GHG threshold. (2146.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter generally supports the proposed definition of the baseline volume, but believes that EPA should include a tolerance value to address improved efficiencies in facility operations. A tolerance level also allows facilities to become more efficient, which would provide additional GHG benefits. Although EPA suggested 10 percent may be appropriate, the commenter believes that 20 percent is a reasonable tolerance value for EPA to apply. Twenty percent also gives

facilities more incentives to increase their efficiencies, which will result in energy savings. On the other hand, the baseline value should not be based only on 2006 production, as this is not representative of a facility's potential capacity, but only reflective of the demand that particular year. Further, the commenter believes EPA should make clear that the facility must be a renewable fuel facility that was producing renewable fuel prior to enactment. [[Docket number 2249.2, p. 34]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter supports the 10% debottlenecking increase to the baseline volume as proposed in the preamble. Any volume exceeding the baseline (plus 10% debottlenecking) would be subject to the 20% GHG reduction threshold.

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) believes that the rule should grandfather an existing facility up to the permitted capacity and allow for a 20% tolerance on baseline value to account for such things as potential improvements in production efficiencies.

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter states that baseline volumes for grandfathered facilities should be based on maximum monthly production with a 10% tolerance and believes that there is no justification for establishing an overly restrictive definition of facility-specific grandfathered capacity. The commenter believes that EPA should define the baseline volume for grandfathered facilities as the actual maximum monthly production during any operating month that occurred prior to the effective date of this Proposed Rule, plus 10%. Once the baseline volume as defined above is exceeded, the increase above baseline volume would be subject to the 20% GHG reduction requirement in order to generate RINs. [[Docket number 2472.1, pp. 9-10]]

Our Response

Most commenters favored the concept of a tolerance, although some favored 10% and others 20%. When we had solicited the comment about a tolerance, we were keeping open all options for structuring the basic exemptions, including the options for an expiration of the exemption. In light of our final decision to exempt baseline volume for an indefinite period, we have decided that a 10% (and 20%) level is not appropriate for this regulation for the following reasons: 1) our decision to interpret the exemption of the baseline volume of renewable fuel from the 20 percent requirement will extend indefinitely; thus, any tolerance provided could be present in the marketplace for a considerable time period; 2) increases in volume of 10% or greater could be the result of modifications other than debottlenecking, and 3) we are allowing baseline volume to be based on the maximum capacity that is allowed under state and federal air permits. With respect to the last reason, facilities that have been operating below the capacity

allowed in their state permits would be able to claim a baseline volume based on the maximum capacity. As such, these facilities may indeed be able to increase their volume by 10 to 20 percent by virtue of how their baseline volume is defined. We believe this is appropriate, however, since their permits should reflect their design, and the fuel resulting from their original pre-EISA (or pre-2010, for deemed compliant facilities) design should be exempt from the 20% GHG reduction requirement.

We do recognize and agree with commenters that some allowances should be made for minor changes brought about by normal maintenance which are consistent with the proper operation of a facility. EPA is not aware of a particular study or analysis that could be used as a basis for picking a tolerance level reflecting this concept. We believe, however, that the value should be relatively small, so as not to encourage plant expansions that are unrelated to debottlenecking. We believe that a 5% tolerance level is consistent with these considerations.

3.4.2.4 Restriction of Deemed Compliant Facilities to Produce Only Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) states that the discussion of the 20% threshold recognizes no linkage between ethanol production and grandfathering for facilities operating or under construction prior to December 19, 2007. The language for the "deemed compliant" facilities that commenced construction in 2008 and 2009 comes from EISA 2007 210(a)(1). This language does suggest a requirement that the deems compliant facility be an ethanol plant in calendar years 2008 and 2009 but does not require that the plant remain an ethanol plant in future years. [[Docket number 2384.1, pp. 6-7]]

The commenter recommends the following relevant principles for evaluating conversion of an exempt ethanol facility to the production of different renewable fuel:
-Protection of historical investment.
-Avoidance of long-term backsliding on environmental performance.
-Encouragement of new technologies. [[Docket number 2384.1, pp. 6-7]]

Our Response

The language in EISA is specific that "deemed compliant" facilities are exempted from the 20% GHG threshold only if the plants use natural gas, biomass or combination, and that only ethanol is produced. The language is straightforward and provides no indication that different renewable fuels may be produced after 2009 as the commenter suggests. We note, however, that facilities that commenced construction prior to December 19, 2007, are not restricted to only ethanol production to qualify for the exemption. We apply the exemption, however, only to that volume of renewable fuel that does not exceed baseline volume.

3.4.3 Alternative Options

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:

The commenter (2079.1) with respect to option 2, or expiration of grandfathered status after 15 years, believes that this option is tolerable, as it is clear and concise in its scope, and leaves no doubt as to what may or may not qualify for "grandfathering." The commenter believes that option 3 is more tolerable than option 2, as the criteria is even clearer. The commenter finds option 4 interesting, but again, would create many of the same problems of a facility being unable to integrate cellulosic production technology into an existing production facility without risking being excluded from grandfathering and thus RIN generation. With regards to option 5, or indefinite exemption and no limitations on baseline volumes is the most preferred, as it enables industry to innovate and increase advanced renewable biofuels production capacity, without the compliance burden and risk of being disqualified by the EPA for any hybrid solutions and/or integration that might be the most efficient solution. (2079.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests the EPA consider grandfathering only those facilities that have shown consistent production and operation and consistent demonstration of meeting ASTM quality specifications for the 12 months prior to enacting RFS2. The facilities should be capped at the then current operating limits of the legally permitted capacity at the time RFS2 is enacted. The facility should also be able to document from historical testing data that it was able to produce at the permitted capacity. Expiration of grandfathering would then follow 15 years after EISA enactment as in EPA proposal. This would allow currently financially viable facilities with significant investments to continue in operation and support the mandated levels of renewable fuels. This boundary would also provide for adequate market pricing signals which are necessary to incent new investment in more sustainable projects with genuine GHG reductions that meet EPA requirements. [[Docket number 2106.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
Regarding regulations governing the grandfathering of conventional renewable fuels in EISA, the commenter (2130) supports EPA's limiting grandfathered volumes to the best three-month average during the first two years of operation. Moreover, the grandfathering should sunset no later than 15 years after enactment of EISA (no later than 2022. [[Docket number 2130.1, pp. 10-11]]

Document No.: EPA-HQ-OAR-2005-0161-2393

Organization: American Petroleum Institute (API)
Comment:
Regarding the time period that should accompany grandfathering, the commenter (2393) believes that without a time limit on grandfathering, there may be little incentive to further reduce GHG emissions from existing bio-refineries. The commenter also states that EPA has extended the definition of "grandfathering" far beyond what Congress intended. EPA should be using a 12 month time period after December 19, 2007 instead of a 36 month time period. [[Docket number 2393.1, pp. 40-41]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter does not believe that grandfathered facilities should be exempted indefinitely and agrees with the 15 year expiration of exemption for all grandfathered facilities. The commenter also agrees that biofuel facilities should lose their grandfathered status if they make any changes that result in an increase in GHG emissions for the baseline volumes. The commenter believes that EPA should limit grandfathering to only the fuel pathways that applied in 2007. The commenter also agrees that if coal-fired units are replaced on grandfathered facilities, they must be replaced by natural gas and/or biomass-fired units. (2124.1, p.25)

The commenter also agrees that EPA should require grandfathered facility owners to annually report, starting in 2010, the expenses for replacements, additions and repairs and that EPA should use these reports to determine when the facility effectively becomes new due to rebuilding or modernization. (2124.1, p.25)

The commenter also agrees that EPA should require grandfathered facility owners to annually report, starting in 2010, the expenses for replacements, additions and repairs and that EPA should use these reports to determine when the facility effectively becomes new due to rebuilding or modernization. (2124.1, p.25)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes that once EPA has published the GHG thresholds and fuel pathways for biofuels, this will largely influence the future behavior of an existing plant. Without a time-limit on grandfathering, ethanol plants may have little or no incentive to further reduce GHG emissions. The commenter adds that EPA has extended the definition of "grandfathering" far beyond what Congress intended; EPA should use a 12 month time period after December 19, 2007 instead of a 36 month time period. [[Docket number 2233.2, p. 44]] [[See docket number 2233.2, pp. 43-44 for the commenter's detailed discussion related to EPA's grandfathering scenarios.]]

The commenter agrees with EPA that grandfathering provisions do not apply to advanced biofuels, biomass-based diesel or cellulosic biofuels. [[Docket number 2233.2, p. 47]]

Document No.: EPA-HQ-OAR-2005-0161-2374

Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
In principle, the commenter (2374) does not support grandfathering of facilities as they believe that all biofuels should be superior to the petroleum baseline. Such a waiver will result in unfair commercial advantages without GHG benefit. As to practical implementation, the commenter suggests such waivers have specific limited period with a critical focus on the objectives of reducing the carbon intensity of transportation fuels and reducing the nation's reliance on petroleum derived transportation fuels [[Docket number 2374.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:
The commenter (2491) does not think that there should be an indefinite extension of the grandfathering provision, even with limitations. [[Docket number 2491.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2497
Organization: Wisconsin Department of Natural Resources
Comment:
The commenter (2497.1) supports Option 2, which is the expiration of the grandfather exemption 15 years after EISA enactment, industry-wide (~2022). The commenter also supports the provision of removal of grandfather status for currently operating facilities if they switch to a process fuel or feedstock resulting in a net increase of greenhouse gas (GHG) emissions. The commenter also supports allowing a 10% increase in a facility's baseline before triggering revocation of grandfather status. (2497.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should limit the exemption to the volumes of fuels produced at qualifying facilities as of the date of enactment, and EPA should sunset the exemption. Both of these limitations to the exemption are consistent with congressional intent. Congress clearly intended the renewable fuels provisions of EISA to result in greenhouse gas emission reductions. It is consistent with that intent to limit the exemption to the volumes produced at the date of enactment. (2505.2, p.3)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) generally supports EPA's proposed approach, but believes alternatives (1), (2) and (3) go against the statutory language and Congressional intent. The commenter believes that EPA's Alternative 5, referred to as the Greenfield Approach, best expresses the statutory language and Congressional intent. (2329.1, p.67) [[See Docket Number 2329.1, pp. 67-68 for a detailed discussion of Alternative 5]]

With regards to Alternative (1), the commenter believes that it ignored the language and intent of the statute. EPA cannot determine if a facility is "new" based on actions dating as far back as the

"startup" of the facility. The purpose of a grandfathering clause is to protect existing investment. Under this proposal EPA would require facilities to account for actions taken well before the EISA was enacted. This undermines the purpose of a grandfather clause. EPA must also clarify the reporting requirements under this approach. In particular, costs of routine maintenance and repair should not be included in such assessments. Also, facilities should not be required to find records of costs dating back to "startup" of the facility. If EPA goes down this road, it should limit the time period to consider costs to post-enactment, which at least recognizes the fact that Congress sought to protect pre-EISA investment, if not comply with the statutory provisions. (2329.1, pp. 71-72)

With regards to Alternative (2) & (3), the commenter also believes that it is contrary to the language and intent of the statute. The 15-year limit is based on an underlying assumption that facilities are reconstructed over a set period of time–an estimated 15 years for ethanol plants. This may not be factually correct. The statute expressly refers to "new facilities" and making existing facilities "new" on a date certain beyond the dates in the statute is illegal. EPA simply has no authority to place a time limit on the grandfathering provided by Congress. The commenter believes that the 15 years is wholly arbitrary. Imposing time limits on the grandfathering provision undermines the purpose of a grandfathering statute to protect pre-enactment investment. (2329.1, pp.72-73)

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
With regards to option 1, in which facilities are considered new if they meet the definition of reconstruction as defined by the EPA, the commenter believes that such a provision would eliminate the possibility of any renewable fuel production facility electing to integrate a cellulosic or second-generation ethanol production technology into their process. (2079.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests the EPA consider grandfathering only those facilities that have shown consistent production and operation and consistent demonstration of meeting ASTM quality specifications for the 12 months prior to enacting RFS2. The facilities should be capped at the then current operating limits of the legally permitted capacity at the time RFS2 is enacted. The facility should also be able to document from historical testing data that it was able to produce at the permitted capacity for a reasonable time period. Expiration would then follow 15 years after EISA enactment as in EPA's proposal. This would allow currently financially viable facilities with significant investments to continue in operation and support the mandated levels of renewable fuels. This boundary would also provide for adequate market pricing signals which are necessary to incent new investment in more sustainable projects with genuine GHG reductions that meet EPA requirements which we presume is the primary goal. [[Docket number 2106.1, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)

Comment:
The commenter (2249.2) believes that Alternative 1 (Reconstruction) and Alternatives 2 and 3 (Time Limited Grandfathering) are contrary to the statute. [[Docket number 2249.2, p. 35]]

The commenter states that Alternative 1 is overly burdensome and ignores the intent of Congress to grandfather "facilities." Moreover, requiring facilities to provide information to EPA regarding any action it takes to maintain their facility is overly burdensome, and creates disincentives for increasing a plant's efficiency and reducing its overall GHG emissions. This approach should be rejected outright. [[Docket number 2249.2, pp. 35-36]]

The commenter adds that similarly, Alternatives 2 and 3, which propose to end grandfathering after 15 years, should be rejected outright. The 15-year limit is based on an underlying assumption that facilities are reconstructed over a set period of time. This may not be factually correct and is irrelevant based on the statutory language. This approach does not give meaning to Congress' use of the words "new facilities" in that it makes existing facilities "new" on a date certain, even if they have not been reconstructed, and undermines the purpose of a grandfathering statute to protect pre-enactment investment. The commenter believes that EPA has no authority to place a time limit on the grandfathering provided by Congress. [[Docket number 2249.2, p. 36]]

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2362) offers the following recommendations related to four of the five alternative approaches:
This concept of using "reconstruction" for retiring grandfathered volumes does not work under RFS2. RFS2 may require replacement of equipment with entirely different processes. There is no allowance for switching to more economical fuels. There is no "cost-effectiveness evaluation." There are no set impact thresholds for any increase in emissions.

- This is one of the most blatant violations of EPA's own stated goals in the proposed rule. EPA states "At the same time we also want to offer protection for historical business investments that were made prior to enactment of EISA.
- No proposal could contradict EPA's stated goal more than the idea of using New Source Performance Standards (NSPS) to interpret the EISA Grandfather Clause.
- Ethanol plants have been operating since the late 1970s and early 1980s. These plants will have had numerous upgrades and expansions in the past 25-30 years in order to stay competitive and comply with ever increasing safety, health and environmental regulations.
- Even if an old plant has been completely rebuilt prior to the date of enactment such business decision should surely not be interpreted as thereby disqualification for grandfathering.
- Nowhere does EISA say that EPA should revoke the grandfather clause after ANY period of time. EPA's proposals to revoke the clause goes beyond the law and is clearly designed to kill any future growth in corn ethanol.
- EPA has relied on conjecture from construction and engineering companies that producers will upgrade existing plants with equipment that will somehow bring such

> plants in under the 20% cap for "new" plants. In fact, EPA's proposals-taken in their entirety, will put a chilling effect on any further investment in existing corn based ethanol plants. [[Docket number 2363.1, p. 12]]

Regarding debottlenecking, the commenter notes that a facility is typically permitted at its bottlenecked capacity. The nameplate capacity of a facility could be determined by the highest capacity of the "significant" production components of a process, as long as the cost of debottlenecking does not exceed 25 percent of the cost of the existing facility. [[Docket number 2363.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) is concerned about the 15-year sunset provision discussed in the proposed rule. The commenter believes that limiting the grandfathering provision by either a sun setting provision or an overly restrictive definition of baseline volume will impede, and possibly prevent, the orderly financial recovery of the com-based ethanol industry. [[Docket number 2472.1, pp. 8-9]] [[See Docket number 2472.1, pp. 8-9 for extensive discussion of the commenter's concerns related to Grandfathering.]]

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:
The commenter (2491) believes that of five additional options presented for grandfathering facilities, option (2) is the most appropriate provision since it protects the business interests, and is less costly to implement, monitor and verify. This option puts less burden on facility operators with regard to record keeping, and also provides an incentive to improve or modify the processes. Therefore, when the grandfathering provision expires after 15 years, the grandfathered facilities would be in a good shape to meet the 20% GHG reduction requirement. The option (2) can be imposed industry-wide so that facilities small or big will not be discriminated. [[Docket number 2491.1, p. 2]]

Our Response:

Some commenters supported the option of an expiration date, specifically API, NPRA some refining companies and others. Renewable Fuels Association, the National Biodiesel Board, Ag Processing and several other commenters did not support that option, nor the reconstruction and facility options (Options 2 and 3).

Generally, commenters who supported an expiration of the exemption did so because of concerns that the basic approach of providing an indefinite exemption would not provide any incentives to bring these plants into compliance with current standards. They also objected to plants being allowed an indefinite exemption despite the fact that such plants have long since paid off their investors. Commenters who did not support the expiration option, opposed it because they felt it was a violation of the statute. Valero Energy claimed that such a limit

would "impede, and possibly prevent, the orderly financial recovery of the com-based ethanol industry."

EPA believes that it would enhance the environmental protection goals of the Act to establish an expiration date for the exemption, and that, on the other hand, such an approach may lead to closures of plants that might find it too expensive to retrofit at the end of the exemption period. Such a result would not further the energy independence goals of the statute. Thus, a decision in either direction could both enhance and detract from important goals of the statute. With these factors in mind, we have decided not to adopt one of the exemption options for two primary reasons. First, our approach to limiting the exemption to baseline volumes means that there is less of a justification for an expiration of the exemption than if we had chosen an option such as exempting all volumes of fuel that could be produced into the indefinite future from qualifying facilities and their expansions. Second, we find the approach closer to the text of the statute, which does not specifically suggest a temporal limitation.

There were few comments addressing the "facility" approach, and the indefinite grandfathering approach in which the exemption status is not limited to baseline volume, but to whatever volume of renewable fuel the plant may produce. With respect to the latter option, the Renewable Fuels Association stated that such approach best expresses the statutory language and Congressional intent. However, we see nothing in the text of the statute to suggest that the expanded production from facilities that qualify for the exemption, and which may be based on major construction into the indefinite future, should also qualify for the exemption. We believe that the approach we have selected for the final rule will provide appropriate protection to existing investments, while requiring that new volumes be produced in accordance with the GHG standards specified in EISA.

3.5 Generation of RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2412
Organization: Xebec Adsorption Inc.
Comment:
The commenter (2412.1) proposes that EPA lead the world by including a requirement for the suppliers of fossil-based natural gas to generate RINs, calculated as a percentage of that portion of the product that the entire industry supplies for use as transportation fuels. We recommend that EPA apply this requirement industry wide, to all suppliers of Natural Gas. This will serve to share the burden of cost and not dissuade any specific gas supplier from selling small volumes of gas to fledgling NGV fuel providers. The commenter believes that this strategy will encourage the continued growth and expanded environmental benefits of the industry. (2412.1, p.4)

Our Response:

CAA 211(o) specifies that only renewable fuels are valid for meeting the volume mandates. The statute does not provide authority for EPA to allow fossil-based natural gas to generate RINs, regardless of whether that natural gas is used in transportation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) believes that each RIN should continue to be generated by the producer or importer of the renewable fuel, as is the case under the RFS1 program. (2146.1, p.2)

Our Response:

While we examined various approaches to the designation of RIN generators in the RFS1 rulemaking, we did not take comment on alternatives to the final RFS1 approach in the RFS2 NPRM. We continue to believe that the RIN system operates most efficiently when RINs are generated by producers and importers of renewable fuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2548
Organization: Xyleco, Inc.
Comment:
To provide the legal certainty necessary for innovation, EPA should make clear in the final rules that, even in the event of litigation, (1) pathways remain approved until modified following the procedures of the final rules, (2) RINs generated by producers following an authorized pathway remain valid, and (3) producers who produce in good faith in compliance with those approved pathways are not vulnerable to compliance sanctions.

Our Response:

The pathways in the lookup table in §80.1426(f) for which D codes have been assigned remain valid for RIN generation until modified through a notice-and-comment rulemaking. In the event of a court-ordered suspension of any portion of the RFS2 regulations, or during the period of any litigation, the court would indicate whether and under what conditions pathways in the lookup table at §80.1426(f) would continue to be valid for RIN generation.

3.5.1 Equivalence Values

3.5.1.1 Supports Energy-based Approach to Equivalence Values

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) requests that RFS2 continue to use the RFSI Equivalence Values for Biofuels on the basis of energy content. This will support the marketplace demand for Biofuels above their specified minimum. (0994.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that the energy-content-based equivalency values are appropriate. (2110.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) supports retaining the energy density-based approach to equivalence values. An energy density-based approach helps provide a level playing field for all existing and future potential renewable fuels. The commenter prefers the simplest approach, which would be to provide weighting factors and the factored RIN volumes would be used to meet the standards (i.e., the biomass-based diesel standard). (2124.1, p.21)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) states that EPA's RFS1 equivalence values for the various renewable fuels based on energy density is a reasonable mechanism and should be retained to encourage the use of higher energy density fuels. [[Docket number 2130.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) believes that equivalence values should be based on the energy and renewable contents of each renewable fuel against a baseline of denatured ethanol, consistent with the approach used under the original RFS program. The commenter also believes that EPA is correct to convert volumes of biomass based diesel to ethanol-equivalent volumes. The commenter also agrees with EPA's proposal to treat the denaturant in ethanol and the nonrenewable portion of biodiesel as de minimis, thus counting these portions as part of the renewable fuel compliance volume. (2132.1, pp.6-7) [[See Docket Number 2132.1, pp.14-15 for a detailed discussion on equivalence values]]

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:

The commenter (2143) recommends that the current method of generating RINs based on equivalent amounts of fuel energy must be retained. The commenter (2143) argues that the volume based program provides an inappropriate market advantage to low volumetric energy content renewable fuels.(2143.2, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports retaining the energy-based approach of the RFS1 program. (2145.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) recommends continuing the use of Equivalence Values as under RFS1. This approach is consistent with Congressional intent to support use the development and use of advanced biofuels, and is an appropriate measure of the biofuel's ability to replace overall fossil fuel use and impact on the transportation sector. (2146.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) agrees with option one, which would continue to apply equivalence values based on the energy content and renewable content of each renewable fuel in comparison to denatured ethanol, consistent with the approach under RFS1. The commenter also believes that this should continue to apply to the biomass-based diesel category. (21491.1, p.3)

The commenter noted that if the second option is chosen, and all liquid renewable fuels are counted strictly based on their measured volumes, the commenter believes the non-renewable content of the fuels should be treated as de-minimus. The main reason is that this approach would simplify recordkeeping for us and other renewable fuel companies. (2149.1, pp.3-4)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) supports retaining the current energy based equivalence values. (2154.1, pp.5-6)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes that the concept of equivalence values, the weighting of renewable fuels volumes to account for differences in energy content, made sense for RFS1 and makes sense for RFS2. EPA should continue this practice. The use of equivalence values is necessary for the total and advanced renewable category because many different renewables will be combined in these categories. The commenter further states that it is essential that cellulosic

diesel get some credit for the extra energy it supplies to U.S. transportation and the refinery based renewable diesel should get credit for the extra BTUs it provides. [[Docket number 2233.2, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-2337
Organization: California Air Resources Board
Comment:
The commenter (2337.1) recommends that U.S. EPA calculate equivalence values for fuels based on the energy content (ethanol equivalent gallons) and not on volume. The use of energy equivalence values will create a more level playing field for the production of different fuels from the same feedstock.

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes the equivalence values should be based on a fuel's energy content rather than its volume—this approach is more consistent with the program goal of displacing fossil fuel. Using a volume-based equivalence value would put the fuels capable of displacing the largest amount of fossil fuels at a cost disadvantage. [[Docket number 2358.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) agrees that equivalence values need to be applied based on the energy content and renewable content of each renewable fuel in comparison to denatured ethanol, consistent with the approach under RFS1. The commenter believes that this should continue to apply to the biomass-based diesel category. The commenter believes that a change in how Equivalence Values are applies could negatively impact the value of Dynamic Fuels" product. A change would also represent a flawed fix. The commenter noted that if EPA chose the second option, and all liquid renewable fuels are counted strictly based on their measured volumes, then the commenter believes the non-renewable content of the fuels should be treated as de minimus. The main reason is that this approach would simplify recordkeeping for us and other renewable fuel companies. In addition, because the non-renewable content is typically a small fraction of the overall volume of each alternative fuel, little benefit would be gained from the precision. (2364.1, pp.3-4)

Document No.: EPA-HQ-OAR-2005-0161-2365
Organization: Neste Oil Holding, Inc
Comment:
The commenter (2365.1) believes that the existing methodology for calculating equivalency value in the Renewable Fuel Standard remains very relevant and should not be altered. (2365.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2384

Organization: BP America (BP)
Comment:
The commenter (2384) agrees with EPA's assessment of this issue in the RFS1 regulations and agrees with maintaining the use of equivalence values for RFS2. The commenter believes that equivalency values based on energy content and renewable content are the appropriate yardsticks for determining how different types of fuel deliver the goals of RFS2. [[Docket number 2384.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports EPA's use of fuel energy content as the basis of establishing RIN equivalence values and adds that equivalence values should be uniformly applied to all renewables, regardless of production means or use location. This approach was used in the RFS1 regulations and should be continued under RFS2 as a sound basis for weighing the relative energy contribution by the mandated renewables. [[Docket number 2393.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) supports the continuation of the current EPA approach basing the equivalence values on the energy content and renewable content of each renewable fuel in comparison to denatured ethanol, which is consistent with the approach under RFS1. This approach is also consistent with other energy sectors for non liquid-energy fuels such as biogas and renewable electricity. The commenter is concerned that the failure to utilize an energy density approach will lead to the diversion of feedstocks away from fuels and toward other energy sources, thus making it more difficult to reach the gallons mandated under the statute. (2408.1, p.2)

The commenter encourages EPA to simply take the current energy density program and apply it forward to each of the distinct categories under the redesigned RFS2. (2408.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) proposes the continued use of energy content as finalized in RFS1 rather than volume as is proposed as an alternative. The commenter is concerned is that if Obligated Parties are measured on compliance using volume only, we believe this will erode the value of RINs associated with the newly developed categories of renewable fuels which have an inherently higher energy content per gallon when using the ethanol equivalency basis. This ethanol equivalency tends to incent the highest use of renewable feedstocks into delivering the most energy dense fuels which are in turn most efficient to transport and deliver to the end users. [[Docket number 2106.1, p. 5]]

Our Response:

As discussed in Section II.D.1 of the preamble to the final rule, we generally agree with the above comments in 3.5.1.1, and have finalized an energy-based approach to Equivalence Values that is consistent with the approach taken in RFS1.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) supports EPA's proposal to retain equivalence values for biodiesel and renewable diesel, but not for those RINs being used toward the biomass-based diesel or advanced biofuel mandates. Unlike the existing RFS program where biodiesel is competing with corn ethanol, the advanced biofuel mandates should be met on a gallon to gallon basis. [[Docket number 2249.1, p. 5]]

However, the commenter also recognizes that the existence of four standards under RFS2 may not obviate the value of standardizing for energy content, which provides a level playing field under RFS1 for various types of renewable fuels based on energy content. Thus, the commenter believes that equivalence values under RFS1 should remain in use for the renewable fuel category under RFS2. This category represents the RIN marketplace under RFS1 and fuels with higher ethanol equivalent energy content should be able to demonstrate their favorable energy profile in this category. [[Docket number 2249.2, p. 32 and docket number 2249.1, p. 5]]

Our Response:

As discussed in Section II.D.1 of the preamble, we are retaining the energy-based approach to Equivalence Values promulgated with the RFS1 final rule for all renewable fuels. However, as described in Section II.E.1 of the preamble, we are treating the biomass-based diesel volume mandate as biodiesel equivalent volume, while treating the volume mandates for cellulosic biofuel, advanced biofuel, and total renewable fuel as ethanol-equivalent volumes. To accomplish both of these goals, we have adjusted the biomass-based standard by the 1.5 Equivalence Value for biodiesel.

We do not believe that it would be appropriate to treat the advanced biofuel mandate as actual volume rather than as ethanol-equivalent volume. While the biomass-based diesel mandate is clearly intended to represent diesel fuel and diesel fuel substitutes, the advanced biofuel mandate can be met with any type of renewable fuel. To treat the advanced biofuel mandate as actual volume would require that we presume a specific mixture of renewable fuels in setting the standard, and apply the appropriate Equivalence Value to each type of renewable fuel in a manner similar to the way we have set the standard for biomass-based diesel. The advanced biofuel standard would then depend on the mixture of renewable fuel types that we assume will be produced. Since doing so would b equivalent to EPA choosing what renewable fuel types should be produced or imported, we do not believe this would be appropriate.

3.5.1.2 Supports Straight Volume Approach to Equivalence Values

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) noted that since EISA targets are defined in terms of volume, a 1:1 valuation for all categories of RINs should be used.

Document No.: EPA-HQ-OAR-2005-0161-0999
Organization: Darling International Inc.
Comment:
The commenter (2151.1) supports EPA's decision in the NPRM to adopt the straight volume approach for measuring renewable fuel to calculate compliance with the volume mandates of RFS2, rather than taking the approach to incorporate equivalence values for renewable fuels based on their energy content. Specifically, the commenter supports EPA's decision to adopt the straight volume based requirement to calculate compliance for biomass based diesel. (2151.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should not retain the current equivalence values. If EPA does retain equivalence values, the commenter would support setting the values at 1 for all liquid fuels and all of the volume mandates. (2329.1, pp.89-90)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) supports EPA's proposal of shifting the RINS value of all renewable fuels to be based on the fuel's measured volume as opposed to the existing equivalence value formulas. (1033.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044.1) supports the proposal that demonstrates the generation of 1 RIN for 1 gallon because this concept demonstrates the actual gallons produced and distributed in the system to ensure 100% compliance without error. The commenter believes that EPA's concern that the market will not respond and RINs may not have values is unfounded because recent developments in the RIN trading markets indicate otherwise. (1044.1, p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:

The commenter (2119.1) is in favor of a straight volume approach to measuring liquid gallons of renewable fuel. The commenter believes that an energy-based approach would favor biodiesel and could result in not meeting the specific gallons of advanced biofuel as specified in EISA. By using a straight volume approach, the amount of advanced biofuel as specified in EISA would be produced at the most efficient level. The commenter believes that the final rule should provide a clear incentive to produce both advanced ethanol and biodiesel. (2119.1, pp.4-5)

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) believes that since EISA expanded the renewable fuels program to include four separate categories of renewable fuel with its own volume requirement, there may no longer be a need for Equivalence Values greater than 1.0. The commenter also supports EPA's proposal that all liquid renewable fuels should be counted strictly on the basis of their measured volumes, and the Equivalence Values for all renewable fuels should be 1.0. This would greatly simplify the program and result in fewer calculation errors. (2360.1, pp.6-7)

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter recommends all Equivalence Values for all renewable fuels be 1.0. The commenter recommends that the EPA keep the RIN types separated utilizing the different D-codes. By using the different RIN types instead of equivalency values, it forces certain types of renewable fuels to be blended in, and one type (corn ethanol) cannot be used to meet the obligation for another (biodiesel).

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) encourages EPA to use a 1:1 valuation of RINs under the RFS2 program. Based on the volume thresholds outlined in the RFS2 schedule, using an equivalence value of 1.5:1 would be allowing extra credit for biodiesel. (2511.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
Initially, the commenter (2101.1) strongly disagreed with EPA's proposal to create equivalency values for a range of fuels. Therefore, the commenter pleased that EPA is planning to enforce a straight volumetric approach for RFS2, this is especially appropriate given the nested standards that have been established in RFS2 for various forms of advanced and cellulosic biofuel. (2101.1, p.15)

Our Response:

The commenters provided little support for their preference that Equivalence Values be based strictly on measured volumes. Although some commenters believe that the use of an

energy-based approach would provide extra credit to renewable fuels other than ethanol, in fact this approach would ensure that all renewable fuels are valued the same in terms of their ability to displace fossil-based transportation fuels. Therefore, as discussed in Section II.D.1 of the preamble, we are maintaining the energy-based approach to Equivalence Values promulgated under RFS1.

3.5.1.3 Other Aspects of Equivalence Values

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter supports the proposal to change ethanol energy content from 77,550 Btu per gallon to 77,930 Btu per gallon. (2329.1, pp.89-90)

Our Response:

We agree with the need for a change to the volumetric energy content of ethanol. However, as described in Section III.D.1 of the preamble, we are finalizing an energy content for ethanol of 77,000 Btu/gal.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter is aware of several corn ethanol producers who have been able to generate 2.5 credits for every gallon of ethanol produced under RFS1 because they have implemented a low carbon technology to power their ethanol facility. The commenter thinks it is unfair to arbitrarily take this opportunity away from those producers, so the commenter recommend that EPA consider a plan to gradually phase out the 2.5:1 credit. (2101.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2548
Organization: Xyleco, Inc.
Comment:
EISA displaces the explicit statutory-mandate of a 2.5 equivalence ratio. However, EISA prescribes that EPA shall make available credits at statutorily prescribed prices to enable obligated parties to demonstrate compliance. The Act further delegates to EPA broad authority to establish a credit regime that promotes cellulosic biofuels. EPA should reinstate credit advantages for cellulosic biofuels and sharpen the incentives for new innovative technologies, to ensure continuation of the targeted incentives necessary for renewable fuels development. At a minimum, EPA should maintain the existing credit incentives through 2012, the period of

establishment contemplated by EPAct that market participants such as Xyleco have relied on in making investments and developing innovative cellulosic biofuels production processes.

Our Response:

EISA eliminated the provision originally created in CAA 211(o) by the Energy Policy Act of 2005 which gave 2.5:1 credit to any ethanol if 90% of the facility's process energy is derived from renewable sources. Given the changes to the RFS standards and requirements for what fuels qualify for those standards that were brought about by EISA, we do not believe it would be appropriate or in keeping with the intent of the Act to continue to provide such additional credit for these fuels. Once the provisions of the revised CAA 211(o) are implemented through the RFS2 regulations, the 2.5:1 credit provision ceases to be applicable.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
Urging EPA not to wait for the final endangerment finding, the commenter (2137.1) asks that the Agency promote the use of the lowest GHG emitting renewable fuels. The commenter recommends that EPA establish in the final RFS2 rule that the best performing renewable fuel pathway in any given RFS2 category would receive commensurately higher equivalence values based on their relative reduction in GHG emission (Code "RR" in 38-digit Renewable Identification Numbers, RIN codes). The commenter further states that in the absence of such a requirement, the renewable fuel with the lowest price—not necessarily the fuel with the lowest GHG emissions—would be consumed in the greatest quantity. In contrast, by including such a requirement, there would likely be greater demand for the fuels with lower GHG emissions as compared to conventional renewable fuels. [[Docket number 2137.1, p. 16]]

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter believes it appropriate to provide additional equivalency value relative to the GHG value of the utilized renewable fuels. The current approach provides very broad threshold values that do not value a renewable fuel for its potential contribution to GHG emission reductions. The commenter supports further weighting through added RIN production of advance-low GHG renewable fuels in a manner similar to the EV value in RFS1. (2154.1, pp.5-6)

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter suggested that EPA consider providing additional RIN credits for all fuels that exceed their GHG reduction requirements. This changed could be a simple formula that involves

awarding a couple of tenths of one RIN credit for each fuel which exceeds its GHG reduction target by some specific amount. (2408.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2548
Organization: Xyleco, Inc.
Comment:
EPA should also include in its approval procedure recognition for new renewable fuels production pathways by providing additional incentives for such innovative, breakthrough technologies. EPA should provide in its final rules that new biofuel pathways that meet certain criteria – e.g., new pathways representing breakthrough technologies with low environmental impacts -- receive increased Equivalence Values of 2.5 to 5 to 1.

Our Response:

As discussed in sections 3.5.1.1 and 3.5.1.2 above, we are finalizing Equivalence Values based on energy content in this final rule. We believe this effectively implements the provisions of section 211(o) of the CAA and results in a system that appropriately credits renewable fuels based on their ability to displace fossil fuels. We recognize that further adjusting Equivalence Values to reflect GHG performance could encourage facilities to improve the environmental attributes of their fuels beyond the specified statutory levels, and would provide additional market encouragement to the production of the best GHG-performing fuels. We believe, however, that such an approach would most effectively involve case-by-case life cycle analyses that are beyond the ability of the Agency to perform at this time. If in the future we develop such capability, or discern that a broader approach may be practical, we may reconsider this issue.

3.5.2 RIN Generation for Domestic Producers

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports the concept of allowing a biodiesel producer to "average" its production across facilities. The commenter noted that the following are advantages of using the company-wide averaging approach: GHG reduction goals met; high quality product available; and, better alignment with EISA volumetric goals. (2145.1, pp.3-4) [[See Docket Number 2145.1, pp.2-5 for a detailed discussion of this issue.]]

Our Response:

Based on the updated lifecycle analyses presented in today's final rule, both soy-based biodiesel and waste grease-based biodiesel meet the 50% GHG threshold associated with the biomass-based diesel volume mandate. As a result, there is no longer a need for a provision allowing biodiesel to be averaged across facilities.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2312
Organization: LyondellBasell Industries
Comment:
The commenter (2312.1) believes that the RFS2 regulations should continue the aspect of the RFS1 regulations that recognized and maintained the market flexibility to fully pass-through the RINs associated with renewable fuel alcohol volumes when those volumes are combined with isobutylene in making higher value bio-ether blendstocks such as ETBE. (2312.1, pp.2-3)

Our Response:

We agree that RINs assigned to renewable fuel used as a feedstock in the production of another renewable fuel should be assigned to the new renewable fuel. We have retained this provision at §80.1426(c)(6).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes it is essential that RINs be generated for all eligible fuel to maintain RIN liquidly. The commenter suggests creation of a renewable "pedigree" that accompanies the fuel as it moves through the stream of commerce to avoid creation of fraudulent RINs for fuel that does not meet the requirements. [[Docket number 2358.1, pp.3-4]]

Our Response:

In the NPRM, we proposed that a producer could produce and sell biofuel without RINs if he demonstrated that the renewable biomass definition had not been met. For the reasons described in Section II.B.4 of the preamble, we have determined that this requirement would have been overly burdensome to producers. The creation of a renewable pedigree as the commenter suggests would have required a similar level of effort. However, the final rule requires that RINs be generated for all qualifying renewable fuel for which the producer has demonstrated that the renewable fuel was made from renewable biomass. Moreover, we are finalizing an aggregate compliance provision for domestic "planted crops and crop residue" used as feedstock in biofuel production. As a result those producers using such materials as feedstock will not need to make a demonstration that their renewable fuel is made from renewable biomass, and they will be required to generate RINs.

We believe that the provisions we have finalized are sufficient to ensure that RINs are properly generated, traded, and used for compliance. In particular our creation of the EMTS

system for tracking RIN transactions will help tremendously. Creation of a new renewable pedigree for RINs would appear to create considerable new complexity in the RIN system without providing any significant degree of protection against fraudulent RINs. As a result, we are not finalizing such a system.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) states that normally, they would expect the fuel categories with the highest GHG reduction thresholds to command the highest market price, and BTL producers would clearly generate RINs for those categories. However, in the preamble EPA states that "under certain conditions it may be possible for the market price of corn ethanol RINs to be significantly higher than the market price of cellulosic biofuel RINs." Under such conditions, however remote, it would be inappropriate and contrary to Congressional intent to have corn ethanol RINs command a higher price than those of the most advanced fuels required under the statute, which may be more expensive to produce if externalities in the production cost assessment are not considered (as is the case with many first generation biofuels). In such a case, the commenter believes it would be appropriate for EPA to allow cellulosic biofuel producers the freedom to sell into a broader RIN category. [[Docket number 2310.1, p. 16]]

Our Response:

In order to ensure that RINs accurately represent the renewable fuels that they are generated to represent, we are requiring that producers generate RINs according to the D codes specified in the lookup table in §80.1426(f) that correspond to their operations. We do not allow producers to choose alternative D codes for the RINs, as this would misrepresent the fuels that they produce. However, since cellulosic biofuel RINs can be used to comply with the advanced biofuel and total renewable fuel standards, a producer of cellulosic biofuel can price its RINs to compete with advanced biofuel RINs or renewable fuel RINs.

3.5.3 RIN Generation for Foreign Producers and Importers

3.5.3.1 Party that Generates RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2012
Organization: Caribbean Basin Ethanol Producers Group
Comment:
The commenter (2012.1) recommends that the generator of the RINS be the importer of record. (2012.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) states given that EPA takes the view that renewable fuel ethanol requires the addition of a denaturant, and that in the case of the sugarcane ethanol pathway the denaturant is nearly always added at the U.S. port of entry, the Final Rule should clarify that importers, not foreign producers, should generate the RINs under RFS2 as has been the case in RFS1. The requirement for adding denaturant, which ironically requires the addition of a non-renewable fuel such as gasoline, is unique to the U.S. and consequently, one that shifts the point of RIN generation to the port of entry in the case of imported ethanol. [[Docket number 2137.1, p. 39]]

Document No.: EPA-HQ-OAR-2005-0161-2362
Organization: Canopy Prospecting, Inc. And Trinidad Dehydration Company, Limited
Comment:
The commenter (2362) is concerned about traceability and RINS. TDCL expects to operate as a tolling facility for third parties. TDCL would only have responsibility for their ethanol from the time it passes from the ship chartered by a client to deliver the hydrous ethanol to the time that TDCL delivers the product again to the tolling client's chartered ship's flange. Under such a scenario, TDCL could not establish the origins of the hydrous or anhydrous ethanol. Therefore, we recommend that the importer of record into the United States be responsible for generating RINS. [[Docket number 2362.1, p. 2]]

Our Response:

Under our final RFS2 regulations at §80.1401 (definition of "renewable fuel"), RINs can be generated for imported biofuel that meets the definition of "renewable fuel," under which ethanol must contain a denaturant. Insofar as the importer adds the denaturant to a batch of ethanol that he is importing, then the importer is the only party that can generate RINs for that batch of ethanol. If the denaturant is added to the ethanol prior to importation, then the party that adds the denaturant has the opportunity to generate RINs for that batch if he is registered with the EPA and can make a demonstration that the batch meets the full definition of "renewable fuel" including the requirement that it be made from renewable biomass.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2637
Organization: EthylChem, Ltd
Comment:
We must also concur with others' comments in urging EPA to designate the importer of record as the entity responsible for generating the RINs on all imports of fuel ethanol into the U.S. So much consolidation and comingling make it virtually impossible to trace volumes back to a single mill in Brazil.

Document No.: EPA-HQ-OAR-2005-0161-2017

Organization: Aloha Petroleum, Ltd.
Comment:
The commenter (2017.1) believes that the entity that denatures imported undenatured ethanol should not have the burden of complying with the feedstock source and pathway determination requirements. (2017.1, p.2)

Our Response:

A party that adds a denaturant to imported undenatured ethanol is a producer of renewable fuel under the RFS2 regulations, since "renewable fuel" is defined in §80.1401 to include only denatured (not undenatured) ethanol. If the party adding the denaturant wishes to generate RINs, it must obtain appropriate information from the foreign producer regarding compliance with the renewable biomass requirements and information about the production process, as provided in §80.1426(a)(2).

3.5.3.2 Different Requirements for Foreign Versus Domestic Producers

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) supports equal and fair treatment for international producer certification and registration when compared to domestic producers and facilities. All imported biofuels products must be held to the same standards as domestic biofuels. (2511.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) believes that the EPA's proposed approach to implementing the new RIN system, implicates several World Trade Organization (WTO) violations. The commenter urges EPA to reconsider the proposed system to avoid such concerns. Specifically, the proposed RIN system described in the proposed RFS2 are inconsistent with the United States' international legal obligations under the WTO Agreement in six distinct ways as grouped into the follow three categories of measures:

A. Additional "enforcement-related" requirements that are levied exclusively on foreign renewable fuel producers RFPs) and renewable fuel importers (RFIs), specifically requirements to (1) physically segregate fuel; (2) ensure third-party certification and comparison; (3) comply with an up-front bond-posting requirement; and satisfy additional annual attest engagement requirements;
B. (5) the exemption of domestic small-batch RFPs from all recordkeeping, reporting and attest engagement requirements; and
C. (6) The differential treatment of domestic and foreign RFPs in connection with documentation requirements for implementing the land use restrictions. [[Docket number 2137.1, p. 35]]

The commenter states that each single one of these six measure independently constitutes an unjust discrimination of foreign renewable fuel and is thus a violation of Articles 2.1 and 2.2 of the Agreement on Technical Barriers to Trade (TBT Agreement), as well as Article III:4 of the General Agreement on Tariffs and Trade (GATT). In addition, all measures identified, except measure (5), the small-batch waiver for domestic RFPs, are in contravention of Article XI:1 GATT. [[Docket number 2137.1, p. 35]]

The commenter urges EPA to address these issues in finalizing the RFS2 to avoid any WTO violations. Further, beyond mere WTO ramification, these unfair restrictions against foreign producers risk EPA's ability to achieve the ambitious volume goals mandated by EISA. [[docket number 2137.1, p. 36]] [[See docket 2137.2 pp 36-36 for details of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) strongly agrees that a renewable fuel importer should have the same requirements as a U.S. producer. A level playing field should exist for all participants in this program. Ethanol and biodiesel produced by a foreign source must account for life cycle impacts just as a domestic producer. The commenter disagrees with the structure set up in RFS2 to accomplish this and requests EPA modify the process. The commenter suggests that EPA create requirements for "biofuel importers" that parallel the requirements of a "renewable fuel importer" found in §80.1426. In this scenario, the "biofuel importer" would provide documentation that the biofuel was provided by registered "biofuel producers" (vs. renewable fuel producers). A "biofuel producer" would have similar requirements for registration that a "renewable fuel producer" has in §80.1450. (2145.1, pp.5-6) [[See Docket Number 2145.1, pp.5-6 for a detailed discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes EPA proposal to prevent fraud by segregating foreign fuels that does not qualify for RIN generation is unrealistic and impractical. The commenter suggests that foreign producers meet all the same requirements as domestic producers as the best way to avoid fraud. [[Docket number 2358.1, pp. 4-5]]

Our Response:

For the most part, requirements under RFS2 for foreign and domestic producers of renewable fuel are the same. The RFS2 requirements that are unique to foreign producers of renewable fuel were developed collaboratively with stakeholders in previous fuel rulemakings, and in some cases are provisions developed and finalized in response to previous GATT challenges. Many of these provisions were again proposed and finalized in the RFS1 rulemaking. These include such requirements as posting a bond, admitting EPA enforcement personnel, and submitting to third-party engineering reviews of their production process.

The additional requirements imposed by EISA on renewable fuels, in particular the need to demonstrate compliance with the GHG thresholds and the renewable biomass definition, demand more rigor than was necessary under RFS1 in terms of enforcement and verifying compliance because of the larger volumes and the need to determine what feedstocks and production processes were used at the foreign facility. For renewable fuel produced outside the U.S., this process presents special challenges due to the difficulty in gaining access to the fuel production, storage, and distribution network. Therefore, we believe it is both appropriate and necessary to place requirements on foreign producers to ensure that renewable fuel entering the U.S. is valid for compliance with the RFS2 volume mandates. See preamble Section II.D.2.c for further discussion.

3.5.4 Facilities with Multiple Applicable Pathways

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) generally supports EPA's proposal for facilities that have multiple pathways, but believes that facilities often mix energy sources to improve energy efficiency, which may not be accurately addressed in EPA's pathways. (2329.1, p. 98)

Our Response:

We have revised the fuel pathways in the lookup table at §80.1426 to accommodate renewable fuel production facilities that utilize both fossil and non-fossil fuels for process heat where possible. See further responses to comments on facilities with multiple process heat energy sources in Sections 7.3 and 7.5. The final regulations also include a petition process that parties may utilize to seek qualification of such pathways for D codes. See responses to comments in Section 7.4.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) believes that the proposal of collecting the mass of different feedstocks consumed in the production of renewable fuel is not particularly cumbersome. The only modification the commenter would suggest to the EPA's proposal of capturing this information daily is that Renewable Fuel Producers be allowed to capture it no less frequently than at a batch level. This approach would alleviate the additional complications of having to then dissect and reassemble the data for reporting on a batch basis when the batches cross days or you have multiple batches produced in a day. (1033.1, p.2)

Our Response:

The regulations at §80.1426(d)(5) have been modified to allow producers to use feedstock mass data measured on a daily or per-batch basis.

3.5.5 Facilities that Co-process Renewable Biomass and Fossil Fuels

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) agrees with the proposal to generate RINs for the "advanced biofuel" portion of a renewable fuel produced through co-processing. Facilities that co-process renewable biomass and fossil fuels to produce a single fuel that is partially renewable should use the relative energy in the feedstocks to determine the number of gallon-RINs that should be generated. (2132.1, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) states that RIN generation for co-processing of renewable and fossil fuels should be based on relative energy in the feedstocks. [[Docket number 2130.1, p. 16]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports the methodologies for handling facilities with multiple fuel type pathways and co-processed fuels. [[Docket number 2233.2 p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports the methodologies for handling facilities with multiple fuel type pathways and co-processed fuels as proposed with subsequent application of appropriate EV and CV equivalency factors and does not support either of the suggested alternatives. The alternative methods involve far more complexity in compliance demonstration and enforcement than the small amount of accuracy that would be gained. EPA's alternative clearly is not warranted. [[Docket number 2393.1, p. 10)

Document No.: EPA-HQ-OAR-2005-0161-1027
Organization: Beta Analytic, Inc.
Comment:

The commenter (0998_Copyright) believes that it should particularly since the ASTM D6866 test can accurately determine the biomass fraction of the resultant fuel. It must be noted that the ASTM D6866 method is already adopted in the current EPA's greenhouse gas reporting rule under the Tier 4 sampling protocol for municipal solid waste, specifically for the measurement of the biogenic CO2 fraction. Although the ASTM D6866 method cannot determine the different renewable biomass feedstock percentages, it can determine with excellent accuracy and precision the biomass carbon fraction of fuels. The commenter also wanted to mention that ASTM D6866 is an accepted method for measuring the biomass fraction of fuels in the Australian, European Union, and other regional greenhouse gas protocols, such California's AB 32 and the Western Climate Initiative. This widely accepted method is also being considered as a biomass carbon verification test for the Renewable Transportation Fuels Obligation in the United Kingdom. (0998_Copyright, pp.1-2) (See Docket Number 0998_Copyright, pp.1-31 for a detailed discussion on ASTM D 6866)

Our Response:

We have finalized our approach to facilities that co-process renewable biomass and fossil fuels essentially as proposed, as described in preamble Section III.D.4. We are also providing producers the option of using a radiocarbon dating test method such as ASTM D-6866 to determine the renewable content of their biofuels, as an alternative to determining the renewable content of their feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2420
Organization: Magellan Midstream Partners
Comment:
The commenter (2420.1) supports EPA's recognition that open-access terminals depend upon a regulatory environment that provides the ability to co-mingle renewable fuels from multiple suppliers in the same storage tank. Because of the potential increase in production of cellulosic, advanced and traditional biofuels, the commenter stresses the importance of co-mingling fuels in an effort to promote operational efficiencies and reduce distribution costs. (2420.1, p.2)

Our Response:

We have designed the RIN program structure to allow for such commingling of fuels.

3.5.6 Fuels Without an Applicable D Code

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:

The commenter (2408.1) recognizes the limited resources and the tremendous variability and range of renewable fuels technologies which are currently exploring their commercial applicability under the proposed RFS2 rules. The commenter urges that EPA create an expedited process that would allow individual technologies utilizing specific feedstocks to be able to demonstrate their various greenhouse gas reduction capabilities.

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Regarding RIN-less biofuels, the commenter believes that EPA should require all biofuels that are produced or imported to either meet the RFS2 thresholds or to be treated as transportation fuels, with a RFS2 obligation. [[Docket number 2233.2, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:
The commenter (1036.1) noted that since fuel pathways and applicable D codes have such a strong economic effect on ethanol sales from smaller producers (less than 100MGY), generalized fuel definition GHG reductions and D codes will put many companies at a severe competitive disadvantage because of the RIN generation and sales associated with those broad classes of fuel. The commenter suggests that a process can choose to prove through the EPA's modeling (when completely finalized) they can produce GHG reductions in upwards of 60%; which would grant said process plant the ability to us a D code of 1 for use with the associated RINs. (1036.1, p.2)

The commenter believes that the current wording and broad GHG definitions are "unintentionally subsidizing" the cellulosic fuel class by ignoring project/process specific fundamentals such as production costs, best management practices, and electricity sales via by-product combustion from other advanced biofuels. The commenter recommends that the fuel pathway tables (VI.E.1-1, VI.E.2-1, VI.E.4-1) remain as is to be used as general look up values, but Table III.B.2-1 should reflect fuel classes such as Class I, Class II etc...that corresponds to the appropriate GHG lifecycle reductions. If such an approach is not acceptable, than the commenter suggests a provision be added where a fuel producer can apply for a D code higher than the recommended D code from their fuel pathway as long as work is completed with the EPA on a "case-by-case" basis to confirm through the GHG models such a reduction is indeed feasible. (1036.1, p.2)

Our Response:

EPA is finalizing a petition process for all renewable fuels and fuel additives that are not in the list of modeled pathways. The process is designed to allow companies to generate RINs, if EPA can in its judgment determine if the unique pathway is eligible to generate RINs. We believe this addresses the comments on the need to have an expedited process. Not all petitions will be granted and some will require EPA to finalize a rule making before those pathways may be eligible for RINs. See additional discussion of the petition process in the response to comments in Section 7.4.

What Commenters Said:

Document No.: **EPA-HQ-OAR-2005-0161-2119**
Organization: **National Sorghum Producers**
Comment:
With regards to distiller's grains, the commenter believes that a facility that dries only a portion of its distiller's grains should only be producing different RINs (or no RINs) on that portion of biofuels that resulted in dried distiller's grains. If a facility estimates that it will dry 20% of its distiller's grains in a year, then 20% of the daily volume of ethanol should have a different RIN (or no RIN). An adjustment could then be made each quarter to account for the actual amount of dried distiller's grains produced. (21191, p.4)

Our Response:

EPA has modeled that facilities that dry no more than 65% of their distillers grains and solubles in a calendar year and uses other advanced technologies then they may qualify to produce RINs. If the production facility pathways qualify as meeting the GHG threshold then that facility may generate RINs for all qualifying volumes. If a producer believes that it should be permitted to generate RINs with different D codes depending on the fraction of distiller's grains that is dried, we have developed a petition process for that purpose. See responses to comments in Section 7.4.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should create a Renewable Volume Obligation (RVO) for all RIN-less renewable fuels. In the final rule, EPA should make clear that RIN-less renewables, destined to be used neat or blended into other fuels are, by definition, transportation fuels for the purpose of the RFS and, consequently, incur a RVO. (2110.1, p.3)

Our Response:

We agree that biofuel may be produced or imported under RFS2 for which no RINs are generated. If this biofuel is used as transportation fuel, it might be reasonable to treat it as obligated fuel subject to the standards. However, we do not believe that it would be appropriate at this time to finalize a requirement that RIN-less biofuel be considered an obligated fuel. We did not propose such an approach in the NPRM, and as a result many renewable fuel producers who could be affected did not have an opportunity to consider and comment on it. Moreover, the volume of RIN-less biofuel is likely to be small compared to the volume of renewable fuel with RINs since RINs have value and producers currently have an incentive to generate them. See further discussion in preamble Section III.D.7.

3.5.7 RINs Generated for Electricity, Natural Gas, and Propane

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Regarding how to calculate RINs for electric vehicles, natural gas and propane, the commenter believes that only VMT that is based on the actual use of renewables should be credited. There should be no double-counting (generation) of RINs. [[Docket number 2233.2, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
Regarding how to calculate RINs for electric vehicles, natural gas and propane, while the commenter (2393) supports such RIN generation, only renewable fuels used in the direct application allowed by Congress, i.e., transportation fuels and heating oil that is based on the actual use of renewables in these applications should be credited. There should be no double-counting (generation) of RINs and adequate enforcement mechanisms need to be created to ensure this. [[Docket 2393.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter believes that the EPA should not include biomass electricity, natural gas, CNG or LNG in the RFS2 program at this time. These industries are not well developed as transportation fuel sources, and for now creates a significant burden to have to track whether these energy sources were manufactured with qualified biomass, and whether any portion of these fuels (if manufactured from biomass) were used as transportation fuel. (0994.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) requests that EPA modify the proposed definition of renewable fuel by eliminating the inclusion of electricity, natural gas, and propane made from renewable biomass. (2009.1, pp.10) (See Docket Number 2099.1, pp.10-12 for a more detailed discussion on this issue)

Our Response:

As discussed in Section II.B.1 of the preamble, we are finalizing provisions to allow for the generation of RINs for renewable electricity, natural gas, or propane that has been shown to be used for transportation purposes. (Note that not all of these fuels currently have a D-Code assigned to them and would still have to qualify as renewable fuels under future additions to the lookup table in §80.1426.) Like any other renewable fuel producer, they will have to

demonstrate at the time of registration and through annual audits that their fuel qualifies to generate RINs under the RFS program. In addition, producers of renewable electricity, natural gas, or propane can only generate RINs for their products if they can demonstrate that those fuels are in fact used as transportation fuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) supports the proposed alternative to allow or require parties that supply these fuels to centrally fueled fleets to generate RINs even if they are not the producers of the fuel. They support this approach because it would provide an incentive for a larger volume of electricity, natural gas and propane that is made from renewable biomass to be used as vehicle fuel. (2466.1.pdf, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2337
Organization: California Air Resources Board
Comment:
The commenter (2337.1) recommends that parties who supply centrally located fleets with renewable electricity, natural gas, and propane be allowed to generate RINs, even if they are not the producer of the fuel. Any transportation fuel that can be verifiability linked via physical pathway to renewable biomass should be allowed to generate RINs. Only by establishing a level playing field for all renewable fuels will the market be effective in promoting the least cost mix of transportation fuels. (Page 4)

Our Response:

In order to protect against possible double counting, we are restricting RIN generation for renewable electricity, natural gas, and propane to the producer of the fuel. Downstream distributors or users of these fuels cannot generate RINs. We had considered allowing downstream parties to also generate the RINs since they could better identify the use of the fuels for transportation purposes. However, as some commenters suggested, this might have provided an opportunity for double-generation of RINs for these fuels. If these fuels develop as transportation fuels in the future and mechanisms can be developed to address potential double counting and related enforcement concerns, then in the future we can consider allowing downstream parties to generate RINs as well.

3.6 Applicable Standards

Note: Comments related to our projection of the 2010 cellulosic biofuel volumes and our process for setting the standard for cellulosic biofuel can be found in Section 6.3.2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports the application of the renewable fuel standard to nonroad sources.

Our Response:

We agree with this comment. EISA requires that renewable fuels valid for compliance purposes under RFS2 are those that are used to replace or reduce the quantity of fossil fuel present in a transportation fuel, and transportation fuel is defined to include fuel used in nonroad vehicles and engines.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) stated that if the RFS2 regulations will be effective on 1/1/11, then statutory mandates for biomass-based diesel for 2009 and 2010 and for cellulosic biofuel for 2010 should be ignored/eliminated. The commenter then stated that if the RFS2 regulations will be effective on 1/1/10, then the statutory mandate for biomass-based diesel for 2009 and cellulosic biofuel for 2010 should be ignored/eliminated. (2124.1, p.10)

The commenter believes that EPA should not attempt to combine the 2010 and 2011 yearly standards for biomass-based diesel or cellulosic renewable fuels. (2124.1, p.11)

Our Response:

While the RFS2 regulations will go into effect on July 1, 2010, we are applying the four RFS2 standards to all gasoline and diesel produced in 2010. We do not believe that the statutory mandate for biomass-based diesel in 2009 should be ignored. We did not have the RFS2 program in place for 2009 and thus could not establish a separate standard for biomass-based diesel in 2009. To best implement Congress' intent for 2009 and 2010, we are combining the 2010 biomass-based diesel volume of 0.65 billion gallons with the 2009 biomass-based diesel volume of 0.5 billion gallons to require that obligated parties meet a combined 2009/2010 requirement of 1.15 billion gallons by the end of the 2010 compliance year. As described in more detail in Section II.E.2 of the preamble, this approach is similar in concept to the deficit carryover provision that would have applied to the full 2009 volume mandate of 0.5 billion gallons.

As described in the responses to comments in Section 3.6.2 below, we also do not believe that the cellulosic biofuel standard for 2010 should be eliminated. Based on our analysis of

cellulosic production facilities, we have determined that 6.5 million gallons of ethanol-equivalent cellulosic biofuel can be produced in 2010.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) supports the proposed RFS2 fuel volumes and believes that advanced biofuels will contribute significantly to the objectives of reducing the carbon intensity of transportation fuels and reducing the nation's reliance on petroleum derived transportation fuels. [[Docket number 2374.1, p. 1]]

Our Response:

We agree that advanced biofuels are an important component of the RFS2 program for many reasons, including the fact that they must meet a GHG threshold of 50%.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA must continue to implement the volume mandates each year until it can complete its lifecycle analysis. (2329.1, p.16)

Our Response:

We have conducted a complete lifecycle analysis for a number of renewable fuel pathways, and as a result we are implementing the full RFS2 program including the four RFS2 standards required by EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
Referring to the 2008 Texas petition to reduce the RFS mandate, the commenter (2317) believes that EPA should evaluate any waivers of the RFS volumes with a high degree of scrutiny. [[Docket number 2317.1, p. 44]]

Our Response:

We agree that any request for a waiver of any portion of the volumes required by EISA must be evaluated closely before a decision is made to approve or disapprove it. Such waiver actions, however, are outside the scope of this final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) believes that, within the Advanced Biofuels pool, if significant shortfalls in a particular subcategory such as the biomass-based diesel pool or the cellulosic pool require an adjustment of the volume mandate that other nested categories within the advanced biofuels pool should be allowed to fill the shortfall. Given the specific requirements of an advanced biofuel and the definition of conventional fuels in EISA, corn based ethanol should be excluded from filling any volume shortfalls in the advanced categories. (2408.1, pp.4-5)

Our Response:

Congress gave EPA the authority to lower the required total and advanced biofuel volumes if EPA reduces the required volume of cellulosic biofuel. For 2010, while we are lowering the cellulosic biofuel standard, we are maintaining the other standards at their EISA-mandated levels. The biomass-based diesel volume needed to meet its standard will automatically fulfill the advanced biofuel standard, given the energy-based Equivalence Values for biodiesel and renewable diesel. Decisions for standards in future years will be made at that time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Referring to EPA's request for comment on how to address the individual targets identified for 2009 and 2010 in the 2007 RFS legislation, the commenter (2233) states that obligated parties and renewable fuel producers remain at a loss as to how such targets can be addressed absent completion of the life cycle assessment methodology and final implementing regulations. Clearly the 2009 mandate for individual categories of renewable fuels is no longer feasible.

Our Response:

The lifecycle analyses have been updated and finished for this final rule, and we have determined that there exist renewable fuel pathways meeting the applicable GHG thresholds for all four categories of renewable fuel. Therefore, we believe that the volume mandates in EISA can be met, with the exception of the cellulosic biofuel standard which we have determined should be based on 6.5 million gallons of ethanol-equivalent renewable fuel. Moreover, the

2009 mandate for biomass-based diesel will be met in the context of a combined 2009/2010 standard as described in preamble Section II.E.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter believes that the standards for 2011 should be announced by the Agency by the end of November 2010. The commenter supports notice-and-comment, but observes that EPA lacks statutory authority to impose EISA Total Advanced Biofuel renewable mandates for 2010 until RFS2 final rules become effective. (2124.1, p.20)

Our Response:

The standards for 2011 will indeed be announced by EPA by November 30, 2010, following the statutory mandate. As described in Section I.A.2 of the preamble, we believe it is appropriate to set the annual standards through a notice-and-comment rulemaking process. Thus, for future standards, we intend to issue an NPRM in the Spring and a final rule by November 30 of each year in order to determine the appropriate standards applicable in the following year. However, in the case of the 2010 standards, we are finalizing them as part of today's action.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP).
Comment:
The commenter (2384) states that given the physical and regulatory barriers to implementing RFS2, EPA should add a comprehensive market assessment to its annual process for setting RVOs to avoid market-wide shortfalls which could cause dislocations in the RIN marketplace and encourage unscrupulous behavior. The commenter believes this annual assessment should consider all aspects of the biofuels supply chain. [[Docket number 2384.1, p. 3]]

Our Response:

As described in Section II.K of the preamble, we are requiring production outlook reports from the renewable fuel production industry to help us in projecting the volumes of renewable fuel that can be produced in the future. We will assess any other data that is available during our annual rulemaking process to set the standards for the next year, including data on the operation of the fuels market and the RIN market.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Therefore the 2010 RFS2 obligation would be the 6.8 bgy directed under the current RFS regulations. [[Docket number 2233.2, pp. 1-2]

Our Response:

We do not believe it would be appropriate to continue to use the mandated volumes from EPAct 2005 for total renewable fuel as the basis for standards in 2009 and beyond. EISA changed the volumes in CAA 211(o), and the standards are based upon the volumes mandated in CAA 211(o).

3.6.1 Calculation of Standards

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
Since the RFS2 regulations will not be in effect in 2010 and the small refinery and small refiner exemptions expire at the end of 2010, the "Std" equations only apply for years 2011 and later. As a result, the "GE" terms for exempt small refineries and small refiners should be dropped from the "Std" equations. (2124.1, p.43)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
Since the Std RF equations only apply for years 2011 and later, the "GE" term, which is used to represent small refinery exempted gasoline, should be dropped from the Std RF equations. [[Docket number 2393.1, p. 7]]

Our Response:

The total projected non-renewable gasoline and diesel volumes from which the annual standards are calculated are based on EIA projections of gasoline and diesel consumption in the contiguous 48 states and Hawaii, adjusted by constant percentages of 11.9% and 15.2% in 2010 only to account for small refinery/refiner gasoline and diesel volumes, respectively, and with built-in correction factors to be used when and if Alaska or a territory opt-in to the program. Because the RFS2 program will be in effect in 2010, it is appropriate to maintain the "GE" term in the equation and note that it only applies for 2010.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) agrees with EPA's proposal to base the RFS2 standards on the sum of all gasoline and diesel fuel used. This will allow obligated parties to use RINs generated in the most receptive markets to help satisfy their overall renewable volume obligation, and this will help minimize the overall cost of the program. (2132.1, p.7)

Our Response:

While we took comment on an alternative approach in which the standards would be calculated separately for gasoline and diesel, we agree that the most straightforward approach is to sum gasoline and diesel together in order to calculate the standards. This is the approach we have finalized in today's rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes there are problems with EPA's calculation of the RVO in Section 80.1405. [[Docket number 2233.2, p.6]] [[See docket number 2233.2, pp. 6-7 for explanation of the formula issues.]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter adds that there are problems with EPA's calculation of the renewable volume obligation (RVO) under the RFS1 regulations. In the four Standard Renewable Fuel (Std RF) equations in this section, EPA subtracts the U.S. Energy Information Administration's (EIA) projected renewable usage from EIA's projected gasoline and diesel demand. The commenter believes that since EPA is actually mandating the minimum renewable volumes for the year in question, it should in fact only use the EIA renewable projections if they are larger than the mandated renewable volumes. In the cases where EIA's projected renewable volumes are less than the renewable fuel volumes which will be mandated, the actual mandated volumes should be used.

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the renewable fuel standard equations must be calculated carefully. The proposed equations for the calculation of the annual renewable fuel standard percentages are at §80.1405(d). The denominators should be EIA projections of gasoline and diesel volumes excluding renewable fuels.

Our Response:

The denominator of the equations for setting the RFS2 standards represent non-renewable gasoline and diesel projected to be produced or imported in a calendar year. To obtain these values, we use the projections from EIA for total (renewable plus nonrenewable) gasoline and diesel, and then subtract the EIA projections for renewable fuels blended into gasoline and diesel. In this calculation, it does not matter if the EIA projection of renewable fuel is higher or lower than the EISA-mandated volumes for RFS2. The EIA projection must be used in either case to ensure that the resulting non-renewable gasoline and diesel projections are consistent.

3.6.2 Treatment of Biomass-based Diesel in 2009 and 2010

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC
Comment:
The commenter (1001.1) wants the program to succeed. Under the statute, EPA has ample authority to implement a workable program. The proposed rule, however, does not achieve this goal and, in fact, stands to undermine Congressional intent in establishing the biomass-based diesel requirement—an integral part of the program. (1001.1, p. 1)

Our Response:

The final rule includes an updated lifecycle analysis concluding that biodiesel made from both waste greases and soybean oil will meet the 50% GHG threshold, and therefore will count as biomass-based diesel. In addition, to ensure that the volumes of biomass-based diesel required by EISA for 2009 are implemented, we are finalizing a 2010 standard that is based upon a combination of the 2009 and 2010 volume mandates for biomass-based diesel. Compliance with this standard must be demonstrated by February 28, 2011. We believe that these provisions result in a workable program that achieves Congressional intent.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that the proposed changes will not adequately stimulate production of biomass-based diesel fuel. Based on current consumer demand, diesel fuel makes up approximately 31% of fuel demand. However, the biomass-based diesel volumes presented in EISA only account for 6.6% of the total renewable fuel requirement in 2012. The commenter believes that this disproportionate distribution between biomass-based diesel and other primarily gasoline substitute renewable fuels will lead to a potential diesel fuel supply shortfall as industry crude throughput is reduced to absorb gasoline substitutes. The commenter requests that the

EPA Administrator review the volume requirement for biomass-based diesel to determine if a higher volume requirement is necessary to ensure that adequate supplies of renewable diesel are developed on a commercial scale. (2118.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter believes that EPA should carefully evaluate future biomass-based diesel production capability. The commenter stated that EPA will need to identify the annual regulatory volume for the first year of the RFS2 program for biomass-based diesel. To identify an appropriate regulatory volume for 2011, the Agency should project actual supply in 2011. The commenter believes that EPA should not just rely on nameplate production capacity and assume that all plants will operate at 100% capacity utilization throughout 2011. (2124.1, p.23)

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests that EPA strongly consider setting more aggressive targets for biomass-based diesel beginning in 2013 to provide the necessary pricing signals to the market to incent advancement of new technologies. The commenter's analysis based upon a compilation of NREL, USDA, U.S. Bureau of Labor & Statistics, and National Renderer's Association data concludes there is enough energy dense fats and oils neutral and non-neutral materials to support over 2 billion gallons of biomass based diesel already in the marketplace in the U.S. If foreign sources are included, the total is much higher. Technology exists today to convert these feedstocks into high quality methyl esters. The commenter also suggests that the only barrier to utilization of these feedstocks is price differential to crude oil and that the 30% suggested restriction is overly conservative. Therefore, the commenter suggests the EPA target significantly greater than 1 billion gallons of biomass-based diesel in 2013 and beyond. [[Docket number 2106.1, p. 1]]

Our Response:

The volumes for biomass-based diesel were established by EISA, and EPA does not have the authority to increase those volumes prior to 2013. For 2013 and beyond, EPA must determine the appropriate volumes to require, so long as those volumes exceed 1.0 bill gal. We have not conducted the analyses necessary to determine the appropriate volumes for 2013 and beyond, and thus have not established those volumes in today's final rulemaking.

As discussed in our responses under section 3.6.2.2, we have assessed the potential biomass-based diesel volume for 2010 and believe that the standard based upon 1.15 bill gal is feasible. We intend to continue to assess the potential production as we set the standards for future years based on available information, including information provided to us in the annual production outlook reports discussed in preamble Section II.K.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2141
Organization: American Trucking Associations
Comment:
The commenter (2141.1) recommends that EPA temporarily allow domestically produced soy-based biodiesel to be used to meet the biomass-based diesel requirements under RFS2. This will ensure that the RFS2 statutory mandates are achievable in the near term. Once EPA obtains scientifically-defensible data on soy based biodiesel's lifecycle emissions, EPA should address the issue in a future rulemaking. (2141.1, p.5)

Our Response:

The updated lifecycle analysis of GHG emissions for soy-based biodiesel indicates that it meets the 50% GHG threshold applicable to biomass-based diesel. Therefore, there is no need for special, temporary treatment of biodiesel in order to meet the biomass-based diesel standard.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter believes that allowing parties to utilize the same RINs over multiple years will likely cause issues with software programs that are managing RINs and will also cause confusion when calculating the 0100 reports. The commenter recommends that the EPA not allow biodiesel RINs to be used twice. Allowing obligated parties to use the RINs for compliance as well as sell them would cause inconsistencies when performing attestations. (2400.2, p.2)

Our Response:

We have designed the regulations such that the software issues described by the commenter are unlikely to occur. Under RFS2, all RINs can only be used for compliance purposes in a single year. This includes compliance with the combined 2009/2010 biomass-based diesel standard. However, prior to determining compliance with the combined 2009/2010 biomass-based diesel standard, obligated parties can take a credit for any biodiesel or renewable diesel RINs that were used for compliance in 2009. In other words, the RVO for biomass-based diesel will be reduced by the number of RINs that the obligated party used for compliance in 2009. The resulting, adjusted RVO must then be met with 2008, 2009, and/or 2010 RINs that have not previously been used for compliance purposes, subject to rollover restrictions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:

The commenter (2155.1) believes that biomass based diesel should be treated as an ethanol-equivalent volume as opposed to the suggested diesel volume for the purpose of continuity amongst other types of renewable fuels (2155.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter agrees with EPA that Congress intended the required volumes related to Biomass-based Diesel to be treated as diesel volumes rather than ethanol-equivalent volumes. The commenter states that Congress also intended to spur the development of advanced biofuels, through specific volume mandates. The commenter urges EPA to apply option 2 to the Biomass-based Diesel, Advanced Biofuel, and Cellulosic Biofuel RVOs. [[Docket number 2249.2, p. 32]]

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The required categories of "Total Renewable Fuel", "Total Advanced Fuel" and "Cellulosic Biofuel" should share a common basis for accounting for different renewable fuels that are replacing both gasoline and diesel in the marketplace. The commenter advocates that the biomass-based diesel standard be expressed as an ethanol-equivalent volume. This approach has the benefits of being simple and transparent. (2145.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) agrees with the EPA that Congress intended the required volumes of Biomass-based Diesel to be treated as diesel volumes rather than ethanol-equivalent volumes. The 1 billion gallons of Biomass-based Diesel by 2012 is intended to be a strict volume calculation and not an ethanol-equivalent energy content calculation. (2360.1, p.7)

Our Response:

While the EISA-mandated volumes for cellulosic biofuel, advanced biofuel, and total renewable fuel can be met with any type of renewable fuel, we believe that the mandated volume for biomass-based diesel was intended to be met only by renewable fuels that displace fossil-based diesel. Moreover, we expect that the predominant renewable fuel used to meet the biomass-based diesel requirement will be biodiesel (mono-alkyl esters). Since we are finalizing the energy content approach to Equivalence Values, we have adjusted the biomass-based diesel volume mandate from EISA upward by a factor of 1.5, the Equivalence Value for biodiesel. The net result is a biomass-based diesel gallon being worth 1.0 gallons toward the biomass-based diesel standard, but worth 1.5 gallons toward the other standards.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471

Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter noted that if EPA finalizes the Biomass-Based Diesel fuel standard as proposed, an Obligated Party's BBD obligation will actually exceed its Advanced Biofuel RVO in 2010 (due to the proposed combined 2009-2010 BBD mandate). The commenter does not believe that this result was intended and requests that EPA clarify this situation to allow Obligated Parties to separate an appropriate amount of self-generated "D3" RINs. (2471.1, p.17)

Our Response:

The biomass-based diesel volume of 1.15 bill gal for 2010 will automatically fulfill the advanced biofuel standard, given the energy-based Equivalence Values for biodiesel and renewable diesel. However, obligated parties can still buy advanced biofuels with a D code of 5 and use them to meet their total renewable fuel standard, or retain them for use in 2011.

3.6.2.1 Supports the Proposed Treatment of Biomass-based Diesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) supports the Option 1 Treatment that rolls the 2009 Biomass-based Diesel requirements into 2010 for total volume of 1.15 billion gal. The commenter also supports the pathway of subtracting 2009 consumed Biodiesel or Renewable Diesel from the 2010 requirement of 1.15 billion gal. The commenter supports the position of being able to use excess 2009 Biodiesel volumes (RR code of 15 or 17) (at a 20% rollover cap) to go toward meeting the balance of their 2010 Biomass-based Diesel volume requirements. (0994.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should not penalize obligated parties who responded in good faith to EPA guidance on complying with the 2009 BBD volume requirement. EPA should explicitly allow BBD RINs procured based on EPA advice to be used for BBD compliance with the first BBD volume mandate established under the final RFS2 rules. (2110.1, p.3)

Our Response:

We agree that the special provisions proposed in the NPRM to account for the 2009 biomass-based diesel volume requirements in EISA should be finalized. Since the RFS1 regulatory structure did not provide a mechanism for implementing the 0.5 billion gallon requirement for biomass-based diesel in 2009, we are combining the 2010 biomass-based diesel requirement of 0.65 billion gallons with the 2009 biomass based diesel requirement of 0.5 billion

gallons to require that obligated parties meet a combined 2009/2010 requirement of 1.15 billion gallons by the end of the 2010 compliance year. All 2009 RINs for biodiesel and renewable diesel are valid for complying with this combined 2009/2010 standard, consistent with our intention as described in the November 2008 notice setting the 2009 standard for total renewable fuel.

3.6.2.2 Opposes the Proposed Treatment of Biomass-based Diesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) recommends commencement of a biodiesel requirement on January 1, 2011 and a volume requirement of 800 million gallons for 2011 as was legislated in EISA. The industry will need adequate lead time from the date of the final rule to plan, designing, construct, and complete the necessary biodiesel infrastructure. [[Docket number 2384.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that EPA should not combine the 2009 and 2010 requirements. By imposing the 2009 volume requirements in 2010, EPA would be imposing a retroactive requirement and immediately put obligated parties in a compliance deficit. (2124.1, p.10)

The commenter also believes that EPA's proposal to combine the 2009 and 2010 volume mandates for 2010 is clearly contrary to the express intent of Congress. Combining the 2009 and 2010 standards makes little sense as a practical matter since it results in a standard of 1.15 billion gallons when Congress only envisioned a 1 billion gallon mandate in 2012. EPA is creating a situation where unnecessary blending capacity is required for a one year period. The commenter noted that the same would be true if EPA attempts to combine the 2010 and 2011 standards if the RFS2 program starts in 2011. (2124.1, p.11)

The commenter strongly opposes any attempt by EPA to impose, on a retroactive basis, biomass-based diesel requirements for 2009 or any other period that precedes a final rulemaking for RFS2 that includes provisions sufficient to implement EISA requirements. EPA has no authority to "recapture" volume mandates under different start-date scenarios. (2124.1, p.11) [For a detailed discussion of this issue, see pp. 12-16 of Docket Number 2124.1).

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) states that when EPA finalizes the RFS2 rulemaking, the 2009 biomass-based diesel requirement should not be carried forward to 2010 and the 2010 biomass-based

diesel and cellulosic ethanol requirements should not be carried forward to 2011. [[Docket number 2130.1, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Regarding the 2010 mandates, the commenter opposes adding these mandates to 2011. Adding the Biomass-based Diesel mandates is particularly onerous as obligated parties sort through infrastructure, seasonality, quality, economic and GHG reduction issues. Therefore, for 2009, by default, EPA must rely on the RFS1 regulations and the overall mandate alone. [[Docket number 2233.2, p. 39]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should not combine the 2009 and 2010 requirements. By imposing the 2009 volume requirements in 2010, EPA would be imposing a retroactive requirement and immediately put virtually all obligated parties in an immediate compliance deficit. This is not consistent with longstanding legal principles, or principles of basic fairness, that prohibit the government from promulgating ex post facto laws. (2505.2, pp.3-4) (See Docket Number 2505.2 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter further states that EPA should abandon any notion that EISA requirements can be brought forward. Should the RFS2 start date be 1/1/2011 (as recommended by the commenter), the 2011 EISA requirement of 0.80 bg would be a substantial fraction of the proposed 2009/2010 lumped requirement of 1.15 bg and would come at a time when production is even lower than when initially proposed with the November 2008 notice. [[Docket number 2393.1, pp. 14-15 and 2523.1, p. 2]]

The commenter understands that EPA's rationale for establishing the proposed 2009/2010 BBD standard is in jeopardy should the start date be extended, but in extending the start date EPA will have to establish a transition program to manage other EISA mandates and a few practical matters that are seriously compromised by the delay in promulgating the final rules. As part of this transition program, EPA should explicitly allow the use of prior-year biodiesel RINs procured based on EPA advice for BBD compliance with, at a minimum, the first BBD volume mandate established under the final RFS2 rules. [[Docket number 2393.1, pp. 15-16]]

Our Response:

We continue to believe that it is appropriate and consistent with the statute to combine the 2009 and 2010 mandated volumes for biomass-based diesel into a single two-year obligation for which compliance must be demonstrated by February 28, 2011. Congress expected and intended that RFS2 regulations would be adopted by the end of 2008, and that they would have

applied in full to 2009 and 2010. If that had occurred, then obligated parties would have transitioned from RFS1 requirements to RFS2 requirements starting with 2009. They would have had a 2009 volume obligation for biomass-based diesel based on a total volume of 0.5 billion gallons, and a 2010 volume obligation based on a total volume of 0.65 billion gallons. If an obligated party did not satisfy their individual 2009 volume obligation by the end of 2009, then the statute allowed the party to carry the deficit over to 2010 as long as they were in full compliance with both 2009 and 2010 volume requirements by the end of 2010. This is the mechanism that Congress employed to ensure that 1.15 billion gallons would be used by the end of 2010, spread out over 2009 and 2010, through the use of separate 2009 and 2010 volume obligations combined with a deficit carry over provision.

EPA did not issue the RFS2 regulations by the end of 2008, and the transition from RFS1 to RFS2 did not occur at the beginning of 2009. EPA is thus faced with structuring and implementing a transition from the RFS1 to the RFS2 regulations in a way that most appropriately meets two goals. One goal is to maximize compliance with the volume requirements Congress set out for biomass-based diesel. The other goal is to provide the regulated parties with adequate lead-time to meet such volume requirements.

As discussed below, there is significant productive capacity for the production and use of biomass-based diesel, a large amount of which is not currently used because of inadequate demand. Productive capacity is currently estimated at over 2.8 billion gallons, far beyond the 2009 and 2010 volumes set by Congress in EISA. Clearly productive capacity of biomass-based diesel is not a limiting factor as far as the feasibility of the EISA volume requirements or lead time for obligated parties. As discussed below it is also relatively straightforward for much of the current unused capacity to be brought on line, something we believe will occur once sufficient incentive is put in place, such as the combined 2009-10 volume requirement in this rule.

In these circumstances, EPA believes it is appropriate to establish a volume obligation on refiners and importers that amounts to using 1.15 billion gallons by the end of 2010. This should not be seen as just a 2010 obligation. It is an obligation that must be met by the end of 2010, and that reflects the use of biomass-based diesel over both 2009 and 2010. In effect, EPA believes that given the amount of biomass-based diesel that was already used in 2009, obligated parties have adequate lead time such that by the end of 2010 their use of biomass-based diesel over both 2009 and 2010 can quite feasibly and practicably amount to 1.15 billion gallons. This recognizes that approximately 300 million gallons have already been used in 2009, calling for the use of approximately 815 million additional gallons by the end of 2010. Less volume may actually be called for, as obligated parties can also use 2008 RFS1 RINs that are not used for other compliance purposes.

As discussed above and in more detail later and in Section IV.B.4 of the preamble and Section 1.5.4 of the RIA, there is adequate lead time to accomplish this given the large excess current capacity for production of biomass-based diesel. In addition, this approach maximizes the ability to meet the volume goals established by Congress in EISA. Recognizing that, in light of the fact that we are issuing the final RFS2 regulations over a year later than specified in the statute, no program established by EPA will match the specific structure envisioned by Congress

in EISA, this approach comes closest to meeting both the content and purpose of EISA. It is built on and achieves the same volume levels envisioned by Congress. It also functions very similar to the compliance carryover provisions adopted by Congress. Section 211(o)(2)(A) uses broad language giving EPA authority to "revise the regulations under this paragraph to ensure that transportation fuel sold or introduced into commerce in the Untied States …. on an annual average basis, contains at least the applicable volume of … biomass-based diesel determined in accordance with subparagraph (B)." This generally broad grant of authority reasonably is construed to include the authority to adopt this kind of transition from RFS1 to RFS2 requirements, that best promotes the purposes of the EISA biomass-based diesel provisions, given all of the circumstances noted above and best matches the 2009 transition from RFS1 to RFS2 envisioned in EISA.

The alternative approach, suggested by some commenters, would be for EPA to establish solely a 2010 volume requirement, based on the 0.65 billion gallons. This would lead to less use of biomass-based diesel over the two calendar years than envisioned by Congress.

This approach of a combined 2009 and 2010 volume requirement, achieved by the end of 2010, does not impose any retroactive requirements. The obligation that is imposed under the RFS2 regulations is forward-looking – by February 28, 2011, when compliance is determined, obligated parties must satisfy a certain biomass-based diesel volume obligation. This is a future requirement and can be satisfied by biodiesel produced and used in 2009 in addition to 2010, and to some extent biodiesel produced and used in 2008. However the RFS2 regulations do not change in any way the legal obligations or requirements that apply for conduct or action occurring prior to the effective date of the RFS2 regulations. Instead, the RFS2 requirements impose new biomass-based diesel requirements that must be met in the future. While they take into account and give credit for past actions, they do not regulate or change in any way the legal obligations applicable to past conduct.

Some commenters stated that this approach would make them in noncompliance as of the issuance of the regulations. That is not accurate. Compliance by refiners or importers is not determined until February 28, 2011. No one can be in noncompliance with this volume obligation prior to that date. As of the effective date of the RFS2 regulations, refiners and importers will have new obligations that they will have to meet by a future compliance date, but the regulations do not mean that they are in noncompliance upon issuance of the regulations.

Sufficient capacity exists for producing the entire biomass-based diesel needed in 2010 to comply with the combined 1.15 billion gallon requirement. As discussed in section IV.B.4 in the preamble, biodiesel production capacity has continued to grow and is currently estimated at over 2.8 billion gallons; also 75 million gal/yr of renewable diesel production capacity is expected to come online in 2010 as well.

As a benchmark, U.S. biodiesel production in 2008 reached an estimated 776 million gallons, demonstrating that not only does the U.S. have ample production capacity, but also the feedstock and distribution infrastructure to produce very large volumes. For various economic reasons, production fell in 2009, but despite this fact, we have seen that approximately 600 million gal/yr of capacity was built or purchased between fall of 2008 and fall of 2009

(determined by comparing lists of operating plants maintained by National Biodiesel Board). This suggests continued interest and available production capacity to enable obligated parties to meet the standard.

As an additional metric, we see that for July-September of 2009 (the latest EIA data available as of this writing), biodiesel was produced at an annualized rate of 570 million gal/yr. Many of these plants are operating below their full capacities, so simply increasing utilization will likely be sufficient to meet the required volume for 2010. In reviewing biodiesel production over time, it is clear that wide swings in production can occur extremely rapidly. Thus, increasing production at plants currently operating is entirely feasible, with the main issues limited to purchase and transport logistics for the increased volumes of feedstock. Meanwhile, a portion of the large amount of idle capacity could also be brought online once operators receive the signal that will be provided by publication of this final rulemaking. Biodiesel plants have the ability to restart rapidly as evidenced by the long history of facilities shutting down temporarily and then starting back up again when economic conditions improve.

3.6.2.3 Request for Interim Rulemaking

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) says EPA should implement interim rules to ensure the volume requirements for biomass-based diesel are met and not further delayed. Delaying the effective date is not consistent to the stated goal to reduce U.S. dependence of foreign sources of petroleum by increasing domestic sources of energy. [[Docket number 2510.1, p. 2]]

The commenter concludes that the final rules as they are today will destroy business, investors will lose their equity, and employees will lose jobs and benefits. Delaying the implementation of a good RFS proposal encourages the use of more foreign oil, and that should not be the goal of EPA's proposal. [[Docket number 2510.1, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) supports having the RFS2 regulations enforceable beginning January 1, 2010 but adds that delayed implementation of the biomass-based diesel requirement has adversely affected the biodiesel industry and the commenter specifically. Recognizing that EPA's proposed rule may not be finalized until the end of 2009 and may have an effective date beyond January 1, 2010, EPA must act now to effectuate Congressional intent and implement the 2009 volume mandate for biomass-based diesel (and, if necessary, the 2010 requirement). [[Docket number 1051.1, p.1]]

Document No.: EPA-HQ-OAR-2005-0161-1005

Organization: Cotner Consulting Services
Comment:
The commenter (1005.1) noted that the Energy Independence and Security Act (EISA) of 2007 added a specific mandate for biomass-based diesel as part of the program's Advanced Biofuels schedule. The biomass-based diesel requirement was to begin in 2009 with 500 million gallons. EISA required EPA to revise the current RFS regulations to ensure these new mandates are implemented. Unfortunately, EPA has yet to issue final rules largely due to the complicated and controversial lifecycle analysis being conducted as part of the RFS2 regulations. This has delayed implementation of the biomass-based diesel requirement, which has adversely affected the biodiesel industry. The commenter believes that EPA must act now to effectuate Congressional intent and implement the 2009 volume mandate for biomass-based diesel (and, if necessary, the 2010 requirement). (1005.1, p.1)

The commenter believes that existing biodiesel facilities, which are able to meet the RFS2 requirements with existing feedstock sources, should not be unfairly penalized for assumptions related to international land use changes. EPA has already indicated that obligated parties will be able to use 2009 biodiesel and renewable diesel to meet the RFS2 requirements. The commenter believes that EPA should grant this relief in the form of an interim final rule that codifies this finding and that would ensure the biomass-based diesel requirement is being met until the entire RFS2 program is finalized and becomes effective. At a minimum, EPA must provide notice that 2009 biodiesel RINs are valid and will be required to show compliance with the RFS2 to fulfill Congressional intent and provide legal certainty to the industry. (1005.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-1052
Organization: Pennsylvania Energy Resources Group (ERG)
Comment:
The commenter (1052) states that existing biodiesel facilities which are able to meet the RFS2 requirements with existing feedstock sources should not be unfairly penalized for assumptions related to international land use changes. Since EPA has already indicated that 2009 biodiesel and renewable diesel can be used to meet the RFS2 requirements, an interim rule will support stability for the industry. [[Docket number 1052.1, pp. 1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) requests that EPA publish a rule that will implement the Biomass-based Diesel requirement for 2009 (and until final regulations become effective) or, at a minimum, provide notice that 2009 biodiesel and renewable diesel will be valid and required to be in compliance with the RFS2 program. (2079.1, p. 3)

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) requests that EPA publish a rule that will implement the Biomass-based Diesel requirement for 2009 and 2010 (and until final regulations become effective) or, at a

minimum, provide notice that 2009 and 2010 biodiesel and renewable diesel will be valid and required to be in compliance with the RFS2 program. (2360.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) states that EPA has already indicated that obligated parties will be able to use 2009 biodiesel and renewable diesel to meet the RFS2 requirements. If EPA does not issue an interim final rule that codified this finding then, at a minimum, EPA must provide notice that 2009 biodiesel RINs are valid and will be required to show compliance with the RFS2 to fulfill Congressional intent and provide legal certainty to the industry. [[Docket number 1051.1, p, 1]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that EPA must implement the volume mandates for biomass-based diesel. The commenter is concerned about delays due to the ongoing work needed to complete the lifecycle analysis and urges EPA to issue RVOs this year for the 2010 required volumes for renewable fuel, advanced biofuels, and biomass-based diesel. Issuing RVOs this year for each of these mandates would provide certainty for stakeholders and ensure that the mandated volumes are meted. The commenter suggests that until EPA can finalize the RFS2 regulation, the current RFS regulations can be used to implement the volume requirements. [[Docket number 2249.1, pp. 2-3]

Document No.: EPA-HQ-OAR-2005-0161-1001
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC
Comment:
The commenter (1001.1) looks forward to working with EPA to address the proposal's shortcomings and implement a final rule prior to January 1, 2010. The commenter recognizes, however, that a final rule may not be issued until the end of 2009 and/or may not be made effective until after January 1, 2010. The commenter urges EPA to issue an interim rule to effectuate Congressional intent and address the adverse impacts any further delay of implementing the RFS2 requirements will have on the biodiesel industry. (1001.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter also says EPA should implement interim rules to ensure the required volume requirements biomass-based diesel to the regulated parties are met and not further delayed. Delaying the effective date is not consistent to the stated goal to reduce U.S. dependence of foreign sources of petroleum by increasing domestic sources of energy. Recognizing the complexity of this task and that never before has a regulatory program assessed greenhouse gas emissions of fuels. [[Docket number 2123.1, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-1049
Organization: Prairie Pride, Inc.

Comment:
The commenter (1049) states that delayed implementation of the biomass-based diesel requirement has adversely affected their business and believes that EPA should act now to implement the 2009 volume mandate for biomass-based diesel. Also, EPA should grant this relief in the form of an interim final rule that codifies the biomass-based diesel requirement is met until the entire RFS2 program is finalized and becomes effective. [[Docket number 1049, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
Since EPA has already indicated that obligated parties will be able to use 2009 biodiesel and renewable diesel to meet the RFS2 requirements, the commenter believes that EPA should grant this relief in the form of an interim final rule that codifies this finding and that would ensure the biomass-based diesel requirement is being met until the entire RFS2 program is finalized and becomes effective. [[Docket number 1051.1, p.1]]

Document No.: EPA-HQ-OAR-2005-0161-1052
Organization: Pennsylvania Energy Resources Group (ERG)
Comment:
The commenter (1052) strongly believes that an interim rule is critical to ensure that the 2009 and 2010 volumes are met, as required by the Energy Independence and Security Act of 2007. The two month extension to the comment period for the new regulations further delays implementation, creating additional difficulties for biodiesel plants, refineries and terminal facilities that are spending hundreds of millions of dollars in Pennsylvania alone to meet the volume goals under RFS2. The commenter states that the Pennsylvania biodiesel industry cannot afford a significant further delay in implementation of the volume requirements mandated by EISA 2007. [[Docket number 1052.1, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2013, et al.
Organization: SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC, et al.
Comment:
The commenters stated that EPA should implement interim rules to ensure the required volume requirements biomass-based diesel to the regulated parties are met and not further delayed. Delaying the effective date is not consistent to the stated goal to reduce U.S. dependence of foreign sources of petroleum by increasing domestic sources of energy. Recognizing the complexity of this task and that never before has a regulatory program assessed greenhouse gas emissions of fuels.

Document No.: EPA-HQ-OAR-2005-0161-2300
Organization: Dow AgroSciences
Comment:
The commenter (2300) requests that due to the tight timing and possibilities that the rule may not be made effective until after January 1, 2010, EPA should issue an interim rule to effectively

state Congressional intent which the commenter believes is different from that currently proposed. (2300, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) recognizes that a final rule may not be issued until the end of 2009 and/or may not be made effective until after January 1, 2010. As such, they urge EPA to issue an interim rule to effectuate Congressional intent and address the adverse impacts any further delay of implementing the RFS2 requirements will have on the biodiesel industry. The lack of implementation of the RFS2 adds greatly to business uncertainty in an already stressed market place. [[Docket number 2435.1, pp. 1-2 and 6-7]]

Document No.: EPA-HQ-OAR-2005-0161-2464, 2537
Organization: Musket Corporation
Comment:
The commenter (2464.1) believes that EPA should issue an interim version of RFS2 in time to enforce the 2009 volumes in the EISA no later than January 1, 2010 unless a final version can be issued at that time. (2464.1, p.2) (See Docket Number 2464.1, pp.1-2 for a detailed discussion of this issue)

Our Response:

An interim rulemaking that put in place the 2009 volume requirement for biomass-based diesel without also putting in place EISA's new definition for biomass-based diesel, renewable fuel, and renewable biomass, would have raised significant legal and policy issues that would necessarily have required a new proposal with its own public notice and comment process. After analyzing our available authorities, we determined that a rulemaking addressing these issues without allowing for public participation would ultimately not be successful. Additionally, because of the significant time required for notice and comment rulemaking, the need to provide industry with adequate lead time for new requirements, and the fact that we were already well into calendar year 2009 when the request for an interim rulemaking was received, it was unlikely that any interim rule could impact biodiesel demand in 2009. Resources applied to the interim rulemaking would also have been unavailable for development of the final RFS2 rulemaking. As a result, developing an interim rule could easily have undermined EPA's ability to complete the full RFS2 program regulations in time for 2010 implementation. Therefore, we believed that the most prudent course of action was to continue development of the final RFS2 rulemaking rather than to divert resources to an interim rulemaking that would not likely have had a significant impact on 2009 biodiesel demand.

3.6.2.4 Treatment of 2008 and 2009 Biodiesel RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994

Organization: Griffin Industries
Comment:
The commenter is against the proposal of allowing 2008 Biodiesel and Renewable Diesel excess RINs for compliance of the 2009/2010 Biomass-based Diesel requirements. This can work against the purchase of Biodiesel and Renewable Diesel in 2009 and 2010. Per the RFS1 regulations, excess 2008 RINs no matter what type are permitted to meet the 2009 RFS1 volume obligation, but should not be permitted to meet the 2009/2010 Biomass-based Diesel Obligation. This eliminates any possible confusion about when 2008 RINs are to be retired. (0994.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) supports this proposed option, allowance of 2008 RINs for compliance subjected to the 20% carryover provisions, because it demonstrates a common sense approach of the intended actions of RFS1 and identified the issue caused by the delayed implementation of RFS 2. The commenter asks for an immediate notice or technical amendment on this issue. (1044.1, p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter states that current holders of biodiesel RINs for 2008 and 2009 (and potentially 2010) should be able to carry those RINs forward for use in demonstrating compliance for 2011 if EPA carries any of the biodiesel requirements for 2009 and 2010 forward to 2011. [[Docket number 2130.1, p. 17]]

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) believes that it is important for the EPA to set guidance stating that 2009 generated biodiesel RINs be used for biodiesel compliance purposes and be allowed to carry over into 2010.

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Referring to the November 2008 notice of the 2009 mandated volumes, the commenter believes that it is extremely unfair for EPA to now finalize rules that cause economic harm to the obligated parties who attempted to comply with EPA's earlier guidance. The commenter recommends that EPA allow 2008 and 2009 biodiesel RINs to comply with either a partial 2010 or a 2011 biomass based diesel obligation. [[Docket number 2233.2, p. 39]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:

The commenter (2384) recommends commencement of a biodiesel requirement on January 1, 2011 and a volume requirement of 800 million gallons for 2011 as was legislated in EISA. The commenter also recommends that any biodiesel blended in 2009 and 2010 be allowed to be applied to the 2011 obligations. [[Docket number 2384.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
In particular, EPA has proposed to allow 2008 RINs be used to meet the joint 2009/2010 Biomass-based Diesel volume. The commenter states that this proposal would violate the 12 month limit on the life of a credit, as such RIN should have been applied in 2008 and could have been applied to meet the overall standard in 2009. Moreover, there is more than sufficient supply in 2009, and expected in 2010, to meet the Biomass-based Diesel requirement. Indeed, obligated parties have refused to purchase biodiesel in 2009, making it unlikely that the 2009 volume mandate will be met in actual volumes, despite availability of biodiesel. Obligated parties should not be able to make up for their own inaction by using 2008 RINs. There is simply no justification for allowing 2008 RINs to be used to show compliance in 2010. [[Docket number 2249.2, pp. 31-32]]

Our Response:

Since the 2010 compliance demonstration will include the obligation that would have applied in 2009, and 2008 RINs would be valid for 2009 compliance, we are allowing excess 2008 biodiesel and renewable diesel RINs that were not used for compliance purposes in 2008 to be used for compliance purposes in 2009 or 2010. This is consistent with the requirement that RINs are valid in the year they are generated and in the following calendar year. Moreover, all 2009 RINs for biodiesel and renewable diesel are valid for complying with this combined 2009/2010 standard, consistent with our intention as described in the November 2008 notice setting the 2009 standard for total renewable fuel. Roll-over provisions apply when using prior-year RINs, as discussed in the preamble.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) disagrees with EPA's proposal to allow 2009 biodiesel and renewable diesel RINs to be used for the 2010 biomass-based diesel standard. The commenter noted that EPA is trying to apply the statutory RFS2 standard in 2009 even before implementing the RFS2 program, on the assumption that soy-based biodiesel could satisfy EISA's GHG lifecycle test. Since EPA's analysis ultimately showed biodiesel did not qualify as biomass-based diesel, this assumption is no longer valid. If EPA could legally justify extending the allowance program to biomass-based diesel, this would help the market function better when EPA's volume estimates prove significantly off the mark. (2132.1, p.17)

Our Response:

Our updated lifecycle analysis for the RFS2 final rule determined that soy-based biodiesel meets the 50% GHG threshold for biomass-based diesel. We note, however, that biodiesel RINs generated in 2009 are valid to demonstrate compliance with the 2010 RFS2 biomass-based diesel standard as a transition measure, reflecting the fact that RINs are valid in the year they are generated and the following calendar year. Thus, the 2009 biodiesel RINs would be valid for use in complying with the 2010 standards even if the fuel for which the RINs were generated did not meet the 50% RFS2 GHG reduction threshold or if that fuel was not made with renewable biomass. Therefore, biodiesel RINs generated in 2009 are valid for meeting the appropriate RFS2 standards. Our analysis of the biomass-based diesel market indicates that sufficient production capacity exists to meet the combined 2009/2010 volume requirement of 1.15 bill gal, taking into account biodiesel produced in 2009.

3.7 Fuels that are Subject to the Standards

3.7.1 Coverage Expanded to Transportation Fuels

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2396
Organization: CVR Energy
Comment:
The commenter (2396.1) supports the long-range goal of diversifying America's transportation fuels and do not oppose the development and use of biofuels.

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) states that given that EISA expanded the RFS program to include transportation fuel other than gasoline, EPA proposes to include motor vehicle, nonroad, locomotive, and marine (MVNRLM) diesel fuel in the required volume obligation (RVO) calculation. The commenter argues that biofuels that may be used in non-road, locomotive applications would qualify for RINs as well. If there is a larger pool of RVO required by including the total MVNRLM volumes, biofuels should be able to be used in those applications as well. Further, reducing the emissions in the nonroad and locomotive applications is just as valid as reducing emission in motor vehicle applications. [[Docket number 2369.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) supports EPA's extension of the RFS to all transportation fuels, including diesel and nonroad fuels. [[Docket number 2358.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
It is the commenter's (2233) position that EPA cannot lawfully establish renewable fuel standards (either general or fuel-type-specific) based on the volumes set forth in EISA without completing the rulemaking specified in the final sentence of CAA 211(o)(2)(A)(I), nor can EPA lawfully extend the RFS program to fuels other than gasoline.

Our Response:

We appreciate the comments received on this topic. With respect to comments related to the expansion of the RFS program to include "transportation fuels", EISA clearly stated that the renewable fuels standards apply to transportation fuels—and such fuels are to include fuels for use in "motor vehicles, motor vehicle engines, nonroad vehicles, and nonroad vehicle engines…" Accordingly, we are applying the standards to transportation fuels in the RFS2 rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) believes the definitions at §80.1401 are incomplete and offered the following recommendations:
Diesel—The definition for diesel refers to any and all products listed in §80.1407. So, in §80.1407 the fuels Gasoline, RBOB, CBOB, and Biomass-Based Diesels and others are listed thereby capturing gasoline products as diesel. We are certain this is an error. The commenter proposes the definition of Diesel to codify 40 CFR 80.2 and requests Diesel to be defined as MVNRLM (petroleum derived) as discussed in the preamble. As it is written, the term diesel would also imply that the renewable fuel producers (Biomass-Based Diesel) would become obligated parties since the federal definition of diesel 40 CFR Part 80 (80.2(x)(2)) includes biodiesel.

This further identifies the need and use of MVNRLM as discussed in the preamble as a definition for diesel in RFS 2 and absolves the renewable biomass based diesel producers from compliance issues associated with obligated parties. The commenter believes this is an unintended consequence and would promote the intent of the RFS for compliance purposes between parties. [[Docket number 1044.1, pp. 3-4]]

Our Response:

The final regulations at §80.1407(d) specify that diesel fuel which is subject to the standards must be non-renewable, and meet the definition of MVNRLM diesel fuel at §80.2(qqq).

3.7.2 Treatment of Heating Oil and Jet Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
While the commenter (2134.1) supports including heating oil and jet fuel into the RIN program, the commenter opposes any effort to subject these fuels to the RVO mandate. The problem with calculating obligated party RVOs for heating oil is that it is difficult to predict with any reliability the volumes needed for a particular heating season due to fluctuating winter weather conditions. Previous year consumption data provides little evidence with which to predict current year demand. (2134.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter requests that EPA clarify whether aviation fuel will be included in determining the renewable volume obligation if RINs are generated. The commenter believes that aviation fuel should be included in the definition of transportation fuel as defined in EISA, and counted in determining obligated parties RVOs. The commenter finds aviation to be a mode of transportation and more specifically a nonroad vehicle, and thus it would be appropriate to categorize aviation fuel as a type of transportation fuel in calculating the RVOs. [[Docket number 2249.2, pp. 38-39]]

Our Response:

While we are not requiring heating oil and jet fuel to be included in the fuel used by a refiner or importer to calculate their RVOs, we are allowing renewable fuels used as or in heating oil and jet fuel to generate RINs. Similarly, RINs associated with a renewable fuel, such as biodiesel, that is blended into heating oil will continue to be valid for compliance purposes.

As mentioned above, EISA clearly stated that the renewable fuels standards apply to transportation fuels. However, the statute did not expressly define all terms in the definition of "transportation fuel", so we are interpreting this to mean that Congress defers to the Agency's definitions in this respect. We are interpreting the "diesel" portion of transportation fuel to be MVNRLM diesel fuel (as defined at §80.2(qqq)), and jet fuel is not an MVNRLM diesel fuel. As such, we are not considering jet fuel (or heating oil) to be a transportation fuel under the RFS program.

3.7.3 Treatment of Fuels for Use in Ocean-Going Vessels

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044

Organization: GEN-X Energy Group Inc.
Comment:
The commenter supports the definition of an Oceangoing Vessel to include Category 3 engines only, and opposes the inclusion of Category 2 engines. [[Docket number 1044.1, p. 4]] [[See Docket number 1044.1, pp 4-5 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) is opposed to expanding the definition of "ocean-going vessel" to include C2 engines. To help with the success of the RFS, EPA should allow every possible outlet for renewable fuel. [[Docket number 2393.1, p. 78]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that EPA should revise its definition of "ocean going" vessels. While the commenter supports excluding Category 3 marine engines, as provided by the statute, it believes that EPA should clarify that the definition does not include any Category 1 and Category 2 marine engines. [[Docket number 2249.2, p. 36-37]] [[See pp. 36-38 for additional discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter is opposed to the expansion of the term "ocean-going vessel" to include those powered by C2 engines. [[Docket number 2233.2, p. 69]]

Our Response:

To avoid confusion with the recently finalized Category 3 Marine Rule (*Control of Emissions from New Marine Compression Ignition Engines at or Above 30 Liters per Cylinder*, signed December, 18, 2009), we have instead finalized a definition of "fuels for use in ocean-going vessels." We believe that "fuels for use in ocean-going vessels" is a more appropriate definition because it is based on the fuel supply system. Under this definition, those heavy distillate and residual fuels that are intended for use in ocean-going vessels are not considered transportation fuels and thus will not be subject to the RVOs.

For this definition, we interpret the term "ocean-going vessels" to mean, primarily, Category 3 marine vessels (vessels propelled by the largest category of marine engines—those with a displacement of 30 liters per cylinder or more). Since these vessels use residual fuels most of the time, and almost no other marine vessels use residual fuel, our definition deems marine residual fuel to be a fuel used in ocean-going vessels. The definition also recognizes that these vessels may sometimes use other fuels. In particular, the definition states that Emission Control Area (ECA) marine fuel is also deemed to be a fuel used in ocean-going vessels.

(Recently adopted regulations specify that fuel used by these vessels near the U.S. coast will be ECA marine fuel that is generally subject to a 1,000 ppm sulfur cap beginning June 1, 2014.)

With respect to the comments that EPA should not allow the term "ocean-going vessel" to include Category 2 engines, we note that Category 1 and Category 2 engines/vessels are generally subject to the NRLM diesel fuel standards. Since NRLM diesel fuel would not be considered part of "fuels for use in ocean-going vessels", this means that the vast majority of fuel used by Category 1 and Category 2 engines would be considered part of "transportation fuels". However, our recent rulemaking to establish new standards for Category 3 engines included a provision that would effectively allow Category 1 and 2 auxiliary engines installed on Category 3 vessels (i.e., those vessels powered by Category 3 engines) to utilize fuels other than NRLM. This allowance is to reduce burden that could potentially be caused by requiring that these Category 1 and 2 auxiliary engines burn 15 ppm diesel fuel—which could result in a Category 3 vessel needing to carry three different types of fuel onboard. Thus, to the extent that these engines use residual fuel or ECA marine fuel, their fuel would also not be considered "transportation fuels".

3.8 Renewable Volume Obligations (RVOs)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2014.1) provided specific comments regarding regulatory text responding to RVOs. [[See Docket Number 2014.1, pp.1-2 for these detailed comments]]

Our Response:

We have modified the language in §80.1427 to be clearer with regard to compliance with RVOs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) believes that EPA should apply any expired RINs to reducing the next year's total volume obligation. (2154.1, p.6)

Our Response:

While we took comment on this alternative in the NPRM, there was little support for it among stakeholders. We do not believe it would be appropriate to apply expired RINs to the

next year's volume requirements since it would have the effect of making the valid life of RINs meaningless on a nationwide basis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) has serious concerns with the renewable fuels volumes mandated in the Energy Independence and Security Act of 2007 (EISA), particularly the increased mandate for com-based ethanol. A sustainable and successful biofuels program will promote high performance products that do not rely primarily on food-based feedstocks. The commenter urges EPA to make this transition to the next generation of biofuels its primary focus as it finalizes this rule. (2364.1, p.1)

Our Response:

Since the volume mandates were specified in EISA, EPA has very little authority to change them. Aside from the waiver provisions, we cannot promote advanced biofuels over general renewable fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
It is the commenter's (2393) view that if "RIN-less" renewables enter the marketplace suitable for use in motor vehicles, they are, for the purpose of the RFS, motor vehicle fuels and, consequently, incur a renewable volume obligation (RVO). To avoid future misunderstandings, EPA should include a clear statement to this effect in the final rule and its preamble. [[Docket number 2393.1, p. 8]]

Our Response:

We agree that biofuel may be produced or imported under RFS2 for which no RINs are generated. If this biofuel is used as transportation fuel, it might be reasonable to treat it as obligated fuel subject to the standards. However, we do not believe that it would be appropriate at this time to finalize a requirement that RIN-less biofuel be considered an obligated fuel. We did not propose such an approach in the NPRM, and as a result many renewable fuel producers who could be affected did not have an opportunity to consider and comment on it. Moreover, the volume of RIN-less biofuel is likely to be small compared to the volume of renewable fuel with RINs since RINs have value and producers currently have an incentive to generate them. See further discussion in preamble Section III.D.7.

3.8.1 Treatment of RFS1 RINs under RFS2

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter believes the EPA's suggestion of allowing any appropriately generated RINs with a D-Code of 1 that exist prior to the effective date of RFS2 to also be treated as cellulosic biofuel under RFS2 and be used to meet up to 20% of the current year Renewable Volume Obligations for Obligated Parties. (1033.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) disagrees with EPA's proposal to allow 2009 cellulosic biomass ethanol RINs to be used for the 2010 cellulosic biofuel standard. (2132.1, p.17)

Our Response:

We believe that RFS1 RINs with a D code of 1 should be treated as RFS2 RINs with a D code of 3, as described more fully in Section III.G.3 of the preamble. However, RFS1 RINs generated in 2010 will not be subject to the 20% rollover cap in the context of 2010 compliance demonstrations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
With regards to EPA's transition rules for RFS1 RINs, the commenter agrees with EPA that RFS1 RINs for ethanol would meet new requirements for RFS2, including the renewable biomass and 20 percent requirement. Although the commenter supports EPA's proposed transition rules, these rules will not be necessary if the effective date is January 1, 2011. (2329.1, p. 19)

If EPA continues to allow for some rollover of credits into the next year, the commenter supports EPA's proposed treatment of RINs generated under RFS1 to show compliance with RFS2 requirements. (2329.1, p.91)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) supports the use of excess 2009 RINs for 2010 compliance, as this represents a responsible approach to the smooth transition to the new program. In addition, it is the commenter's opinion this action supports all renewable fuels producers and would alleviate

concerns of the obligated parties regarding compliance. The commenter asks for an immediate notice or technical amendment on this issue. (1044.1, p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) supports the proposed read-across from the RFS1 biodiesel and cellulosic ethanol RINs for use in RFS2. Using RIN "D" code for cellulosic ethanol is appropriate. [[Docket number 2130.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) supports the proposed read-across from the RFS1 biodiesel and Cellulosic ethanol RINs for use in RFS2. Using RIN "RR" code for ester and non-ester based biodiesel to biomass-based diesel is appropriate. [[Docket number 2130.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) urges EPA to carefully review the final rule to ensure that it has completely translated the single RIN concepts from RFS1 to the four different types of RINs in RFS2. For example when RINs are retired, it should be made clear that the type of RIN which is retired should match the type of RIN generated. [[Docket number 2233.2, p. 10]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
To avoid double counting, RINs that have been retired, previously used for compliance or used in an off-road application shall not be eligible for use or eligible to be "unretired." Only RINs which have not been previously used for compliance should be allowed to be used as credit against Renewable Volume Obligations (RVOs). (2511.1, p.7) [[See Docket Number 2511.1, pp.7-8 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) notes that the Proposed Rule states that RINs previously retired in nonroad applications may be reinstated under the RFS2. The commenter agrees with this language and asks the EPA to provide a workable time frame for such reinstatement. The commenter also asks EPA to clarify that RIN ownership for reinstated RINs belong to the party that retired the RIN. Additionally, the commenter asks EPA to clarify specific treatment of nonroad RINs in 2010 or later provided the RFS2 does not commence on January 1, 2010. [[Docket number 2249.2, p. 36]]

Document No.: EPA-HQ-OAR-2005-0161-2471

Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) supports EPA's position that RINs generated under RFS1 should be grandfathered under RFS2. In particular, we agree that biodiesel RINs with an "RR" code of "15" or "17" should be considered "Biomass-Based Diesel" RINs under RFS2, and that RINs with an RFS1 D-code of 1 should be treated as "Cellulosic Biofuel" RINs. We also suggest allowing RINs for waste-derived ethanol (RFS1 D-code of 2, "RR" code of "25") to qualify as "Advanced Biofuel" RINs. (2471.1, P.12)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter supports the proposal documented in III.E.3.a that provides for 2009 RFS1 RINs with a D code of 15 or 17 to be equivalent to 2010 RINs with a D code of 2 (or D code of 4 if the six D code option is approved). This will allow all excess 2009 Biodiesel RINs to meet up to 20% of the 2010 Biomass-based Diesel obligation (after the 2009 volume obligation is subtracted from the total 2010 obligation). (0994.1, p.8)

Our Response:

We agree that RFS1 RINs should be valid for compliance with the RFS2 standards, and have finalized the transition provisions as proposed. These provisions ensure that the two-year valid life of RINs is maintained during the transition from RFS1 to RFS2. Our final regulations at §80.1427(a)(4) describe the treatment of RFS1 RINs for compliance purposes under RFS2. According to this protocol, all RFS1 RINs can be used for compliance purposes under RFS2 and are correlated according to their RR and D codes.

We do not believe that it would be appropriate to allow RFS1 RINs representing waste-derived ethanol to qualify as advanced biofuel RINs under RFS2. Although such RFS1 RINs could be identified by a D code of 2 and an RR code of 25, waste-derived ethanol is not explicitly defined in the RFS1 regulations at §80.1101. As a result, we do not have confidence that such renewable fuel would meet the requirements for advanced biofuel under RFS2. Thus, RFS1 RINs representing waste-derived ethanol will be treated as renewable fuel RINs under RFS2. However, in 2010 there will be no need for RINs categorized as advanced biofuel since the advanced biofuel standard will be automatically met with biomass-based diesel RINs generated to meet the biomass-based diesel standard.

Retirement of RINs for renewable fuels used in nonroad or heating oil applications is governed by RFS1 regulations at §80.1129(e). We believe that a specific RIN which is retired under these circumstances should be allowed to be reinstated and used for compliance purposes under RFS2, since RINs have a valid life of 2 years, and an RFS1 RIN generated in 2009 or 2010 should be valid for RFS2 compliance purposes in 2010 or 2011, respectively, if it has not previously been used for compliance. The protocol for RIN reinstatement is described at §80.1429(g). Since the same specific RIN that was retired would be reinstated, the type of RIN which is retired will always match the type of RIN generated. RIN ownership for reinstated RINs belongs to the party that owned the RIN at the time it was retired.

3.8.2 RINs Eligible to Meet Each RVO

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that consideration should be given to allowing RINs to be interchangeable to meet individual obligation of each category.

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter recommends the substitution of corn RINs for all or part of cellulosic obligation be allowed. (2400.2, p.1)

Our Response:

EISA intended that specified categories of renewable fuels would be used to meet specified volume mandates. The substitution of one type of RIN for another would make the four separate standards meaningless.

3.8.3 Deficit Carryovers

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
Regarding the "deficit carry over" provision, EPA says that the excessive 2009 RINs could not be traded to another party. The commenter (2345) believes this approach is appropriate because it approximates the manner in which the statute had assumed compliance would have been demonstrated if the RFS2 regulations had been issued by the end of 2008. [[Docket number 2345.1, p. 5]]

Our Response:

The commenter refers specifically to the proposed approach to the biomass-based diesel standard in which the number of 2009 biodiesel RINs used by an obligated party for compliance in 2009 can be subtracted off that party's RVO for the biomass-based diesel standard in 2010, prior to determining compliance with that RVO. In this context, such RINs could not be traded to another party. We agree with the commenter that this approach is designed to approximate the

intent of EISA given that RFS2 was not effective in 2009, and we have finalized this approach as proposed.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2102
Organization: RENTECH, INC
Comment:
The commenter (2102.1) encourages EPA to allow obligated parties to run negative credit balances for longer periods of time in the early years of the program, consistent with EPA's statutory obligations to determine available volumes each year. (2102.1, p.6)

Our Response:

CAA 211(o) explicitly allows a deficit carryover of no more than one year at a time. As a result, obligated parties cannot carry a deficit for two or more years in a row. The statute does not provide EPA the authority to change this provision.

3.8.4 Obligated Volumes

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) believes that exported fuels should be excluded from a company's RVO. EISA requires EPA to exclude fuel from an obligated party's obligation because EISA is limited to the transportation fuels used in the United States. The commenter recommends that language be put in similar to §80.1407 (d)(5) to include exported distillate fuels as well. Just as the provisions apply to gasoline fuels, the same provisions should apply to distillate fuels and should be excluded from the obligation. EPA should also be clear that both gasoline and distillate volumes produced at transmix facilities do not incur an obligation since these fuels are previously accounted for and are already part of the obligation of refiners and importers. (2400.2, p.12)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter believes that EPA should include provisions in this section specifying which types of distillate fuels are included, and excluded from the obligation. EPA should also clarify that gasoline and distillate volumes produced at transmix facilities do not incur an obligation since such fuel was already accounted for and is part of the obligation of refiners and importers. (2505.2, p.5)

Our Response:

In the list of exclusions for exported gasoline in the proposed regulations at §80.1407(d), we inadvertently failed to list corresponding exclusions for exported diesel. This has been corrected for the final rule. The correction includes an explicit reference to diesel in transmix.

3.8.5 Exported Renewable Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that EPA should amend the RFS2 regulations to better recognize certain commercial realities of the renewable fuel export industry. The commenter believes that modest changes to the regulations can enhance exporters' flexibility. Specifically, EPA should allow exporters to demonstrate that the product exported was actually produced or acquired in the preceding year. The commenter noted that the requested change would not in any way reduce accountability for renewable fuel exports. Instead it would merely correct an inequity that arises during the transition between compliance years. (2471.1, Section 3.6, pp.12-13)

Our Response:

The provisions at §80.1430 that require an exporter to determine an RVO based on exported volumes of renewable fuel are designed to ensure that only renewable fuel actually consumed within the 48 contiguous states or Hawaii is counted towards meeting the volume mandates in EISA. Since the statutory volume consumption mandates are annual, the regulations are designed to account for exported renewable fuel at the time it is exported, when it is removed from the pool of renewable fuel being consumed in the U.S. In this context, the year of production of the exported renewable fuel is not as important as the year of exportation. Moreover, exporters are unlikely to have access to information about the production date of the renewable fuel they are exporting. Any RINs assigned to the exported renewable fuel may not have been generated to represent that fuel, since assigned RINs are fungible and can be moved from one batch of renewable to another.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter also supports an approach where an exporter assumes all ethanol is renewable fuel and biodiesel is biomass based diesel. The incentives to import cellulosic and advanced biofuels in the RIN market will encourage companies to import cellulosic and advanced fuels.

The commenter is aware of several biodiesel exporters who have apparently failed to retire the RINs associated with biodiesel produced in the U.S. and shipped to Europe. The commenter urges EPA to enforce these provisions. [[Docket number 2233.2, p. 9]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter also supports the approach where exported ethanol is assumed to be renewable fuel and exported biodiesel is presumed to be biomass-based diesel. The commenter believes incentives to import cellulosic and advanced biofuels in the RIN market will encourage companies to import cellulosic and advanced fuels. Thus, it is highly likely that exported renewable fuels will not meet the cellulosic and advanced biofuel criteria. [[Docket number 2393.1, pp. 10-11]]

Our Response:

We agree that it is more likely that cellulosic and advanced biofuels will be imported rather than exported, minimizing any potential misrepresentation of exported volumes when an exporter determines its RVOs. We also agree that exported volumes of biodiesel and renewable diesel should in most cases be used to determine an RVO for biomass-based diesel. However, we have determined that the approach we proposed in the NPRM could provide an opportunity for some parties to gain an inappropriate advantage in the RIN market. For instance, a party could import ethanol with advanced biofuel RINs, separate those RINs, export the ethanol, and be subject to only a total renewable RVO. They would then be able to sell the advanced biofuel RINs and purchase lower value renewable fuels RINs to satisfy their RVO. A similar situation could arise when a producer of cellulosic biofuel is also an exporter. Therefore, we have modified §80.1430 so that if an exporter knows or has reason to know that the renewable fuel that it is exporting is advanced biofuel or cellulosic biofuel, the exporter must determine an RVO for the advanced biofuel or cellulosic biofuel rather than simply assuming it is general renewable fuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2096
Organization: Beveridge & Diamond, PC
Comment:
The commenter (2096) notes that a party may receive a biodiesel blend containing volumes of biodiesel without attached RINs. As currently proposed, EPA's RFS2 regulations do not appear to place any express requirement on the transferors of such a blend to identify the volume percentage of biodiesel included in that blend. This ambiguity may become problematic when a party that subsequently receives the biodiesel blend seeks to export the blend. [[Docket number 2096.1, p. 2]]

The commenter explains that without a requirement that the transferor of a biodiesel blend disclose to subsequent parties the volume percentage of biodiesel in the blend, an exporter may

acquire a quantity of blended biodiesel for which the specific volume percentage of biodiesel is unknown. The exporter would thus be blocked from an ability to make the determination of its own export RVO. [[Docket number 2096.1, p. 2]]

For this reason, the commenter believes that with regard to every transfer of biodiesel, whether for export or domestic use, EPA should require that the volume of biodiesel being transferred by any party be identified in PTDs used to transfer ownership of the blend. At a minimum, the commenter asks that EPA clarify the obligation of every party that transfers a blend containing biodiesel from which RINs have been separated to disclose to the transferee the volume of biodiesel in the transferred blend. [[Docket number 2096.1, p. 2]]

The commenter also points out that EPA's proposal does not identify any test method for use by exporters making the required volume determination. They respectfully ask that EPA include in its final RFS2 regulations the specific method, whether ASTM or otherwise, that exporters must use to determine the amount of renewable fuel or biodiesel in a blend, including the degree of accuracy to which the Agency requires such a determination to meet. In addition, the commenter asks EPA to indicate whether there is a de minimis volume percentage of renewable fuel and/or biodiesel in a blend below which EPA does not require consideration by an exporter determining its RVO and, if so, the method by which such de minimis amount must be identified. [[Docket number 2096.1, pp. 2-3]]

Our Response:

We agree that exporters require more specific direction on how to determine the concentration of renewable fuel in blends that they export. To this end, we have added a provision to §80.1430(b)(4) that gives exporters the option of obtaining this information from their supplier, using a radiocarbon dating test method such as ASTM D-6866 to determine the renewable content of the exported fuel, or by assuming the maximum concentration of the renewable fuel in the blend as allowed by law and/or regulation.

We do not believe that such direction is necessary for domestic use of biodiesel blends, since such blending is generally the basis for separation of any assigned RINs. As a result, downstream parties taking ownership of such blends will not have a need to know the specific concentration of renewable fuel in the blend under RFS2 regulations.

3.9 Designation of Obligated Parties

3.9.1 Supports Existing Approach

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:

The commenter (2329.1) supports retaining the obligated parties as defined under the current system. The RFS program has been in place for two years, and the parties understand their obligations and the requirements. The commenter agrees that the alternatives "would result in a significant change in the number of obligated parties and the movement of RINs." (74 FR 24963.) (2329.1, p.86)

Document No.: EPA-HQ-OAR-2005-0161-2017
Organization: Aloha Petroleum, Ltd.
Comment:
The commenter (2017.1) believes that the current definition of Obligated Party and the definition included in the proposed RFS2 regulations under §80.1406 are adequate and should not be changed. The current approach, where importers and refiners are Obligated Parties, is the most effective way to enforce the requirements of the RFS. (2017.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should not change the current obligated parties or shift the point of regulation downstream in the supply chain. The commenter believes this threatens the ability of the program to reach mandated goals and will result EPA having to delay the program even further or risk having to take remedial action midstream, a very disruptive prospect at a time when the program faces several serious challenges as it is. The proposal appears to create more problems than it solves. (2110.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) noted that the concept of moving a federal obligation from major oil companies to small businesses is not practical nor will it generate the outcome as described in this preamble. Furthermore, the EISA does not imply nor does it suggest that any party other than fuel reformulators, importers, and refiners are obligated under the law. The commenter believes that the suggestion to move the RFS obligation to the renewable fuel blender is premature and will only increase energy costs to the end consumer further. (2155.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2217
Organization: Petro-Diamond Incorporated
Comment:
The commenter (2217) opposes modifying the current definition of "obligated party" as primarily refiners and importers to include "blenders". (2217, p.1) (See Docket Number 2217.1, p.1 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
The commenter (2134.1) opposes any changes in the RFS program that would extend obligated party status to downstream blenders. The commenter believes it is premature to assess the status

of the RINs market until the agency deploys its Moderated Tracking System MTS for RINs transactions. The MTS will produce a much more accurate snapshot of the RINs market because it creates a central transaction point for all RINs separations, including buy, sell, and retire transactions. MTS will also have the capability to track detailed transaction history on a company by company basis and identify invalid or incomplete RIN report filings. (2134.1, pp.2-3)

The commenter believes that EPA must consider alternative regulatory approaches to minimize the significant economic impact that redefining obligated parties would have on small businesses petroleum marketers and fuel dealers. Alternatives should include renewable fuel blending thresholds for transportation fuels below which obligated party status is not imposed. If done properly, the thresholds would protect small business petroleum marketers and fuel dealers from the crushing compliance burdens that shifting obligated party status would inflict while at the same time helping to achieve the ambitious RVO schedule under EISA. EPA must also conduct a new, thorough and comprehensive regulatory flexibility analysis on the costs and associated compliance burdens such a change would impose on small business petroleum marketers and fuel dealers. 2134.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2328
Organization: Petroleum Marketers Association of America (PMAA)
Comment:
The commenter (2328.1) opposes any changes in the RFS program that would extend obligated party status to downstream blender. The commenter noted that if EPA should continue to weigh such options, it must consider alternative regulatory approaches to minimize the significant economic impact that redefining obligated parties would have on small business petroleum marketers. Alternatives should include renewable fuel blending thresholds for transportation fuels below which obligated party status is not imposed. If done properly, the thresholds would protect small business petroleum marketers from the crushing compliance burdens that shifting obligated party status would inflict while helping to achieve ambitious RVOs under EISA. (2328.1, p.2)

If EPA was to consider redefining obligated parties, the commenter would expect the agency to conduct a new and comprehensive regulatory flexibility analysis pursuant to Title 5 U.S.C. Sec. 601-612 on the costs and associated compliance burdens such a change would impose on small business petroleum marketers. (2105.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes the proposal to alter the designation of obligated parties by assigning RVOs based solely on the volume of finished gasoline produced or imported is badly misguided and also believes EPA's scenario where large refiners hoard RINs is unlikely. In addition, EPA's proposal to more closely align a party's obligation to acquire RIN with a party's access to RINs relies on false assumptions. The commenter believes that the method for assigning RVOs should remain unchanged and RBOB and CBOB should remain on the list of

fuels subject to the standard. [[Docket number 2358.1, pp. 5-8]] [[See docket number 2358.1, pp. 5-8 for a detailed discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) notes that in RFS, the renewable volume obligation applied to refiners, blenders, and importers of motor vehicle or non-road gasoline or diesel. The commenter believes this system should be extended to RFS2 to promote blending of renewable fuels with traditional petroleum fuels. [[Docket number 2374.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) believes that changing the obligated parties under RFS2 to include blenders of RBOB and CBOB provides minimal benefits while requiring a higher cost of administration for both market participants and for EPA. The RFS1 approach to obligated parties was well designed; there is no need to change it. [[Docket number 2384.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.1) opposes the potential shift of obligated party "downstream" to the terminal operator. The commenter hopes that EPA will consider the financial implications and investments used to meet the current compliance measures as an obligated part and the resulting impact of more than doubling the number of obligated parties in the marketplace by moving the responsibility "downstream." (2400.1, p.1)

The commenter recommends that EPA keep the obligated party at the current refiner level. The reporting requirements and time taken to ensure RVO is met would become even more difficult should EPA change the obligated party. Shifting the obligation further downstream would likely cause confusion in reporting and inject a high degree of instability in the RIN marketplace. If the obligated party were change, EPA may have to delay the program in order to address myriad of unforeseen variables, complexities in monitoring and enforcement, and training of scores of new obligated parties. (2400.2, pp.3-4)

Document No.: EPA-HQ-OAR-2005-0161-2464
Organization: Musket Corporation
Comment:
The commenter (2464.1) requests that EPA continue to define obligated parties in RFS2 as the refiners and importers of petroleum-based fuels. (2464.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2322
Organization: Illinois Petroleum Marketers Association
Comment:

The commenter [[2322]] number of consequences will flow from designating downstream blenders as "obligated parties." First, if blenders have no control over the volume of blended gasoline they can acquire in any given year, how can they be sanctioned for failing to meet a goal? We recommend that downstream blenders who are not producers, refiners or exporters should not be designated obligated parties. [[#2322.1 p.2]]

Our Response:

We agree in general that the existing designation of obligated parties has been effective and should be retained under RFS2.

3.9.2 Blenders or Other Downstream Parties Become Obligated Parties

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that the Renewable Volume Obligation calculation should be adjusted so products that rely on ethanol blending to make a final product not be included in the calculation for those volumes that said blending is not under control of the obligated party. For product sold as 84 CBOB, the ethanol blending obligation should be shifted to the downstream blender of the final product. (2118.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
Regarding EPA's request for comment on a possible change in the definition of the parties subject to the renewable volume obligation, the commenter (2130) believes that the parties obligated under the RFS should be those parties that have control of the decision regarding whether to blend or not to blend biofuels to make a finished fuel blend for retail or wholesale purchaser consumer sales. The commenter believes that in the absence of this change, it will become increasingly difficult for refiners and importers to secure the requisite number of RINs to demonstrate compliance, particularly if their refinery production levels of gasoline or diesel exceed their downstream marketing volumes. [[Docket number 2130.1, pp.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) supports changing the designation of obligated parties to the party that has title of the gasoline and diesel at the truck rack before it is loaded into trucks for delivery to retail outlets and wholesale purchaser-consumer facilities as the EPA proposed in the RFS2 preamble. [[Docket number 2072, p. 2]] [[See docket number 2072, pp 2-4 for discussion of the impact of this change.]]

Document No.: EPA-HQ-OAR-2005-0161-1002
Organization: Fuel Marketing Corporation
Comment:
The commenter (1002) supports eliminating RBOB and CBOB from the list of fuels that are subjected to the standard, as such making blenders of these fuels obligated parties. (1002/1002.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) endorses altering the definition of an Obligated Party/Renewable Volume Obligations to say that the RVO is placed upon the party blending the finished gasoline or diesel fuel. This modification would correct a fundamental weakness in the alignment of incentives for how RVOs were calculated under RFS1. (1033.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) approves the second alternative which is to move the obligations for all gasoline and diesel downstream to parties who supply finished transportation fuels. The commenter noted that there are numerous problems with the current RFS1 regulations that will be magnified under the RFS2 regulations if the obligated party remains the refiner/importer. The current form of the regulation does not: maximize benefits and minimize costs, treat all regulated parties equally, or minimize costs to the consumer. The commenter noted that the current definition of obligated party has the following issues:
1. Creates an uneven playing field among refiners/importers
2. Creates an uneven playing field between refiners and renewable fuel blenders
3. Does not address issue of state clear gasoline regulations
4. Does not address the issue of RIN-less renewable fuel. (2124.1, p.16)

The commenter stated that EPA's primary reason for making refiners and importers the obligated party instead of renewable fuel blenders or those parties that hold title to the fuel at the truck rack was to minimize the number of parties impacted by the regulations. With ethanol now approaching 100% penetration in the gasoline pool (at least at 10% or lower blends), all of these parties will be reporting under the current RFS1 regulations. The commenter believes that changing the definition of obligated party to providers of finished transportation fuels will not significantly increase the number of parties reporting to the EPA. (2124.1, p.17)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports moving the Renewable Volume Obligation (RVO) to the producer of the finished fuel. The commenter recommends that a party's RVO be based on the volumes of non-renewable finished gasoline or diesel that it produces or imports. (2145.1, p.2) [[See Docket Number 2145.1, p.2 for a detailed discussion on this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) believes that a change in the obligated party designation is imperative to the workability of the RFS2 program and parity amongst market participants. The commenter support shifting the obligation to the provider of finished transportation fuels. (2154.1, p.2) [[See Docket Number 2154.1 pp.2-4 for a detailed discussion on this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
Referring to EPA's proposed alternates to the current designation, including a suggested alternate that EPA change the designation to the entity that owns the renewable fuel and the petroleum product immediately prior to blending above the rack, while not endorsing the suggestion, the commenter (2345) stresses that if the Agency makes such a change in the designation, it should only apply to lenders operating above the rack. These blenders tend to be larger companies that greater ability to ensure compliance. [[Docket number 2345.1, pp. 1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that EPA can dramatically ease the flow of RINs and reduce the costs associated with compliance by re-defining "Obligated Parties" as solely renewable fuel blenders, thus moving the point of compliance downstream to the terminal rack or other point where renewable and petroleum-based fuels are blended to produce a retail-grade product. (2471.1, p.4) (See Docket Number 2471.1, pp.4-5 for a detailed discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) does not support any of EPA's alternative approaches related to the designation of obligated parties. Rather, the commenter supports a hybrid of the two alternative approaches proposed by EPA. The commenter says that the RFS2 obligated party should be the ethanol blender for RBOB and CBOB, and the party that holds title to finished conventional, RFG and diesel at the truck rack before it is loaded into trucks for supply to retail outlets or wholesale purchaser-consumer facilities. [[Docket number 2472.1, p. 3]] [[See docket number 2472.1, pp. 3-5 for extensive discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should move the obligation downstream to blenders who have control over the amount and type of biofuel blended. Shifting the burden downstream is appropriate in light of the complicated four mandate structure of EISA, since it is only the downstream blender that has the ability to decide which biofuels to blend. Shifting the obligation downstream also addresses the issue of state ethanol blending laws, which have the

potential to interfere with the ability of obligated parties to comply. The commenter recommends that the obligated party be the party that has title to gasoline or diesel fuel at the time that it enters the truck at a terminal rack (the typical point of taxation). To the extent that a party downstream of that point adds ethanol or biodiesel to the gasoline or diesel, the obligation for that volume of gasoline or diesel fuel should transfer to the party that blended the ethanol or biodiesel and be subtracted from the obligation of the party that held title to the gasoline or diesel fuel as it enters the truck at a terminal rack. (2505.2, pp.4-5)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Referring to the three alternatives for obligated parties, the commenter believes that all the alternatives have serious problems, such as requiring obligated parties to blend more than the marketplace can absorb, which are likely to eventually cause the obligated parties to be unable to comply or for EPA to be unable to effectively enforce the RFS2. The commenter does indicate that the "Finished transportation fuel supplier" option is the best of the three. In addition, the commenter states that obligated parties cannot be held responsible for activities outside of their control, and urges EPA to create reasonable boundaries each year to ensure the market acts rationally. [[Docket number 2233.2, pp. 2-3]] [[See docket number 2233.2, pp. 2-6 for a detailed discussion of each EPA-proposed alternative.]]

Our Response:

We do not believe that the concerns expressed about the existing designation of obligated parties, or the perceived benefits of alternative schemes, warrant a change for the RFS2 program at this time. We continue to believe that the market will provide opportunities for parties who are in need of RINs to acquire them from parties who have excess. This has been the case in RFS1, and we believe that it will continue to be true under RFS2. Moreover, a change in the designation of obligated parties would result in a significant change in the number of obligated parties and the movement of RINs. Such changes could disrupt the operation of the RFS program during the transition from RFS1 to RFS2 and be administratively burdensome in the long term for the many blenders who are small businesses. Further discussion of this issue can be found in Section II.G.1 of the preamble.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2322
Organization: Illinois Petroleum Marketers Association
Comment:
The commenter [[2322]] states that IPMA members have traditionally purchased ethanol at the best price from an independent ethanol producer. They receive Renewable Identification Numbers (RINs) as a result of this process. Many oil companies now no longer sell pure, unblended gasoline at the terminal rack and will only sell pre-blended gasoline. This removes independent marketers' ability to purchase gasoline and ethanol separately. The new RIN rules eliminate this competition by removing the financial incentive to blend and discouraging

blending below the terminal rack will have an impact on the wholesale and retail price of gasoline that could also create opportunities to manipulate the market. [[#2322.1 p.1-2]]

Our Response:

The RFS program is intended only to ensure that certain mandated volumes of renewable fuel are used in transportation fuel, heating oil, or jet fuel in the U.S. each year. The program leaves to the market the choice of which party blends renewable fuels into gasoline and diesel. However, since we have determined that RINs should continue to be transferred with volumes of renewable fuel through the distribution system until renewable fuel is purchased by an obligated party or blended into conventional fuels, consistent with the RFS1 program, there remains an incentive for blenders to purchase ethanol and gasoline separately and blend them to produce transportation fuel.

3.9.3 Expired RINs Used to Reduce Nationwide Obligation for the Following Year

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes that EPA should reject its proposed alternative to reduce the overall volume based on excess RINs. The mandated volumes are a minimum, and EPA should not take actions that may otherwise reduce the volumes in any year. Moreover, while EPA claims this approach would prevent "hoarding" from driving up demand for renewable fuel, it, in fact, may provide incentives for obligated parties to hoard RINs. (2329.1, p.90)

Our Response:

We agree with this comment. While the use of expired RINs to reduce the next year's volume could help ensure that the obligation applied to each refiner and importer of gasoline and diesel is more closely aligned with their access to RINs, we recognize that this alternative approach would reduce the volumes mandated by EISA. We do not believe this would be appropriate, and therefore are not finalizing this approach.

3.9.4 Other

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:

While the commenter (2249) believes that EPA does not intend for biodiesel producers to become obligated parties with RVOs, the commenter requests clarification on the application of the definition of producers and importers of diesel fuel. [[Docket number 2249.2, p. 29]]

Our Response:

As provided in §80.1407(d) and (f), diesel fuel that is subject to the standards and incurs an RVO must be non-renewable. Thus, producers that produce only biodiesel and do not export would not have an RVO.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2370
Organization: NGVAmerica
Comment:
The commenter (2370.1) supports the decision to not include natural gas and other alternative fuel providers as regulated entities. While it is laudable to encourage alternative fuels to include a renewable component, there is no indication that Congress intended such a requirement to be mandatory for alternative fuels such as natural gas, propane or electricity. (2370.1, p.8)

Our Response:

While we have excluded natural gas, propane and electricity from the list of obligated fuels subject to the standards, we are allowing producers of such fuels to generate RINs if they can demonstrate that their fuels are made from renewable biomass and are actually used as transportation fuel in the U.S. If in the future these fuels become a more significant portion of the transportation fuel pool, we may consider making them subject to the standards.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that none of the three alternatives proposed by EPA eliminates the future compliance difficulties of obligated parties or the future enforcement issues that will face EPA with the RFS2 four-tier renewable fuels mandates. Nor will any of them solve the problem that the commenter believes is the fundamental driver causing this discussion to intensify at this time, i.e., the approaching E10 blend wall and, consequently, a potential RIN shortage that will send obligated parties scrambling to try to find a way to comply with the RFS. [[Docket number 2393.1, p. 4]]

Regardless of where the obligation lies, the commenter believes that EPA must ensure that all annual biofuels mandates are in fact achievable. EPA needs to err on the side of being certain that the next year's production of the mandated biofuels will occur. [[Docket number 2393.1, p.

5]] [[Also see Docket number 2393.1, pp. 4-7 for further discussion of the alternatives for obligated parties.]]

Our Response:

In the annual rulemaking that we intend to promulgate to set the standards for the following year, we will be evaluating both production and import potential under the provisions of CAA 211(o)(7)(D) as well as issues related to consumption potential, such as storage, distribution, and dispensing capacity. In this context we will be evaluating the E85 market and the potential for FFVs to consume it. The annual standard for cellulosic biofuel will be based directly on the projected volume of cellulosic biofuel production in the following year. EPA will use similar information in considering whether waivers are appropriate for the other renewable fuel standards.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1041
Organization: DSI Fabrication, Inc.
Comment:
The commenter's (1041) specifically relates to whether county, state, or local governments that produce their own biodiesel from waste vegetable oil (WVO) or yellow grease and use it in their fleet vehicles are subject to this proposed rulemaking. The commenter is aware of several county governments that produce high quality biodiesel (B100) from WVO for use in their own fleet vehicles. The counties do not distribute or sell the biodiesel but use a blend of B20 in their fleet vehicles. The commenter questions if this means they are not subject to the requirements of this proposed rulemaking. (1041, p.1)

The commenter believes that the benefits of counties, states, or local governments producing biodiesel from WVO and using it in-their fleet vehicles should be supported, encouraged and promoted. In addition, biodiesel produced from WVO has a GHG performance of 80% reduction from the conventional diesel baseline. Therefore, it would not be appropriate to reduce the threshold to 40% to allow biodiesel producers to average their emissions to meet the one billion gallon volumetric requirements by 2012 unless every effort is made to encourage and promote the production of biodiesel from WVO. (1041, p.1)

The commenter's other comment relates to whether a county, state, or local government that produces ASTM quality biodiesel from WVO which is used strictly in their fleet vehicles (not distributed or sold) would be eligible to participate in any future carbon trading efforts to reduce GHG. (1041, p.2)

Our Response:

The RFS program does not distinguish between renewable fuels used by the party that produced them, or sold for use by another party. Renewable fuels that are valid under RFS are those that are used to replace or reduce the quantity of fossil fuel present in a transportation fuel,

heating oil, or jet fuel. Any party producing renewable fuel that meets these requirements is a regulated party.

The RFS program does not currently provide a means for generating carbon credits for trading. Any provision for carbon credits generated for renewable fuels must await a future regulatory action allow it.

3.10 Separation of RINs

Note: Comments addressing the alternative approach to RIN transfers presented in the NPRM in which producers would have been allowed to separate RINs from batches (Section III.H.4 of NPRM) are addressed in Section 3.11

3.10.1 Nonroad Diesel Fuel, Heating Oil, and Jet Fuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) questions the logic of retiring RINs if a renewable fuel is used in a commercial or industrial boiler or ocean-going vessel. If a renewable fuel is sold on the market and blended in all fuel oil #2 and sold on the retail level it is not clear why a RIN would be retired as the renewable fuel in principle reduces greenhouse gas emissions and is better for the environment. If RINs are separated from the fuel and the distributor blends biofuel in most of the gallons of fuel sold, the commenter believes that determining a customer's use of the fuel places an unnecessary burden on the biofuel providers and distributors. [[Docket number 23369.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) question the logic of retiring RINs if a renewable fuel is used in a commercial or industrial boiler or oceangoing vessel. If RINs are separated from the fuel and the distributor blends biofuel in most of the gallons of fuel sold, determining a customer's use of the fuel places an unnecessary burden on the biofuel providers and distributors. (2549.1, pp.6-7)

Our Response:

EISA's definition of "additional renewable fuel" includes renewable fuel that is used to replace or reduce the quantity of fossil fuel present in home heating oil and jet fuel, and in the NPRM we proposed that RINs could be generated and used for compliance purposes for all such renewable fuels. However, in the NPRM we distinguished between heating oil used for residential heating from that used for commercial or industrial heating purposes. Based on

further evaluation of industry practices and comments from stakeholders, we have determined that such a distinction is not appropriate. First, the term home heating oil is used interchangeably in the marketplace with heating oil to refer to the type of fuel used in home, commercial, and industrial applications, not to refer to its place of use. Second, by using the broader industry interpretation of the term "home heating oil" to refer to all heating oil that could be used in homes, whether or not it ultimately does, the RFS2 program will be greatly simplified for both regulated parties and EPA enforcement personnel, and appropriate credit will be provided for the use of renewable fuels that displace fossil fuels. This is in keeping both with the GHG reduction and energy security goals of EISA. Therefore, for the final rule we are eliminating the requirement that RINs be retired for renewable fuel present in heating oil that is used in a commercial or industrial boiler, and are allowing RINs to be generated and used for RFS2 compliance purposes for all renewable fuels designated as or used in heating oil. The term "heating oil" is defined for RFS2 purposes consistent with existing EPA regulations at 40 CFR 80.2(ccc). See additional responses to comments on the subject of heating oil in Section 3.2.6.

EISA explicitly excludes renewable fuels used in ocean-going vessels from the definition of transportation fuel, and makes no other allowances for including such fuels in the RFS2 program. Therefore, we are requiring RINs assigned to renewable fuel that is used in an ocean-going vessel to be retired.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter believes that a similar system in the fuels market whereby the RINs are separated from the fuel sold in the market managed by the EPA through an EPA Moderated Transaction System appears to be logical especially if the participants are limited to those who generate and sell RINs and those who need to purchase RINs. (2549.1., p.7)

Our Response:

The EPA Moderated Transaction System (EMTS) will streamline much of the RIN transfers and RIN separations that are currently recorded separately in each party's IT system, and will significantly reduce many of the errors in RINs. However, we do not believe that the benefits of EMTS warrant a change in which parties can own RINs or separate RINs from volumes of renewable fuel. In the RFS1 program we designed the regulatory program such that RINs must be assigned to renewable fuel by the producer or importer, and must be transferred with the renewable fuel until it is owned by an obligated party or is blended into gasoline or diesel. This approach was designed to ensure that RINs make their way to the parties that need them for compliance. While we did take comment on alternative approaches to RIN transfers, we have determined that these alternatives should not be implemented as discussed more fully in Section 3.11.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
Written guidance on how to handle 2009 biodiesel RINs, previously retired due to nonroad applications, is needed so that those RINs may be pulled out of retirement and made valid for meeting RVOs. (2155.1, p.1)

Our Response:

In the NPRM we proposed that certain RINs retired under the RFS1 regulations at §80.1129(e), including those retired because of ultimate use in a nonroad application, could be reinstated for use in complying with the 2010 RFS2 standards. We have finalized this provision at §80.1429(g). Reinstatement can be made through EMTS.

3.10.2 Exporters

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes that the current treatment of exports and imports of renewable fuels is appropriate. (2329.1, p.87)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter noted that RFS1 expressly allows RF producers, importers and marketers to transfer up to 2.5 assigned RINs per gallon, and likewise authorizes RF blenders to separate up to 2.5 RINs per gallon blended. The regulations, however, do not specifically authorize RF exporters to separate up to 2.5 RINs per gallon exported (although we have been advised by EPA that it has informally adopted this position). The commenter requests that EPA formally adopt this change as part of RFS2. (2471.1, p.17)

Our Response:

The regulations at §80.1429(b) have been modified to allow exporters to separate up to 2.5 RINs for each gallon of renewable fuel exported, consistent with the treatment of blenders.

3.10.3 Neat Renewable Fuels

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) noted that if the Producer RIN separation proposal does not become law, then the commenter agrees that sections 80.1429(b)(2) and 80.1429(b)(5) be eliminated and section 80.1429(b)(4) be expanded to allow RINs to be separated from neat fuel or blends under the restrictions cited by the EPA.

Our Response:

We have retained the proposed provisions for neat renewable fuel or blends designated as transportation fuel, heating oil, or jet fuel in the final rule. These provisions are designed to ensure that RINs can be separated from any renewable fuel, whether in neat or blended form when the fuel is designated and used as transportation fuel, heating oil or jet fuel without further blending. However, we do not believe that the RIN separation provisions applicable to blenders should be eliminated since the blender is not required to ensure that the blend is used as a transportation fuel, heating oil, or jet fuel in its blended form without further blending. Moreover, we do not believe that the RIN separation restrictions on biodiesel, which require that biodiesel be blended at 80 percent biodiesel or less to activate RIN separation, in instances where the fuel is not designated for use as transportation fuel, heating oil or jet fuel without further blending, should be eliminated since biodiesel producers often add small amounts of fossil-based diesel to their biodiesel for tax credit purposes, but do not designate the resulting blend as a transportation fuel, heating oil, or jet fuel. As described in Section 3.4.10 below, RINs can be separated from biodiesel blends with greater than 80 percent biodiesel if such blends are designated and used as transportation fuel, heating oil, or jet fuel at that blend level.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
Regarding "Neat Renewable Fuels and Blends-Transportation and Home Heating Oil and Jet Fuel" the commenter (1044) believes that requiring a blending event is misguided. The commenter states that biomass-based diesel must conform to recognized ASTM standards that allow the fuels to be used in any fashion similar to diesel. The commenter further states that the notion that biomass-based diesels must be blended with baseline or non-baseline diesel is nonsense. The commenter believes that a review of this action, and the subsequent removal of this item, would relinquish the requirement and burden of support documentation for blenders and support statements of use as discussed in this proposed rule and streamline the ability of producers to generate, separate and distribute RINs more effectively. (1044.1, p. 2)

Our Response:

The provisions at §80.1429 regarding separation of RINs do not require blending of renewable fuel with conventional gasoline or diesel prior to the separation of RINs. However, due to concerns that producers could exercise market power by separating and retaining RINs from renewable fuels that they produce, we have included a requirement that RINs can only be separated from neat renewable fuels if a party designates the neat renewable fuel as transportation fuel, heating oil, or jet fuel and demonstrates that it is used as such in its neat form.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2081
Organization: Novogy, Inc.
Comment:
The commenter (2081) seeks to confirm their interpretation of the proposed approach to RIN separation for a fungible renewable fuel such as methane molecules derived from cellulosic biomass that are produced and sold as biogas in "neat" form under RFS2. Specifically, the commenter would like to confirm that the regulation allows producers who can produce and sell cellulosic biogas for an intended transportation fuel use under RFS2 (and potentially as a fossil gas replacement in a home heating application) to be eligible to separate the RINs generated for that batch of fuel at the time the fuel is sold for its designated purpose. Successful documentation would include verification that the amount of cellulosic biogas produced and sold was used either: (a) as produced for a designated on-site transportation user; (b) injected into a pipeline network serving multiple end users drawing on this supply for transportation; or, (c) directly by industrial entities connected into that same pipeline network, where their direct usage of cellulosic biogas would effectively displace quantities of fossil derived natural gas from that network. Designated use would be verified in an off-setting sales contract. Producers generating and separating RINs would track the credits on the EPA monitored trading system. Annual attest requirements will use Btu equivalence measures from RFS2 tied to cu ft of biogas sold on required PTD documents to ensure producers are not able to separate more RINs than correspond to the volume of fuels they produce. Mirroring proposed compliance mechanisms would allow cellulosic biogas producers flexibility to scale new distribution by selling directly to transportation users, into pipelines or to large industrial natural gas users drawing off natural gas pipeline networks that serve transportation (and potentially home heating) users. The commenter requests confirmation that a producer of cellulosic biogas can separate an appropriate RIN at the time the cellulosic biogas product is sold in "neat" form for an approved use as designated use under RFS2. [[Docket number 2081.1, p. 7]] [[See docket number 2081.1, pp. 7-11 for detailed discussion of this issue.]]

Our Response:

Our final regulations allow biogas producers to generate RINs and separate them if they designate it as transportation fuel, and demonstrate its use as transportation fuel. The regulations specify conditions and procedures applicable to producers introducing biogas into a fungible natural gas pipeline to ensure that a similar quantity of fungible fuel is ultimately used for transportation purposes. See also the discussion of biogas in Section 3.2. Biogas used as transportation fuel could only be considered cellulosic biofuel if it is made from cellulosic

renewable biomass, and could only be assigned cellulosic biofuel RINs if a D code is approved by EPA in §80.1426(f) or pursuant to §80.1416.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter agrees with and supports allowing RINs associated with neat renewable fuels to be separated and traded as EPA has proposed as long as such renewable fuels are not further blended. [[Docket number 2393.1, p. 11]]

Our Response:

We agree that parties designating neat renewable fuels as transportation fuel, heating oil, or jet fuel for use without further blending can separate the RINs.

3.10.4 Biodiesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
If the Producer RIN separation proposal does not become law, then the commenter agrees with the EPA proposal to allow RIN separation for blends above B80 when the fuel is specified for transportation fuel, heating oil or jet fuel and no further blending is allowed.

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter supports allowing RINs associated with neat renewable fuels to be separated and traded and supports altering the definition of a neat renewable fuel to allow biodiesel blenders creating a blend of B80 or higher to separate RINs. [[Docket number 2233.2, p. 9]]

Our Response:

In order to account for situations in which biodiesel blends of 81 percent or greater may be used as transportation fuel, heating oil, or jet fuel without ever having been owned by an obligated party, EPA proposed, and is finalizing a change to the applicability of the RIN separation provisions for RFS2. Regulation Section 80.1429(b)(4) will allow for separation of RINs for neat renewable fuel or blends of renewable fuel and diesel fuel that the party designates as transportation fuel, heating oil, or jet fuel, provided the neat renewable fuel or blend is used in the designated form, without further blending, as transportation fuel, heating oil, or jet fuel.

Those parties that blend renewable fuel with gasoline or diesel fuel (in a blend containing 80 percent or less biodiesel) must separate RINs pursuant to §80.1429(b)(2).

3.10.5 Other

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) recommends that RINs associated with any renewable fuel blended into any distillate be allowed to be separated and then used for compliance purposes. Using RINs for compliance that were blended into any distillate outside of MVNRLM will not change an obligated parties RVO, and still allows for the use of renewable fuel into the distillate supply. (2400.2, p.5)

Our Response:

EISA defines renewable fuels that are valid under RFS2 as those that are used to replace or reduce fossil fuel present in transportation fuel, heating oil, or jet fuel. Under most circumstances this means that renewable fuels that can be blended into fossil-based distillate will be valid for RFS compliance purposes. However, the resulting blend must be used as transportation fuel, heating oil, or jet fuel. For instance, renewable fuel blended with distillate for use in ocean-going vessels would not be valid under RFS2, since EISA explicitly excludes such fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter believes that EPA should revise the rules to limit the ability to separate RINs to obligated parties. Since the time that EPA promulgated the RFS1 rules several states have passed laws that could interfere with the ability of obligated parties to comply with the RFS rules. EPA could facilitate compliance with the RFS by re-aligning the obligated parties and limiting the ability to separate RINs to such parties. (2505.2, p.9)

Our Response:

While obligated parties can separate RINs for any renewable fuel batches that they own, not all renewable fuel is owned by an obligated party prior to being used as transportation fuel, heating oil, or jet fuel. Therefore, we must provide opportunities for other parties to separate RINs from renewable fuel. In most cases, RIN separation by a non-obligated party will occur because the renewable fuel has been blended with gasoline or diesel to produce transportation

fuel, heating oil, or jet fuel. Exporters can also separate RINs for volumes of renewable fuel that they export, but such exporters will also incur an RVO to which those RINs can be applied. Other parties can also separate RINs without blending if they designate the renewable fuel as transportation fuel, heating oil, or jet fuel in its neat form, and they demonstrate that the neat renewable fuel is actually used in its designated form.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) requests that RIN Marketers be permitted to own RINs and to function under the RFS2 program. (0994.1, p.13)

Our Response:

Any party that registers under the RFS2 program can own RINs. A marketer that assumes ownership of renewable fuel with assigned RINs cannot separate those RINs unless they blend the renewable fuel into gasoline or diesel for use as transportation fuel, heating oil, or jet fuel. However, once separated, RINs can be owned by any party.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) also believes that the original intent of the RFS must be upheld and that those desiring to take title to the RINs on neat product, being purchased downstream, must be allowed to do so without interference or pressures from other EPA-registered parties. (2155.1, p.3)

Our Response:

A party who takes ownership of neat renewable fuel can also take ownership of any RINs assigned to that neat renewable fuel if it is registered with EPA under the RFS2 program. If an upstream party has already separated the RINs from the neat renewable fuel by designating it as transportation fuel, heating oil, or jet fuel in its neat form, then no RINs will be assigned to it when a downstream party takes ownership of it.

3.11 Alternative Approaches to RIN Transfers

3.11.1 Opposes Allowing Producers and Importers to Separate RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) noted that EPA proposes alternate methods for the separating and selling of RINs. One such proposal would lead renewable fuel producers down the path of pre-designating their product as transportation fuel, home heating oil, or jet fuel, yielding a marketable RIN. The subsequently separated RINs could then be sold to obligated parties by the Producer or Importer. The commenter believes that not only would this remove any potential incentive for the actual (true) blender on record to continue purchasing renewable fuels but it is also wrought with tracking and end-use verification issues. If such language were to be adopted, renewable fuel blenders would be left with a strict compliance burden with zero financial incentive to absorb the costs of compliance. The commenter also wanted to point out to EPA that if adopted, this provision would be subject to the Regulatory Flexibility Act and as amended by the Business Regulatory Enforcement Fairness Act of 1996. (2155.1, P.2)

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) states that since the inception of RFS2, obligated parties and blenders have made investments and divestments contemplating RIN separation fuels consistent with RFS1. A policy shift 4 years later would likely reward those companies who chose not to invest and penalize those who have made investments in biofuel blending based on RIN separation. In addition linking RIN separation with blending, more directly aligns the economic incentive with the business decision to blend more biofuels. [[docket number 2384.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393.1) believes EPA has not provided justification for allowing producers to separate RINs and does not support allowing renewable fuel producers and importers to separate RINs. The concerns for market manipulation are equally, if not more valid in the RFS2 program. Also, the approach does not correct the inefficient markets that result from obligated parties being only at the refinery gate. If however, EPA decides to allow producers to separate RINs the commenter believes that significant safeguards are needed. These safeguards must include, at a minimum: obligated party only trading, establishment of the EMTS, controls to prevent RIN hoarding by producers and RFS1-type trading limits on the number of RINs bought and sold. [[Docket number 2393.1]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter also believes that renewable producers should not have the ability to separate RINs and pass them along as they feel necessary. The commenter recommends that the EPA only allows a producer to separate RINs if they are selling to an obligated party to allow for

fewer bulk transfers. RINs should continue to be passed as stated in RFS1 if the buyer is not an obligated party. (2400.2, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that allowing the renewable fuel producers to separate the RINs could result in hoarding of RINs by the producers and take away the economic incentive for the blender (who could either use or sell the RIN) to blend the renewable fuel. (2505.2, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2537
Organization: Musket Corporation
Comment:
The commenter (2537) opposes a change in the process of separating a RIN from the fuel. To the extent that EPA continues to be conceded about RIN transfers, a reduction of the rollover cap would suffice. The commenter notes that in one of EPA's alternate proposals a renewable fuel producer would be allowed to separate RINs from the fuel. In another proposal renewable fuel producers would only be allowed to transfer RINs to obligated parties. Both of the proposals ignore the incentives that were created for non-obligated parties to participate in and improve the economic efficiency of the RFS. This vibrant sector has the capability of "filling in the gaps" in regions where obligated parties are unwilling or unable to invest in the infrastructure required to bring renewable fuels into the motor fuel supply chain. Changing the RIN transfer system as EPA proposes would create the high likelihood of failing to meet the volume goals in EISA, since the opportunity to detach and resell the RIN is in many cases the only incentive for non-obligated parties to blend renewable fuels. Although many obligated parties have their own facilities for distribution and handling of renewable fuels and can chose whether to purchase the renewable fuel or the RIN, the likelihood that a non-obligated party would invest capital would decline without the assurance of a forward RIN market in which to hedge their risk. The EPA-stated goal of a gain in efficiency in the "tracking and trading of RINs" would be offset by the real risk of a shortfall in the consumption of renewable fuels by non obligated parties which would raise the total cost to the motoring public. [[Docket number 2537, pp. 2-3]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) notes that EPA proposes allowing renewable fuel producers to separate and sell RINs to obligated parties as a "solution" to the issue of an uneven playing field. The commenter strongly opposes this option. This option would not address the issue of state clear gasoline regulations and RIN-less renewable fuel working against the goals of the RFS2 program. In addition, as EPA stated in section 1II.B.4.b of the preamble (74 FR 24936), "... this approach could potentially place obligated parties at greater risk of market manipulation by renewable fuel producers..." While EPA may favor this approach because it simplifies the regulations, the commenter believes that EPA acknowledged risks are unacceptable. Especially when the hybrid approach to obligated parties is a valid workable solution. [[Docket number 2472.1, p. 5]]

Referring to EPA's request for comments on alternative approaches to RIN transfers as an alternative to changing the designation of obligated party, the commenter does not support this approach. The alternative approaches to RIN transfers will not minimize cost, treat all regulated parties equally, minimize cost to the consumer, and would be potentially un-workable and definitely have unintended consequences. [[Docket number 2072, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2464
Organization: Musket Corporation
Comment:
The commenter (2464.1) believes that changing the RIN transfer system as the EPA proposes would create the high likelihood of failing to meet the volume goals in EISA, since the opportunity to detach and resell the RIN is in many cases the only incentive for non-obligated parties to blend renewable fuels. The commenter opposes a change in the process of separating a RIN from the fuel. To the extent that EPA continues to be concerned about RIN transfers, a reduction of the rollover cap would suffice. (2464.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) believes that the current approach developed for RFS1 is an effective system that avoids pitfalls that may emerge in the alternate RIN transfer approaches considered. [[docket number 2384.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) believes the majority of complications associated with RIN Transfers will be addressed through the implementation of EMTS. By making changes to the area of separating or transferring RINs, it seems it would be adding complexity to an area that is already working fairly effectively or where plans are already in place to address shortcomings. The commenter feels that it would be best to implement the Proposed Rulemaking and see how that is functioning before making further modifications to this process. (1033.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that RINs should be separated from renewable fuels from the Blender who is or will be an obligated party. The commenter does not agree with the alternative approaches on the transfer of RINs. If renewable fuel producers are allowed to separate all RINs and either transfer them separately or sell them to obligated parties, obligated parties would be at the mercy of the renewable fuels producers. The intent of the standard is to blend renewable fuels into existing gasoline and diesel production. (2118.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:

The commenter (2124.1) opposes EPA's proposal allowing renewable fuel producers to separate and sell RINs to obligated parties as a "solution" to the issue of an uneven playing field. The commenter believes that this "direct transfer" approach would just change the location of the uneven playing field to between refiner/importers and renewable fuel producers. This option would not address the issue of state clear gasoline regulations and RIN-less renewable fuel working against the goals of the RFS2 program. The commenter noted that while EPA may favor this approach because it simplifies the regulations, the EPA-acknowledged risks are unacceptable, especially when the hybrid approach to obligated parties is a valid workable solution. (2124.1, p.18)

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) does not agree with the alternative approach of allowing renewable fuel producers to separate RINS from renewable fuels. If renewable fuel producers are allowed to separate RINs and either transfer them separately or sell them to obligated parties, obligated parties could be at increased risk of market volatility/manipulation by the renewable fuels producers. The current system of having the blender or the obligated party separate the RIN from the renewable fuel provides a check and balance on the system that ensures that the intent of the standard is met. The few SBRs now participating in the RFS RIN program spend a significant amount of time verifying and ensuring that the volume of RINs received are correct for the volume of renewable fuels they purchase for introduction into the market place. Allowing the renewable fuels producer to separate the RIN and transfer or sell them separately may not promote entry of the same levels of renewable fuels into the marketplace, the overarching goal of the RFS program. [[Docket number 2135, p. 21]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
Regarding EPA's request for comment on the separation of RINs by biofuel producers, the commenter (2130) states that while this change could simplify RIN reporting and verification, it would necessitate other changes to safeguard against RIN market manipulation. [[Docket number 2130.1 pp. 2-3]]

Our Response:

We agree that allowing producers to separate RINs from renewable fuels that they produce would have significant impacts on the RIN distribution system, potentially allowing producers to hoard RINs. Blenders may also have less incentive to purchase renewable fuels for bending if they will not receive RINs with those renewable fuels that they can separate and sell. Therefore, the RFS2 program requires that producers assign RINs to batches and transfer those RINs with batches to downstream parties, consistent with the RFS1 program. The only exception is that a producer can separate RINs if they designate their renewable fuel as transportation fuel, heating oil, or jet fuel in its neat form, and the fuel is ultimately used in its designated form without further blending. EPA believes that this exception is appropriate, since

there will be no downstream blending event at which RINs would be separated, and the fuel may never be owned by an obligated party (who would separate it).

3.11.2 Supports Allowing Producers and Importers to Separate RINs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
MnSP strongly supports EPA's proposal to allow renewable fuel producers to separate and sell RINs apart from renewable fuel gallons. MnSP's experience with RIN assignment has been extremely negative in that it has reduced the MnSP customer list from 200 plus to less than 10. In Minnesota, a state with a 5 percent biodiesel requirement, most petroleum wholesalers ("jobbers") simply cannot afford the cost of complying with the RIN regulations and as a result MnSP has seen nearly a complete loss of biodiesel demand from petroleum jobbers. The enactment of RFS1 and its attending RIN program has been the single largest disincentive for petroleum jobbers to perform biodiesel blending in the history of biodiesel.

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter supports the proposal to make all RIN separating activities the responsibility of the Producer (Section III.H. 4) which would simplify the RIN management process. If this were adopted, it would not be necessary to consider the proposals in IV.A or IV.C.1. (0994.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) supports allowing RINs to trade separately from volume, as it will foster greater RIN market simplicity and liquidity. Separating RINs and volume will avoid imposing the significant inefficiencies and cost burdens of physical segregation of the different fuels along the value chain. (2146.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter (1015) believes allowing a renewable fuel producer to separate the RIN at production will not only streamline the tracking and trading of RINs, but will be effective because our biodiesel company works with a significant number of small jobbers in the marketplace. (1015, p.1)

Document No.: EPA-HQ-OAR-2005-0161-1975
Organization: Canadian Bioenergy Corporation
Comment:

The commenter (1975) believes that EPA should allow RINs to be separated by biodiesel producers in order to offer value. Allowing a renewable fuel producer to separate the RIN at production will not only streamline the tracking and trading of RINs, but will be effective because our biodiesel company works with a significant number of small jobbers in the marketplace. Allowing the biodiesel producer to take ownership and separate these RINs gives producers the ability to transfer/sell RINs to third parties. This also removes compliance burdens from the small petroleum jobbers which, in turn, will increase availability of biodiesel in the marketplace and provide an additional revenue stream to the biodiesel industry which is already under duress. [[Docket number 1975, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:
The commenter (2010) believes that allowing a renewable fuel producer to separate the RIN at production (with a K code of 2 rather than 1) will streamline the tracking and trading of RINs. This will also be effective because REG works with a significant number of small jobbers in the marketplace who, although they are proponents and supporters of the renewable fuel industry, do not have the financial ability to comply with the reporting requirements being placed on them as part of the RFS. If the EPA requires absolute compliance with the RFS standard as written, the commenter believes this group will remove themselves from the biodiesel marketplace. This represents approximately 30% of our market. By allowing the producer to take ownership and separate these RINs and achieve the ability to transfer/sell them to third parties while removing compliance burdens from the small operators will increase availability of biodiesel in the marketplace and provide an additional revenue stream to an industry already under duress. [[Docket number 2010.2, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Comment:
The commenter (2011) believes that allowing a renewable fuel producer to separate the RIN at production (with a K code of 2 rather than 1) will streamline the tracking and trading of RINs. This will also be effective because REG works with a significant number of small jobbers in the marketplace who, although they are proponents and supporters of the renewable fuel industry, do not have the financial ability to comply with the reporting requirements being placed on them as part of the RFS. If the EPA requires absolute compliance with the RFS standard as written, the commenter believes this group will remove themselves from the biodiesel marketplace. This represents approximately 30% of our market. By allowing the producer to take ownership and separate these RINs and achieve the ability to transfer/sell them to third parties while removing compliance burdens from the small operators will increase availability of biodiesel in the marketplace and provide an additional revenue stream to an industry already under duress. [[Docket number 2011.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC
Comment:

The commenter (2013) believes that allowing a renewable fuel producer to separate the RIN at production (with a K code of 2 rather than 1) will streamline the tracking and trading of RINs. This will also be effective because REG works with a significant number of small jobbers in the marketplace who, although they are proponents and supporters of the renewable fuel industry, do not have the financial ability to comply with the reporting requirements being placed on them as part of the RFS. If the EPA requires absolute compliance with the RFS standard as written, the commenter believes this group will remove themselves from the biodiesel marketplace. This represents approximately 30% of our market. By allowing the producer to take ownership and separate these RINs and achieve the ability to transfer/sell them to third parties while removing compliance burdens from the small operators will increase availability of biodiesel in the marketplace and provide an additional revenue stream to an industry already under duress. [[Docket number 2013.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2248
Organization: Iogen Corporation
Comment:
The commenter (2248.1) believes that EPA should allow CE RINs to be separated from the associated fuel by CE producers. This will allow CE producers to more directly control how they are able to profit from both of the commodities they produce. (2248.1, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (docket number 2249.2) supports the proposal to allow renewable fuel producers to separate and sell RINs apart from gallons. Allowing biodiesel producers to separate all RINs will reduce some of the burdens involved in tracking the use of the biodiesel. EPA initially imposed this requirement to avoid RIN hoarding by renewable fuel producers. However, such has not been the case. Moreover, it is in the interest of biodiesel producers to ensure that the biodiesel is sold, but provides more flexibility in the sale of the RINs. In addition, the commenter opposes EPA's other proposals to ensure access to RINs and believes there is ample capacity for biodiesel production to meet the RFS2 requirements. [[Docket number 2249.2, pp. 29-30]]

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) sees merit in permitting separation of RINs to make various attributes of fuels tradable. This greater flexibility will enhance market operations and simplify the logistics of fuel transportation and delivery and, as EPA noted, enable the creation of a single RIN marketplace. The commenter recommends that EPA adopt its proposed alternative approach of permitting producers to sell RINs separate from volumes of fuel, to any party. (2502.1, p.7) (See Docket Number 2502.1, p.7 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:

The commenter (2510) states that much of their business is with local and regional companies that are established oil jobbers and believes that it is logical to include the biodiesel fuel distribution in their business as they have existing infrastructure to handle the products and a customer base that desires fuels requiring less foreign oils. With the way the current RIN program is written, these local jobbers may elect to not participate. This defeats the purpose of the RFS2 proposals and will again delay the goals of the program. [[Docket number 2510.1, p. 4]]

The commenter adds that allowing the producer to take ownership and separate these RINs and achieve the ability to transfer/sell them to third parties while removing compliance burdens from the small jobbers will increase availability of biodiesel in the marketplace and provide an additional revenue stream to an industry already under duress. [[Docket number 2510.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter believes the RIN credits should be able to be sold separately from the fuel. This will provide a larger pool of purchasers and also make it easier on a regional basis to distribute some of the local renewable gallons. (2408.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) supports removing the restriction requiring that RINs be strictly assigned to fuel, and therefore do not support the direct transfer alternative. The commenter agrees with EPA that this approach streamlines compliance, and provides greater incentives to demonstrate compliance. The commenter disagrees, however, with the notion there is somehow any greater possibility for market manipulation by renewable fuel producers than obligated parties. The commenter also believes that removing the assignment would reduce industry-wide spending on transportation and logistics costs. (2149.1, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) supports the alternative of Producers separating RINs and not transferring them with renewable fuel purchases. This will result in more small volumes of biofuel being distributed, and RIN tracking will be much simpler. The commenter believes that §80.1429(4) addresses the RIN transfer issues that were not clear in RFS1. The commenter also supports the situation where RIN Marketers are permitted to participate in the RFS2 program, to own RINs and have access to the information in the EMTS in order to make buy or sell decisions on RINs. The commenter believes that the inclusion of RIN Marketers will reduce the potential for manipulation of the RIN value in the marketplace by either RIN Generators or Obligated Parties. (0994.1, pp.8-9)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.

Comment:
The commenter (1044) supports allowing the renewable fuel producer to sell the RIN to any registered party. The commenter, as a producer, sees the need to streamline the RIN transfer process or transactions responsibly. Similarly, the thought process represents other diesel programs. The commenter also agrees this would spare the entire distribution system issues of reporting and compliance that are causing a direct restriction of trade. It would also allow the parties that wish to conduct transactions with RINs the "option" to participate. (1044.1, p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2084
Organization: Syntroleum
Comment:
We support [[2324]] removing the restriction requiring that RINs be strictly assigned to fuel, and therefore do not support the direct transfer alternative. However, we disagree with the notion that there is somehow any greater possibility for market manipulation by renewable fuel producers than obligated parties. There is one key reason why removing the assignment makes sense: It will reduce industry-wide spending on transportation and logistics costs. [[2324.1 p.1]]

The commenter [[2324]] states that for an example, assuming conventional diesel sells for $2.00/gal and biomass-based diesel RINs are worth $0.20/gal, most non-obligated parties would be willing to pay $2.00/gal for the biomass-based diesel, because at that point the costs of both fuels are identical. However, an obligated party would be willing to pay a greater amount for the fuel, $2.20/gal. As such, even if the cost to transport the fuel to an obligated party was $0.15 more than a non-obligated party, the producer would be incented to send the fuel a longer distance to make more on a per gallon basis [[2324.1 p.2]]

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) supports removing the restriction requiring that RINs be strictly assigned to fuel, and therefore do not support the direct transfer alternative.

The commenter agrees with EPA that this approach streamlines compliance, and provides greater incentives to demonstrate compliance. The commenter disagrees with the notion there is somehow any greater possibility for market manipulation by renewable fuel producers than obligated parties. (2364.1, p.2)

The commenter noted that the ability of a producer to separate the RIN from the fuel would enable producers to sell the fuel to the closest buyer, without regard to whether or not the buyer is an obligated party. Under the current system, where RINs are attached to batches of fuel, producers are incentivized to sell the fuel to obligated parties so long as the RIN value is greater than the transportation cost to send the fuel to a more distant obligated party. The commenter believes that a preferable system would enable the producer to separate the RIN, and therefore sell the fuel to the closest user. Also, because the RINs have value, there is an economic incentive for the renewable fuel producer to transfer the RINs to the obligated party. (2364.1, 2)

Our Response:

In general we disagree with these comments. We believe that the advantages of this alternative approach are significantly outweighed by the disadvantages. For instance, while allowing producers to separate RINs from batches of renewable fuel they produce would likely simplify the distribution of RINs, it also creates the potential for RIN hoarding on the part of producers. The commenters did not provide compelling arguments that this potential hoarding was unlikely to occur. The fact that this alternative approach would be a significant deviation from the RFS1 program structure could also adversely impact the transition from RFS1 to RFS2. Both RIN hoarding and adverse impacts on program transition could increase RIN prices and ultimately fuel prices for consumers.

With the exception of potential simplification to information included on PTDs, we do not believe that allowing producers to separate RINs would simplify the distribution of fuels, as physical segregation of the different fuels within the distribution system is not required by the RFS2 program. Producers can transfer anywhere between zero and 2.5 gallon-RINs with each gallon of renewable fuel, and are not required to maintain the assignment of a specific RIN to the gallon of renewable fuel that it was generated to represent. These provisions provide producers the flexibility to sell some renewable fuel without RINs for downstream parties who prefer it. The introduction of EMTS is also expected to ease compliance burdens for parties who buy and sell renewable fuel with assigned RINs.

3.11.3 Direct Transfer Approach

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter agrees that RINs attached to renewable fuel sold directly to Obligated Parties should also be transferred to Obligated Parties. However, based on the regulations that RINs need to be retired when renewable fuel is exported, Exporters must also receive RINs with their fuel purchase so that they can meet their export RVO. The commenter also agrees that for all other sales, the Producer (or RIN Generator) should separate and keep the RINs. (0994.1, p.10)

The commenter does not agree that Producers (RIN generators) must sell their RINs to Obligated Parties on a quarterly basis. The Producer, if a direct exporter, will need to retain some RINs to meet his direct export RVO. The commenter believes that Renewable fuel Exporters must also be allowed to own RINs to meet direct export RVO. (0994.1, p.10)

The commenter noted that sections 80.1426(e) and 80.1429 need to be changed to reflect the proposal that RINs are assigned to volumes of renewable fuel and only transferred if the fuel is sold directly to an Obligated Party or to an Exporter, otherwise the RINs are separated from the fuel and retained by the Producer or RIN Generator. (0994.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2472

Organization: Valero Energy Corporation (Valero)
Comment:
The commenter states that if the Agency does select the direct transfer option, EPA should restrict the sale of RINs to obligated parties, as proposed in the NPRM. However, the commenter does not support the proposed auction approach for RINs that a renewable fuel producer does not sell. Instead, EPA should require that by the 15th of every month, the renewable fuel producer must have sold all of its RINs from the previous month's production. There will always be a market clearing price that renewable fuel producers will be able to sell their RINs at to meet their sales requirement. [[Docket number 2472.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233.2) does not support allowing producers and importing parties to separate RINs with no further safeguards, citing concerns for market manipulation. The commenter would support this approach only if tied to "obligated party only" trading and establishment of EMTS and controls to prevent RIN inventory builds by producers. [[Docket number 2233.2, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter believes that if EPA selects the direct transfer option, then EPA should restrict the sale of RINs to obligated parties, as proposed in the NPRM. The commenter though does not support the proposed auction approach for RINs that a renewable fuel producer does not sell. Instead, the commenter believes that EPA should require that by the 15th of every month, the renewable fuel producer must have sold all of it RINs from the previous month's production. Introducing an auction mechanism is an unnecessary complication. The commenter also does not support using the proposed EPA-moderated RIN trading system as a vehicle to facilitate RIN purchases and sales beyond the voluntary listing of contact information only by buyers and sellers. (2124.1, p.18)

Our Response:

The direct transfer approach had the potential to alleviate some of the concerns with allowing producers to separate RINs as expressed in comments summarized in Section 3.11.1 above. However, we continue to believe it would be difficult to ensure that producers are actually selling their RINs in a timely manner without imposing excessive prices on those RINs. Moreover, this change to the RIN distribution system could significantly disrupt the functioning of the RIN market during the transition from RFS1 to RFS2, as some RINs would be required to be transferred with volume whole others would not. Therefore, as discussed in Section II.H.4 of the preamble, we are not finalizing such an approach.

3.11.4 Other

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
If the Producer RIN separation proposal does not become law, then the commenter requests that the regulations for section 80.1429 be expanded to clarify the three fuel sales situations discussed in Section III.H.4 so that RIN separation in these cases is well defined. (0994.1, p.10)

Our Response:

Modifications have been made to §80.1429 to clarify the conditions under which RINs may or must be separated from renewable fuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1002
Organization: Fuel Marketing Corporation
Comment:
The commenter (1002) has concerns over the two proposed methods of distributing RINs, either allowing producers complete separation of RINs or allowing producers to sell directly to obligated parties. Both scenarios pose a serious risk to the distribution of renewable fuel that is going to be required, especially true if blenders who may not buy directly from producers are made into obligated parties with the above mentioned changes. The commenter sees both methods limiting the ability to push current and new renewable fuel types through the supply chain, limiting or even eliminating the ability of marketers to sell product without RINs to obligated parties since such product is not needed for obligation. The commenter also feels that giving producers the ability to separate RINs completely or sell directly to obligated parties gives too much control to single group of stakeholders. (1002/1002.1, p.2)

The commenter proposes that RINs be separated by marketers and producers for the two following circumstances:
-Product is shipped by railcar
-Product is placed in a terminal or pipeline for blending purposes

Separating RINs for fuel transported by railcar would eliminate the need of tracking railcar movement for the purposes of transferring RINs. RIN separation for renewable fuel placed in terminals and pipelines for blending will allow producers and marketers the ability to assign RINs based on volumes purchased instead of individual transactions. (1002/1002.1, pp.2-3)

Our Response:

As described in our responses to comments in Section 3.11.2 above, we agree that producers should generally not be allowed to separate RINs from batches of renewable fuel that they produce. (One exception being where a producer designates neat renewable fuel as

transportation fuel, heating oil or jet fuel, and the fuel is used in that manner without further blending. See Section 3.10). However, we also do not believe that RIN separation should be allowed for renewable fuel shipped by railcar or pipelines. The RFS2 program is based on ownership of renewable fuel with assigned RINs, not the mode of transport. Moreover, the IT systems required for tracking renewable fuel with assigned RINs should be the same regardless of mode of transport. The RFS2 program includes a variety of flexibilities that can address the commenter's concerns, including the flexibility to assign batch numbers on the basis of individual transactions or total volumes purchased, up to 30 days worth of volume.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
If EPA retains the general prohibition on renewable fuel producers being able to separate RINs, the commenter (2249.2) requests EPA to change the transfer rate of RINs with associated gallons of biodiesel. Under RFS1 RINs may be transferred accompanying gallons of renewable fuel in the range of 0-2.5 RINs per gallon of fuel. Since a gallon of biodiesel generates 1.5 RINs, the commenter requests that a gallon of biodiesel be transferred with between 0 and 3 RINs. The commenter believes this would greatly simplify the math and result in fewer calculation errors. [[Docket number 2249.2, p. 33]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should clarify that the 2.5 gal transfer limit in (a)(4), which was a feature of RFS1, should not apply to RFS2, since there is no longer a 2.5 equivalence value for cellulosic ethanol. (2505.2, p.9)

Our Response:

The regulatory provision allowing 0-2.5 gallon-RINs to be transferred with each gallon of renewable fuel was established under RFS1. The upper limit of 2.5 was determined from the maximum number of gallon-RINs that could be generated for any gallon of renewable fuel, based on the statutory requirement that cellulosic biomass ethanol and waste-derived ethanol each count as 2.5 gallons of renewable fuel for compliance purposes. However, this higher limit also served to provide flexibility in RIN transactions, allowing more or fewer RINs to be transferred with volume depending on the needs are desires of the trading partners.

Although EISA eliminated this provision from CAA 211(o), the RFS2 NPRM did not propose changing the upper limit of 2.5 for gallon-RINs transferred with each gallon of renewable fuel in order to maintain the flexibility for RIN transactions. We believe that the 2.5 limit provides sufficient flexibility for all renewable fuels, including biodiesel. Moreover, maintaining this provision for RFS2 helps to ensure a smooth transition from RFS1.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
The commenter (2345) believes that only parties within the petroleum business should be engaged in the purchase and sale of RINs. The participation of brokers and traders is detrimental to the market and should not be permitted under RFS2. The commenter also suggests that at the end of the year, all regulated parties own no more than a specific percentage of expired RINs. In this way, each party will have an incentive either to use the RINs or sell those that are expiring. Thus, a greater number of RINs will be on the market and obligated parties can meet their obligation more easily [[Docket number 2345.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter supports restricting the purchase of separated RINs to only obligated parties regardless of the approach adopted in the final regulations. First, allowing non obligated parties to purchase RINs creates an un-level playing field. Second, allowing non obligated parties to purchase RINs may lead to higher prices and increased price volatility. Finally, allowing non obligated parties to purchase RINs will lead to higher costs to the consumer and act as another hidden tax. The commenter strongly noted they do not support EPA acting as a broker, buyer or seller of RINs beyond the statutory requirement for EPA to offer cellulosic credits for cellulosic biofuel when a waiver is necessary. (2124.1, p.30)

Our Response:

The regulatory provisions established during the RFS1 rulemaking process allowing any party to own RINs were intended to maximize the avenues through which blenders can sell the RINs they have acquired. We continue to believe that this is an important element of the program. Moreover, we do not believe it would be appropriate to limit the number of RINs that any party can own, and either of these changes could significantly alter the operation of the RIN market. Therefore, we have not made these changes for the RFS2 final rule.

Under the RFS2 program, EPA does not act as a broker, buyer, or seller of RINs beyond the statutory requirement that we offer cellulosic biofuel waiver credits under specific circumstances.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:

The commenter (2358) believes that the proposal regarding RIN transfer should be altered, but not in the way EPA suggests. The commenter urges EPA to consider an alternative that would have RINs generated at the time the renewable fuel is actually either blended with fossil fuels or used in its "neat" form as a transportation fuel or heating fuel. [[Docket number 2358.1, pp. 7-8]] [[See docket number 2358.1, pp. 7-10 for an extensive discussion of this issue.]]

Our Response:

We considered a variety of approaches to designing the RIN program in the RFS1 rulemaking, including that raised by this commenter. We evaluated comments received in response to the RFS1 NPRM and promulgated a program structure in which the renewable fuel producer generates the RINs. The reasons we did not select the approach recommended by the commenter are described in the preamble to the final RFS1 rule, and remain applicable under RFS2.

3.12 Treatment of Cellulosic Biofuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter also believes that at this point in time, the credits should be issued on a wet barrel basis and that the Agency resist the inclination to issue paper credits. EPA should make adjustments to volume at the end of each mandated period, not at the beginning. This approach will help create an atmosphere for financial support moving forward for the industry. (2408.1, p.5)

Our Response:

EISA requires that we make cellulosic biofuel waiver credits available if we waive a portion of the statutory volume for cellulosic biofuel. These credits represent an alternative means of compliance for obligated parties in the event that cellulosic biofuel RINs are either unavailable or available at excessive prices. Therefore, the waiver credits are not issued on the basis of wet barrels.

EISA directs EPA to publish the RFS2 standards by November 30 of the previous year. As a result, we must determine what the required volumes of renewable fuel will be prior to the beginning of a compliance period, not at the end.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)

Comment:
The commenter (2345) supports the proposal to calculate the price of cellulosic allowances using the 12-month average wholesale price of a gallon of gasoline from the refinery gate. The price should remain constant for the entire calendar year the waiver is in place. In addition, the allowances program needs stability—a constant annual price, not quarterly changes. To provide for a transparent predictable and stable allowance market, the price of allowances should be based on the higher of 25 cents per gallon or the amount by which $3.00 per exceeds the average wholesale price of a gallon of gasoline measured from the refinery gate. This approach will provide the program with a more accurate measure of wholesale gasoline prices. [[Docket number 2345.1, pp. 6-7]]

Our Response:

We have finalized using a 12 month average price per gallon based on EIA's monthly refinery gate price data. We have also finalized that the price will be set annually.

3.12.1 Approach to Cellulosic Biofuel Credits

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (0952.1, 0970.1) believes that the proposal does not provide sufficient certainty to investors in cellulosic biofuels. The price cap on EPA's allowances may also result in placing cellulosic biofuels at a price disadvantage, affecting investments and creating disincentives to develop cellulosic biofuels. The commenter feels that the proposal also goes against Congressional intent to promote investment in cellulosic biofuel. (0970.1, p.2)

The commenter believes that EPA should limit waivers of the RFS. For the cellulosic biofuel waiver, EPA indicated that it believed it would be appropriate to allow excess advanced biofuels to make up some or all of the shortfall in cellulosic biofuel. The commenter supports this interpretation, and agrees that if other advanced biofuels are available they should be allowed to make up the waived amount of cellulosic biofuel. This would ensure that the GHG emission reductions sought by Congress are still met, and the mandated volumes are sold. (2329.1, p.92)

The commenter also believes that EPA should limit the ability of obligated parties to use cellulosic allowances. The commenter supports the proposed limits on the use of cellulosic biofuel allowances, but believes that they are not sufficient. The commenter also believes that EPA should implement the dual RIN system to ensure the sale of cellulosic ethanol and ensure the volume mandates are met. (2329.1, p. 93-94) [[See Docket Number 2329.1, pp.93-95 for a detailed discussion of these issues]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association

Comment:
The commenter (0952.1, 0970.1) would like to work with EPA to ensure that the final version of the RIN system is designed to ensure that it does not undermine the main thrust of RFS program: namely to increase the use of all renewable fuels and, in particular, cellulosic ethanol. (0970.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) agrees in principal with EPA's theory for issuing Cellulosic Allowances. Because there are still a number of avenues though that would exist in the proposed methodology for market manipulation, the commenter encourages EPA to be flexible in its implementation approach and be ready to make modifications as warranted to ensure the intent of the program is carried out. (1033.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (1050.1) is concerned about the provisions that address the treatment of cellulosic biofuel within this revised RIN system, which they believe may have the effect of inhibiting cellulosic biofuels commercialization. (1050.1, p.1)

The commenter noted that EPA credits equal to the reduced volumetric target would not only be allowed to show compliance with the cellulosic biofuel volumetric mandate, but also with the advanced biofuel and renewable fuel mandates. This is not what Congress intended. The commenter noted that the EISA requires that EPA develop rules with respect to cellulosic biofuels that do not "reduce the use of other renewable fuels." But as currently proposed, EPA issued credits could be used by obligated parties to reduce the overall volumetric consumption requirements of the RFS. As the commenter indicated during the rulemaking for the first RFS program, they have serious concerns about actions EPA may propose to permit the use of a paper credit or allowance to satisfy the Act's requirement to use a physical gallon of fuel, because doing so could result in a reduction in the overall volume of renewable fuel used under the program. (0150.1, pp. 1-2)

The commenter is also concerned that the proposed price cap on EPA's allowances could lead to cellulosic biofuels being put at a price disadvantage, which would have a negative impact on cellulosic biofuels investment. (1050.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that EPA's assessment of the statutory requirements of the cellulosic biofuel waiver provision is appropriate. In the event that a waiver is required by the annual assessment of cellulosic biofuel capability, the commenter believes that EPA must make available to obligated parties at their discretion allowances up to the amount of the revised cellulosic biofuel requirement. The commenter also supports EPA's proposal that such

allowances cannot be traded or banked for future use, but would be allowed to meet the cellulosic biofuel requirement, the advanced biofuel requirement, and the total renewables requirement. Use to meet all three requirements must be allowed due to the nested nature of the mandates. (2124.1, p.19)

The commenter also strongly supports EPA's proposal that if it reduces the cellulosic biofuel mandate, then cellulosic biofuel allowances bought from EPA may also be used to meet the obligated party's RVOs for Advanced Biofuels and the general RFS. (2124.1, p.20)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) believes that EPA must make available to obligated parties allowances up to the amount of the revised cellulosic biofuel requirement and supports the proposal that such allowances cannot be traded or banked for future use, but used to meet the requirements. In addition, in making its annual assessment of cellulosic biofuel capability, the commenter urges EPA to adjust the advanced biofuel and total renewables requirements by the same volume as cellulosic adjustment. [[Docket number 2130, pp 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) noted that some have expressed concern that if EPA issues RIN credits for cellulosic fuels, retailers might be able to avoid buying the fuel, which could result in cellulosic ethanol prices below ethanol made from other feedstocks. The commenter wants to ensure that the cellulosic fuel industry is able to quickly expand to meet the RFS requirements, and this will mean avoiding the use of credits and waivers. The commenter also noted that EPA had proposed to allow obligated parties to purchase cellulosic credits from EPA as a way to discharge their obligation to purchase advanced biofuel. This arrangement could cause significant market disruptions anytime the market price for conventional RINs was above the EISA-dictated price for EPA-supplied cellulosic credits. The commenter noted that one fix to this potential problem would be to not exempt any obligated party using EPA-supplied credits for compliance with the cellulosic standard from the obligation to purchase its full share of advanced biofuels. (2132.1, pp.23-24)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) believes that EPA should make available for sale a number of cellulosic biofuel credits that is no more than the volumetric requirement. Each credit will sell at the higher of $0.25 per gallon or the amount by which $3.00 per gallon exceeds the average U.S. wholesale price of a gallon of gasoline. The commenter supports the process as outlined in the RFS2 proposed rulemaking, with the exception that the cellulosic allowances should not be applicable to meeting other renewable fuel categories. (2146.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2146

Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) support the process proposed by EPA for conducting a yearly review and rulemaking process to determine cellulosic ethanol volumes, thereby both ensuring an outlet for the early cellulosic volumes produced and eliminating the requirement for the fuel industry to purchase volumes larger than those anticipated to be available for their purchase. (2146.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2171
Organization: Mascoma Corporation
Comment:
The commenter (2171) urges EPA to limit the number of cellulosic allowances that EPA will offer for sale in years that it reduces the cellulosic biofuels mandate to better ensure a market demand for cellulosic ethanol that will spur investment in cellulosic production. [[Docket number 2171.1, p. 5]]

The commenter states that the specific volume requirements for cellulosic biofuels in the RFS2 are critical to fostering investment confidence in developing new projects; therefore, it is essential that EPA not undermine confidence via the rules establishing EPA's waiver authority and the resulting sale of cellulosic allowances. The proposal envisions the issuance of allowances equal to the amount of the reduced cellulosic biofuel requirement and allows them to be used to show compliance for not only the cellulosic biofuel requirement, but also the advanced biofuel and renewable fuel requirements. The commenter believes that this proposal has two significant shortcomings. First, by choosing to issue an equal number of cellulosic allowances as the cellulosic volume mandate (instead of a smaller percentage of the total volume) the rule artificially caps cellulosic ethanol prices. While conventional ethanol RINs are allowed to be priced in the marketplace, cellulosic RINs would be capped based upon the price that EPA sells the cellulosic allowance. Second, this proposal could also result in EPA-issued cellulosic allowances reducing the overall number of actual gallons of renewable fuels sold in the United States. As a result of these two deficiencies, the RFS2 rule does not provide sufficient certainty to cellulosic biofuels investors and creates a potential disincentive to developing cellulosic biofuels. The commenter appreciates EPA's efforts to restrict cellulosic allowances to ensure obligated parties do not misuse them, and believes the final rule should correct these deficiencies to ensure that the RFS2 truly drives demand and spurs investment in cellulosic biofuel production. [[Docket number 2171.1, p. 4]] [[See docket number 2171.1, pp.3-4 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2248
Organization: Iogen Corporation
Comment:
The commenter (2248.1) noted that if implemented properly, the availability of EPA-issued cellulosic biofuel credits will:

1) Ensure competition/deny market- or monopoly-power for parties that hold CE RINs in excess of their RVO for CE
2) Ensure, as a result of that market competition, that cost of CE is capped at the prevailing market price for ethanol, plus the price for an EPA-issued cellulosic biofuel credit or a CE RIN

3) Ensure a smooth process exists for compliance in the event that either
   a. EPA overestimates the available volume of CE, or
   b. Parties holding excess CE RINs choose to use them for additional compliance purposes rather than sell them to other obligated parties
4) Enable the credit price formula set in law to create transparency and certainty on CE RIN prices
5) Create certainty for regulated entities through availability of EPA-issued cellulosic biofuel credits for all who seek them for compliance
6) Creates market liquidity through the option for obligated parties to purchase as many EPA-issued cellulosic biofuel credits from EPA as are sought for compliance
7) Create certainty for renewable fuel producers by ensuring that the market rewards CE for its additional policy benefits by pricing it at a slight premium

The commenter believes that this provision is deserving of especially careful and thoughtful implementation. The multiple functions of this provision underscore and at the same time solve the challenges created for the market players needing to comply with the CE portion of the RFS. (2248.1, p.4)

The commenter also believes that the ability of EPA to sell cellulosic biofuel credits both eliminates the prospect of any party establishing market- or monopoly-power over CE RIN markets and limits what can be charged for those RINs. It is necessary that EPA make as many cellulosic biofuel credits available as are sought for compliance in any given year. Failure to do so would reconstitute the opportunity for obligated parties to be subjected to monopoly pricing whenever the market lacks willing sellers offering reasonable prices. (2248.1, p.5)

The commenter noted that EPA's proposed implementation of the provisions of Sec. 202 (e)(2)(D) would allow an EPA-issued credit - or allowance - to excuse obligated parties from purchasing the full applicable volume for Advanced Biofuel or renewable fuel. This is in direct contravention of the provision in EISA that states that the Administrator must "limit any potential misuse of cellulosic biofuel credits to reduce the use of other renewable fuels". (2248.1, p.6) (See Docket Number 2248.1, pp.6-7 for a detailed discussion of this issue)

The commenter noted that the proposed rule suggests obligated parties would be forced to purchase EPA-issued cellulosic biofuel credits to cover a volume of CE that the EPA is certain the industry will not produce. Should this occur, it could undermine public and political support for the RFS, which in turn would dampen investment in next generation renewable fuel technology. The NPRM also suggests that EPA would not reduce the CE applicable volume to a level at which it can be reasonably confident will be available to obligated parties. The commenter urges EPA to adhere to Congressional direction and set the applicable volume each year at a level that EPA can reasonably expect will be available. (2248.1, pp.7-8) (See Docket Number 2248.1, pp.7-8 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2248
Organization: Iogen Corporation
Comment:

The commenter (2248.1) recommends that EPA maximize the benefits of the RFS by reducing the applicable volume for CE based on EPA's best assessment of available CE, and limit the use of EPA-issued cellulosic biofuel credits to satisfying compliance with an obligated party's RVO for CE, but not for Advanced Biofuel or Renewable Fuel. The result will be a more favorable and predictable environment for businesses looking to commercialize CE. (2248.1, p.2) (See Docket Number 2248.1, pp.2-3 for a detailed discussion of this issue)

The commenter believes that it is essential that the Administrator follow Congressional direction and reduce the applicable volume to a level agency assessments suggest will be available. This serves two purposes. First, it will relieve the petroleum industry of any obligation to purchase those volumes of fuel that the CE industry is not yet able to produce. Secondly, it will serve the larger Congressional objective of ensuring that, to the extent the CE industry can produce fuel; it will have a market for that fuel. In taking this approach, the Administrator will promote confidence in the political stability behind the policy. If EPA were to require obligated parties to purchase EPA-issued cellulosic biofuel credits for every gallon between actual production and the ambitious target volumes in EISA, it is highly likely that the CE mandate will come under attack from the petroleum industry as equivalent to a tax that will have no effect on accelerating CE deployment. (2248.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (224932) noted that for the Cellulosic Biofuel waiver, EPA indicated that it believed it would be appropriate to allow other excess advanced biofuels to make up some or the entire shortfall in cellulosic biofuel. The commenter supports this interpretation, and agrees that if other advanced biofuels are available they should be allowed to make up the waived amount of cellulosic biofuel. [[Docket number 2249.2, p. 49]]

The commenter also has concerns that EPA's cellulosic biofuel allowance provisions may work to reduce the actual volumes of advanced biofuels or renewable fuels sold each year. While the commenter supports EPA's limitations on purchasing and trading such allowances, EPA also proposes to permit these allowances to be used to show compliance with the Cellulosic Biofuel, Advanced Biofuel and Renewable Fuel obligations. As EPA recognizes, its proposal still runs the risk of affecting the overall volumes sold. As such, the commenter supports EPA's alternative approach to limit the application of allowances to the Cellulosic Biofuel volume only to limit the potential adverse impacts on the purchase of other renewable fuels. [[Docket number 2249.2, pp. 49-50]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter supports EPA's proposals to allow obligated parties to purchase allowances up to the level of their cellulosic biofuel RVO less the number of cellulosic biofuel RINs they own; to allow an obligated party to use such allowances to meet its total renewable and advanced biofuel standards, if it used the allowance to meet its cellulosic biofuel standard; and

recommends that EPA provide obligated parties the flexibility to meet their revised cellulosic requirement with cellulosic RINs and/or cellulosic allowances. [[docket number 2384.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:

Where EPA adjusts the cellulosic biofuel requirement due to inadequate production capacity, EPA proposes to make allowances available to obligated parties up to the level of the adjusted cellulosic biofuel standard. The commenter agrees that this is required by EISA. EPA also states that "Because cellulosic biofuel RINs can be used to meet the advanced biofuel and total renewable fuel standards in addition to the cellulosic biofuel standard, we propose that cellulosic biofuel allowances also be available for use in meeting those three standards." Section 80.1427 should be clarified to make clear that allowances used to comply with the cellulosic renewable fuel mandate also count towards the advanced and general renewable fuel obligations. [[Docket number 2393.1, p. 40]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter noted that should EPA over-estimate the amount of cellulosic gallons that will be available for a particular year, obligated parties will need other means to meet their obligation. The commenter recommends that the EPA offer cellulosic allowances to obligated parties only when they need additional RIN credits to meet their annual obligation. The number of credits purchased needs to be limited to the remaining amount of credits needed to meet the obligation, with no excess. (2400.2, pp. 7-8)

The commenter also noted that EPA indicated interest in restricting obligated parties from purchasing extra allowances and to use cellulosic RINs for other compliance categories. EPA must carefully consider the timing and availability of allowances before advancing such a change. The commenter recommends that the EPA only allow obligated parties to purchase cellulosic allowances after the year-end RFS0300 reports are completed and obligation has been calculated. (2400.2, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) supports EPA's proposal to place certain restrictions on Cellulosic Biofuel credits that EPA must issue, per statute, if it waives a portion of the Cellulosic Biofuel mandate. It could be very difficult to obtain Cellulosic Biofuel RINs, even when there is not a waiver, given the relatively small volume of Cellulosic Biofuel required initially and the fact that every Obligated Party, no matter how small their obligation, must obtain these RINs. If part of the mandate is waived, securing Cellulosic Biofuel RINs could be especially difficult. The commenter also supports EPA's proposal that Cellulosic Biofuel "allowances" issued by EPA pursuant to a waiver should be limited in terms of who can buy, sell or trade them. The

commenter requests that EPA clarify that it will not issue allowances in instances where the entire Cellulosic Biofuel mandate is waived. (2471.1, p.11)

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) recommends that EPA require that obligated parties demonstrate actual progress toward fulfilling their annual RVOs through periodic, e.g., quarterly reports on volumes actually acquired during each period. (2502.1, p.6) (See Docket Number 2502.1, p.5 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) agrees with EPA's proposal to make allowances available to obligated parties up to the level of the adjusted cellulosic biofuel standard. Whenever EPA adjusts the cellulosic biofuel mandate due to inadequate production capacity, the commenter believes that EPA should reduce the overhanging advanced and general renewable fuel mandates by an equal amount. If EPA does not reduce the overhanging mandates, EPA will be merely creating an incentive to increase use of the least performing biofuels and exacerbating the E10 blend wall problem and the de facto E85 mandate imposed by EISA. (2505.2, p.13)

The commenter also believes that section 80.1427 should also be clarified to make clear that allowances used to comply with the cellulosic renewable fuel mandate also count towards the advanced and general renewable fuel obligations. (2505.2, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment:
The commenter (2526) believes that the EPA must set a clear and strong precedent for allowing the waiver and cellulosic RIN allowance to perform as Congress intended, which is to spur deployment of cellulosic technologies that can have meaningful reductions in transportation related greenhouse gas emissions. The commenter believes that RIN allowances should not displace volumetric requirements for blending all biofuels and RINs should trade separately from volume. [[Docket number 2526.1, p. 1]] [[See docket number 2526.1, pp. 2-9 for a detailed discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
The commenter [[2071]] also states because of regional demand disparities caused by transportation costs. The result is that certain regions of the country may have an oversupply of biofuels because distant Obligated Parties choose to purchase allowances rather than wet gallons while those Obligated Parties that are near sources of biofuels would only purchase sufficient wet gallons to satisfy their applicable RVOs. This would leave producers with gallons of

cellulosic biofuel that cannot be sold for an economical price even while satisfying Congressional intent under the EISA. [[#2071.1 p.8]]

Document No.: EPA-HQ-OAR-2005-0161-2389
Organization: BlueFire et al.
Comment:
The commenter (2389) wants EPA to have transparent pricing and to ensure renewable fuel is actually purchased.

Our Response:

Based on the comments provided, EPA has finalized the Cellulosic Biofuel Waiver Credits (waiver credits) provision slightly differently than as proposed. We agree that waiver credits should not replace consumption of renewable fuel. Our final rules provide that waiver credits may only be used for the cellulosic biofuel standard. Companies purchasing waiver credits will need to purchase biomass based diesel, advanced biofuel and total renewable RINs to meet their obligations for those standards in the same way as if they had purchased cellulosic biofuel RINs. In order to ensure every obligated party has access to the waiver credits we are setting the quantity of waiver credits for a given compliance year to the volume of the reduced cellulosic biofuel standard for that year.

Some parties commented about the price of waiver credits stating that the price could affect market dynamics. The pricing formula was set in the Act and EPA is finalizing what we proposed based on the instructions provided in the Act. We took comment on how often we should set the price for credits. Based on comment, EPA will only set the price annually when we finalize the cellulosic biofuel standard for the next compliance period. This approach will provide regulatory certainty for obligated parties and producers of cellulosic biofuels.

3.12.2 Adjustments to Other Standards in the Event of a Cellulosic Waiver

What the Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that if EPA determines that a cellulosic biofuel waiver is needed, the commenter urges EPA to also adjust the advanced biofuel and total renewables requirements by the same volume as the cellulosic adjustment. If EPA adopts a 30 year averaging and zero discount rate for Lifecycle Analysis, it is unlikely there will be any advanced biofuel to make up the cellulosic shortfall. The commenter stated that EPA should not ever adjust only the advanced biofuel requirement and leave the total renewable requirement unchanged. Such an action would allow the use of grandfathered biofuels that need not provide any GHG reduction to replace cellulosic biofuels that are required to achieve at least a 60% lifecycle GHG emissions reduction. (2124.1, p.19)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (224932) believes that, as long as other renewable fuels are available, the renewable fuel standard should not be reduced. While it may not present the same GHG reductions as cellulosic biofuel, other renewable fuels would still provide GHG emission reduction benefits over petroleum. [[Docket number 2249.2, p. 49]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
For the Cellulosic Biofuel waiver, EPA indicated that it believed it would be appropriate to allow other excess advanced biofuels to make up some or the entire shortfall in cellulosic biofuel. The commenter supports this interpretation, and agrees that if other advanced biofuels are available they should be allowed to make up the waived amount of cellulosic biofuel. [[Docket number 2249.2, p. 49]]

EPA further noted that, if the advanced biofuel requirement were also lowered, the total renewable fuel volume would be lowered to the same degree. The commenter believes that, as long as other renewable fuels are available, the renewable fuel standard should not be reduced. While it may not present the same GHG reductions as cellulosic biofuel, other renewable fuels would still provide GHG emission reduction benefits over petroleum. [[Docket number 2249.2, p. 49]]

The commenter also has concerns that EPA's cellulosic biofuel allowance provisions may work to reduce the actual volumes of advanced biofuels or renewable fuels sold each year. While the commenter supports EPA's limitations on purchasing and trading such allowances, EPA also proposes to permit these allowances to be used to show compliance with the Cellulosic Biofuel, Advanced Biofuel and Renewable Fuel obligations. As EPA recognizes, its proposal still runs the risk of affecting the overall volumes sold. As such, the commenter supports EPA's alternative approach to limit the application of allowances to the Cellulosic Biofuel volume only to limit the potential adverse impacts on the purchase of other renewable fuels.[[Docket number 2249.2, pp. 49-50]]

Document No.: EPA-HQ-OAR-2005-0161-2337
Organization: California Air Resources Board
Comment:
The commenter (2337.1) believes that a policy which allows the substitution of biodiesel or sugarcane ethanol for cellulosic biofuel would significantly reduce incentive for investment in cellulosic and other second and third generation biofuels. Therefore, they recommend U.S. EPA only allow other second and third generation biofuels that do not compete with food for arable land to be substituted for cellulosic ethanol should the projected volume of cellulosic ethanol not meet the minimum applicable volume required by statute. This restriction will help preserve the incentive for investment in truly sustainable biofuels. (Page 4)

Document No.: EPA-HQ-OAR-2005-0161-2384

Organization: BP America (BP)
Comment:
The commenter recommends that if EPA determines a shortfall in cellulosic biofuel production capacity for the following year and subsequently reduces the following year's requirements for cellulosic biofuel, the EPA should also reduce the advanced and total renewable fuel volume requirements by the same amount that the cellulosic requirements were reduced. [[docket number 2384.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
Regarding the impact of the cellulosic mandate on other mandates, the commenter (2393.1) believes that both the advanced and total mandates should be reduced by the same amount as the cellulosic waiver—this will have no material adverse impact on any producing entity and will serve to slow the approach of the E10 blend wall. The commenter adds that if EPA does not reduce the overhanging mandates, EPA will (a) create an incentive to increase use of the least performing biofuels that Congress clearly sought to limit and (b) exacerbate the E10 blend wall problem and the de facto E85 mandate imposed by EISA. [[Docket number 2393.1, p. 40]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter adds that the mandates for both the advanced biofuels and total renewable fuels should be reduced by the same amount as the cellulosic biofuels waiver. This will have no material adverse impact on any producing entity and will serve to slow the approach of the E10 blend wall. [[Docket number 2523.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter agrees with EPA's view that EISA effectively sets a limit for participation in the RFS program of 15 billion gallons of corn-based ethanol by 2022. The commenter also agrees with EPA's position that any reduction to the advanced biofuels standard in a given year should be accompanied by a corresponding reduction in the overall renewable standard. This will ensure that com-based ethanol cannot be used to meet volume levels that Congress clearly intended be met by next generation biofuels. (2364.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Regarding where "EPA determines that the projected volume of cellulosic biofuels is not sufficient to meet the levels in EISA we will consider the availability of other advanced biofuels in deciding whether to lower the advanced biofuel standard as well." The commenter believes that both the advanced and total mandates should be reduced by the same amount as the cellulosic waiver. [[Docket number 2233.2, p. 42]]

The commenter also supports the approach that EPA has proposed for the issuance and use of EPA-issued cellulosic RINS. [[Docket number 2233.2, p. 43]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (0952.1, 0970.1) is concerned that the provisions in the proposed rule that address cellulosic biofuel may undermine, rather than advance, Congress' intent. (0970.1, p.1)

The new program could have some important shortcomings with respect to how RINs are issued and applied for cellulosic biofuel in the event EPA waives all or part of the cellulosic biofuel requirement. Under the Act, EPA must reduce the cellulosic biofuel requirement to the extent projections indicate that the volume expected to be produced in the next year will be less than the minimum applicable volume required. If such is the case, EPA must issue allowances up to the reduced volume for sale at a price capped by the statute. Under the proposal, EPA would issue such allowances in the amount of the reduced cellulosic biofuel requirement and allow them to be used to show compliance not only with the cellulosic biofuel requirement, but also the advanced biofuel and renewable fuel requirements. While the commenter appreciates the limits EPA has proposed to restrict the ability of obligated parties to misuse these allowances, these limits are not adequate to protect against reduction in the amount of renewable fuel sold or to ensure continued investments being made in the industry—two clear goals of Congress. (0970.1, pp.1-2)

The commenter noted that EISA requires that EPA promulgate regulations governing cellulosic biofuel credits in a manner that does not inappropriately "reduce the use of other renewable fuels" and that provides certainty to renewable fuel producers. Obligated parties utilizing cellulosic allowances purchased directly from the EPA may not be required to purchase a volume of renewable fuel equal to the number of cellulosic credits that it retires. These paper credits, rather than actual volumes, then will be used to meet these requirements. Thus, EPA-issued credits could be used to reduce the overall volume requirements of the RFS. If EPA reduces the RFS commensurate with the reduction in the cellulosic biofuel requirement, this reduction in actual volumes sold is even more pronounced. (0970.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) believe that EPA should exercise its authority under Section 202(e) of EISA to reduce the total volume required under the renewable fuel standard if it determines that reduced volumes of cellulosic biofuel are projected to be available, so as to match the required volume to the projected volume available. The commenters suggest that the EPA adjust the total renewable standard, and not only the advanced biofuel standard, downwards in every event of projected shortfall in the volumes of cellulosic biofuels, and to make that downward adjustment of equal or greater amount. EPA must not allow for a fuel that achieves less GHG emissions

reductions below baseline levels than the cellulosic or advanced biofuel that has fallen short of projected volume levels to be allowed to fill the deficit left by this shortfall. (2129.1, p.14)

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) notes that it is likely that there will not be enough cellulosic biofuels available to meet the RFS2 volume targets for 2010 and beyond. And concurs with EPA's interpretation of the EISA that "it would be appropriate to allow excess advanced biofuels to make up some or all of the shortfall in cellulosic biofuel." The commenter believes that in any given year, if there is an insufficient volume of cellulosic biofuel available but an ample volume of other advanced biofuels available with GHG emissions equal or better than the cellulosic threshold, EPA should not lower the required volumes for advanced biofuel but instead shift the requirement from cellulosic to the other advanced biofuel categories. To ignore this option would be to encourage the use of fossil fuels. [[Docket number 2137.1, pp. 14-15]]

The commenter (2137.1) also concurs with EPA's assertion that "we do not believe it would be appropriate to lower the advanced biofuel standard but not the total renewable standard", as this would allow conventional biofuels to effectively be used to meet the standards that Congress specifically set for cellulosic and advanced biofuels. [[Docket number 2137.1, p. 15]]

Our Response:

We appreciate the varying perspectives of the different commenters on future adjustments to the advanced and total renewable fuel standards in the event of a waiver of the cellulosic biofuel standard. For 2010, while we are waiving a portion of the cellulosic biofuel standard, we are not adjusting the other standards. The relative magnitude of the biomass-based diesel standard in 2010 made any adjustment to the advanced biofuel and total renewable standard unnecessary. The approach for any adjustments to the standards in future years will be decided when those standards are finalized.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1, p.11) believes combining standards for the cellulosic biofuel mandate would exceed EPA's authority. (2124.1, p.11)

Our Response:

EPA is not combining standards for the cellulosic biofuel mandate in the final rule.

3.13 Production Outlook Reports

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
If Production Outlook Reports can be captured by the EMTS system, the commenter (1044) would fully endorse the requirement based upon their live attendance at the EMTS Seminar. The commenter finds this provision similar to other agency fuel programs; therefore, they would support it provided the EMTS system will capture the data. (1044.1, p. 3)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) believes that Production Outlook Reports by biofuel producers should be required, but not overly relied upon, particularly for new biofuel technologies. [[Docket number 2130.1, p. 17]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA provides no reasonable explanation to require the information being requested for the outlook reports, and such information is not needed to assist parties to come into compliance. (2329.1, p. 105) [[See Docket Number 2329.1, pp.104-105 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) rejects the proposal for an annual outlook report required for each regulated party. With so many unknowns and no previous history of renewable fuels mandate, and no sense of continued tax rebate, the renewable fuels industry cannot confidently project what will happen in year 2010, let alone 2022. Until the industry operates a few years under the RFS2 carve-outs and the issues on tax rebate for renewables are resolved, the industry cannot develop a meaningful outlook forecast. EPA would be better off hiring a consultant who can look at the big picture and provide a much more meaningful evaluation than could be provided by the individual members of the biofuels industry. (0994.1, pp.14-15)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) believes that EPA would be grossly duplicating regulatory efforts by requiring renewable fuel marketers and terminals to report on an annual basis as to volumes, type, and projections. These regulated parties already submit quarterly and annual (sometimes monthly) reports for blending credit purposes. This information is readily available to the EPA and should not be duplicated. (2155.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) opposes requiring annual production reports. This proposal would be another burden for the renewable fuels industry. Moreover, the requirement is wholly unnecessary. EPA has sufficient information available to track production and future plans for production from EIA and from the National Biodiesel Board for the industry as a whole. EPA provides no valid justification to require annual production reports from individual facilities. [[Docket number 2249.2, pp. 43-44 and docket number 2249.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
The commenter (2345) believes that additional terminal reporting is unnecessary and burdensome. EPA can base its decision regarding terminals on information from EIA and from private publications that provide data on individual facilities, tankage, and products they handle. [[Docket number 2345.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) notes that EPA is considering whether to require the annual submission of data to facilitate its evaluation of the ability of the distribution system to deliver projected volumes of biofuels to petroleum terminals. Currently, EIA's Petroleum Supply Monthly reports data on a monthly basis for the supply, disposition, and inventory of renewable fuels for each PADD. The commenter suggests that EPA use these EIA data and not place any additional reporting burden on terminal operators and others in the distribution system. [[Docket number 2393.1, p. 14]]

Regarding the fuel producers annual "Production Outlook Report", because cellulosic technologies are unproven, and based on past experience with projected timelines for completion of cellulosic projects, it would seem likely that there may be a tendency for producers to overestimate their production capacity. EPA does not appear to provide guidelines to producers regarding their predictions of next year production, nor provisions for penalties to producers who submit information that does not prove to be accurate. The commenter believes that accuracy in mandated producer reports should be enforced just as vigorously as accuracy in mandated obligated party compliance demonstration reports. [[Docket number 2393.1, pp 38-39]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) is opposed to submitting such confidential and strategic information even under a CBI submission. The commenter believes that any forward looking information to 2022 seems excessive and somewhat useless given the nature of such long-term predictions. (2511.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should limit these reports to producers of renewable fuel (both domestic and foreign) and not require such reports from importers. Importers will tend to import renewable fuels based on variable economic conditions and will likely not be able to reliably predict the amount of renewable fuels that they may import in future years. (2505.2, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Producers (MnSP)
Comment:
MnSP also objects to EPA's proposal that annual renewable fuel production outlook reports be required of all domestic renewable fuel producers. This proposal is burdensome and duplicative for the domestic biodiesel industry. The Energy Information Administration currently collects significant and detailed monthly biodiesel production, by-product production, pricing, production forecasts and other information from biodiesel producers. This information already exists in the public domain. MnSP urges EPA to utilize the information already being generated and not implement duplicate reporting requirements that are already required by other agencies.

Our Response:

As discussed in section II.K of the preamble, we are finalizing the requirement for production outlook reports from renewable fuel producers. The information required for the reports will be in a simple spreadsheet format, similar to the diesel fuel pre-compliance reports, and we may also utilize information reported to EMTS as well. The information submitted in the reports will be used to evaluate the progress that the industry is making towards the renewable fuels volume goals mandated by EISA. They will help EPA set the annual cellulosic biofuel standard and consider whether waivers would be appropriate with respect to the advanced biofuel, biomass-based diesel, and total renewable fuel standards. Without this information we would be unable to reliably set the renewable fuel standards each year and appropriately respond to waiver applications. While we understand that the types of projections we request in the Outlook Reports could be somewhat speculative in nature, we believe that the projections will provide us with the most reliable information possible to inform the annual RFS standards and waiver considerations. Further, we believe this information will be more useful to us than other public information that is released in other contexts (e.g., announcements for marketing purposes). It will provide the most accurate information available for setting the cellulosic biofuel and biomass-based diesel standards, and any adjustments to the advanced biofuel and total renewable fuel standards.

We recognize concerns of some commenters with respect to submission of confidential business plans and forecasts. All information submitted to EPA will be treated as confidential business information (CBI), and if used by EPA in a regulatory context will only be reported out in very general terms. As with our Diesel Pre-compliance Reports, we fully expect that the information will be somewhat speculative in the early reports, and we will weight it accordingly.

As the program progresses, however, information submitted for the reports will continue to improve. We believe that any information, whether speculative or concrete, will be helpful for the purposes described above. Thus we are finalizing Production Outlook Reports, and the required elements at §80.1449.

We appreciate that some commenters expressed concern that the Production Outlook Reports may contain too many unknowns or might not provide meaningful information. However, as discussed above, while these reports will have their limitations, we believe they will provide the best and most up to date information available for us to use in setting the standards and considering any waiver requests. We will of course also look to other publicly available information, and may consider using contractors to help out in this regard, but it cannot replace the need for the production outlook report data.

A commenter noted that this provision is similar to reports required under the diesel program, and further stated that if the required information can be captured by EMTS, the commenter fully supports this requirement. However, the commenter stated that it is opposed to some of the required elements of the reports for planned expanded or new production (strategic planning, planning and front-end engineering, detailed engineering and permitting, procurement and construction, and commissioning and start-up); these are an aspect of financial planning that the commenter believes EPA has no jurisdiction over and cannot derive basis from EISA in any form regardless of interpretation. As explained above, this information will be used by EPA to inform us for setting the standards on an annual basis and in responding to any waiver petitions. It will not be used to assess compliance with the program. The other provisions for registration, recordkeeping, and reporting serve that purpose.

We note that the information that currently exists from other sources mentioned by the commenters is generally either current or historical information. For the purposes of setting future standards, we need to have information on future plans and projections. We understand that reality will always be different from the projections, but they will still give us the best possible source of information. Furthermore, by having projections five years out into the future, and then obtaining new reports every year, we will be able to assess the trends in the data and reports to better utilize them over time.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 4
Compliance
(Registration, Recordkeeping, Reporting)

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

4. COMPLIANCE (REGISTRATION, RECORDKEEPING, REPORTING)

4. COMPLIANCE (REGISTRATION, RECORDKEEPING, REPORTING)

What We Proposed:

The comments in this section correspond to Section IV of the preamble to the proposed rule and address registration, recordkeeping, reporting. A summary of the comments received and our response to those comments are located below (and in section III of the preamble to the final rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) offers the following remarks related to proposed regulation §80.1427: §80.1427(7)(i) and (7)(iii) (How are RINs used to demonstrate compliance?) The language contradicts itself. In §1427(7)(i) the word ”all“ is used referring to 2008 and 2009 RINs for 2010 compliance purposes and in §1427(7)(iii) the wording limits the use to 2008 and 2009 RINs that were not used for prior compliance. Which is it? Clearly the preamble discusses all 2008 and 2009 excess RINs that were not used for compliance purposes will move forward. Therefore the commenter requests the wording to reflect that position. [[Docket number 1044.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2312
Organization: LyondellBasell Industries
Comment:
The commenter (2312.1) noted that the revised RFS2 definition of “renewable fuels” will likely exclude or block much of the current foreign biofuels as well as future expansions from entering U.S. commerce and thereby being used to satisfy non-RFS2 markets. EPA is essentially applying the same costly and extensive supply chain record-keeping and segregation (verification) requirements on any biofuel trade in the U.S. even if that trade is not intended for satisfying RFS2 obligations. Unless modified, these additional requirements will economically penalize any future biofuels trade in the U.S. that is not intended for meeting the RFS2 fuels requirements in the U.S., and will unfairly and unnecessarily disadvantage a U.S. producer’s ability to compete in supplying either fuel blends with biofuels or bio-component intermediates to the global markets. (2312.1, p.4-5)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should revise the registration, recordkeeping and reporting requirements for the renewable biomass definition to simply require registrants to identify the types of feedstock they use, to keep verifiable records of the amount and type of feedstocks used in producing the renewable fuel. (2329.1, p. 102)

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) noted that the proposal includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers, including possible onsite engineering reviews by a certified Professional Engineer. Many of these new requirements (which also include renewable biomass verification records and submission of RIN pricing information to EPA) appear to offer little or no regulatory benefit and are not thoroughly justified in the proposal. (2079.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) supports EPA's proposed approach that importers of renewable fuels should be subject to the same reporting, registration, recordkeeping, and attest engagement regimes. (2099.1, p.25)

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) believes that it is important that EPA works to keep the regulatory compliance burdens to a minimum. The benefits of regulations should be carefully balanced with the costs they create. This is perhaps most important in the emerging renewable fuels industry where the typical competitor is relatively small and therefore lacks the scale that can help it absorb such costs. (2149.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) believes EPA should eliminate recordkeeping, reporting, and registration requirements that are unnecessary or overly burdensome or expensive. [[Docket number 2380.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that registration, certification, and reporting requirements that are impractical and burdensome should be eliminated. (2474, p.2)

Our Response:

RFS2 is inherently more complicated than RFS1 due to additional requirements imposed by Congress in EISA. As such, the registration, recordkeeping and reporting requirements have necessarily become more burdensome to ensure the requirements of EISA are being fulfilled. In Section II of the FRM preamble, we have addressed concerns over burdens associated with specific topics such as Registration requirements, third party engineering reviews, and

Production Outlook reports. While additional burdens are a fact of new RFS2 requirements, we are sensitive to the burdens placed on the regulated community and have made significant improvements to the mechanisms associated with some of these functions. We have revised our registration system via EPA's Central Data Exchange (CDX) enabling regulated parties to apply for registration IDs and make corrections online. We have also introduced the EPA Moderated Transaction System (EMTS) to manage the generation and tracking of RINs in a less burdensome manner than was used in RFS1. EPA staff continues to make improvements to the registration and reporting infrastructure in order to reduce burdens on the regulated community and EPA, as well as to insure confidence and compliance with RFS2.

4.1 Registration

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) is concerned with additional registration, certification, and reporting requirements that EPA is proposing. The commenter finds these are impractical, burdensome and unnecessary. Generally the current RFS RIN program has been working, and EPA should not add undue burdens that may be cost prohibitive and, in fact, may result in having the opposite of the intended effect. Specifically, EPA should presume the existing agricultural lands are met, and not require certification and, at most, should utilize an approach similar to the baseline production approach identified in the Proposed Rule (taking into account increased yields). Additionally, price information, on-site engineering reviews, and production outlook reports are unnecessary and burdensome, may require release of confidential business information, and should not be required. (2157 p. iv-v).

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
EPA should impose regulatory requirements of foreign producers in a way that facilitates their participation, for example, allowing engineers based in and licensed by foreign countries to perform reviews. [[Docket number 2358.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) generally supports using a one-time registration requirement to identify grandfather status and identify pathways to generate RINs. The commenter does not agree with

the on-site engineering review requirements. (2329.1, p. 102) [See Docket Number 2329.1, p. 102 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that EPA should eliminate the re-registration process because the only purpose it served is to allow EPA to obtain confidential business information that is not necessary for the success of the RFS2 program. Requiring re- registration and engineering inspection will delay the Jan 1, 2010 launch of the RFS2 which will have significant negative economic impact on the Biodiesel industry. (0994.1, p.6)

The commenter also believes that since feedstock usage is the critical element in establishing the proper Biofuel categories, the requirement for a professional engineering inspection of all renewable fuel facilities is not necessary and should be eliminated. If a biofuel facility is expecting to get grandfathered into the system then a formal request form should be required. This form should require the details about the facility such as the existing production capacity at the time of the grandfathering. However this form is not needed for all other biomass Producers who are not to be grandfathered. (0994.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) suggest that the requirement of an Independent Professional Engineer review places a undue burden and expense on facilities, not to mention being impractical to accomplish given what is likely to be a very narrow window for registration after the final rule is published. Since most producers have licensed engineers on-site or individuals who are very knowledgeable of the design and operation of the facilities, the commenter believes that at least for all of the Grandfathered facilities, but preferably all Producers, that the requirement of the analysis to be done by an “Independent Professional Engineer” be stricken and allow it to be performed by a “knowledgeable employee of the Producer”. (1033.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
Referring to proposed §80.1450, the commenter (1044) vehemently opposes these additional requirements and this section! Their opposition is based upon the reality of Biomass-Based Diesel production (Biodiesel)–producers must undergo the exact requirements for permitting under the guidelines of the National Environmental Policy Act as adopted by each State. [[Docket number 1044.1, pp. 7-8]]

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051.1) states that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers”

compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. Therefore, we recommend working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. [[Docket number 1051.1, p, 4]]

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) is hopeful that the registration and reporting system could be simplified. Eventually any system should include an internationally accepted certification system applied by accredited organizations that cover the fuel life cycle (as required by EISA and presumably other sustainability measures if and when they are developed) and provisions for a consistent global certification system. A preferred system would take advantage of existing or developing third-party efforts and ultimately provide a single certificate establishing the sustainability credentials of the biofuel, its GHG saving percentage, and all the information needed to establish a D code or, better yet, assign the D code itself. (2110.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter believes that the only option is for implementation of the program is January 1, 2011 or later. Even if EPA is able to promulgate a final rule before January 2010, it will take until 2011 to accomplish the registrations that are required and to put in place the systems and plans that are necessary for compliance (assuming that EPA can issue the final rule by January 2010). (2124.1, p. 9).

The commenter (2124.1) noted that registration will be a burdensome process for renewable fuel producers and that it will take considerable time for all renewable fuel producers to complete the registration process. The commenter believes that it is imperative that EPA provide sufficient lead time at the beginning of this program to allow these registrations to occur. If sufficient time is not provided, it could limit the availability of RINs. (2124.1, p.22-23)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports an engineering review to verify the appropriate D code is being generated and believes that EPA should clarify the kinds of production changes that would trigger a review by a professional engineer. However, the commenter believes that the requirements that EPA envisions are far too complex and time consuming which is one of the reasons they believe a start date before 1/1/2011 will be disruptive.

Document No.: EPA-HQ-OAR-2005-0161-2125
Organization: Mercedes Benz
Comment:
With respect to the registration of new biomass-diesel manufacturers, including biodiesel manufacturers under 40 CFR. Part 79, and the regulation of fuel production quality under 40

CFR Part 80, the commenter (2125.10 believes that the existing regulatory mechanisms need to be made more stringent and effective. (2125.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) noted that in §80.1450, there are several references to providing EPA with registration "information specified under §80.76." Some of the §80.76 registration information does not make strict sense in the context of '80.1450. The commenter suggests that EPA address these inconsistencies with changes to either §80.76 or §80.1450, or both. (2145.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) supports extending the RIN registration requirements to all domestic renewable fuel producers, importers, and foreign renewable fuel producers in an equitable manner. While it is appropriate for EPA to request information about a producer's products, feedstocks and facilities in order to allow proper classification of the fuel, the commenter is concerned about the potential compliance burden and additional costs a new verification or certification process would create. (2146.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) is concerned with additional registration, certification, and reporting requirements that EPA is proposing. The commenter finds these are impractical, burdensome and unnecessary. Generally the current RFS RIN program has been working, and EPA should not add undue burdens that may be cost prohibitive and, in fact, may result in having the opposite of the intended effect. Specifically, EPA should presume the existing agricultural lands are met, and not require certification and, at most, should utilize an approach similar to the baseline production approach identified in the Proposed Rule (taking into account increased yields). (2157 p. iv).

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports an engineering review to verify the appropriate D code is being generated. EPA should make clear what kinds of production changes would trigger a P.E. review. [[Docket number 2233.2, p. 45]]

Document No.: EPA-HQ-OAR-2005-0161-2249

Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) supports a streamlined registration process. In particular the commenter generally supports the proposed revisions to the registration process, but opposes the requirement for an on-site engineering review as unnecessary and overly burdensome. The commenter agrees that it made sense to require on-site inspection of the facility for foreign producers where EPA does not have the same access to records or ability to inspect, but such is not the case for U.S. facilities. The commenter notes that EPA already requires substantial recordkeeping and reporting, including attest engagement requirements that are sufficient to meet any enforcement needs. The on-site engineering review also seems counter to EPA's decision to use lookup tables to identify general pathways to ease administrative burdens, rather than allow those facilities to establish a source-specific pathway. If EPA believes there is a question regarding a particular facility, it retains authority to request and review additional records, and to inspect the facility. The commenter believes that EPA should remove this requirement for on-site engineering reviews of U.S. facilities. [[Docket number 2249.2, pp. 39-40]]

In addition the commenter asks EPA to clarify how to register facilities that use multiple/aggregated feedstocks. Although the commenter opposes an on-site review requirement, they seek clarification to ensure that EPA's proposal to require an update of facility registration does not include a change in feedstock that was already identified and documented under the list of "capable" feedstocks for renewable fuel production. If EPA intends every feedstock change to require an on-site engineering review, this requirement would be costly and unnecessary. Docket number 2249.2, p. 40]] [[See docket number 2249.2, pp. 40-42 and docket number 2249.1, pp 4-5 for additional discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2341
Organization: Noble Americas
Comment:
The commenter (2341) believes that re-registration should not be required and would contribute to delays in the implementation of RFS2. The commenter asks that the inconsistency be reconciled and feels that re-registration is not justified. (2341, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes EPA should impose regulatory requirements of foreign producers in a way that facilitates their participation, for example, allowing engineers base in and licensed by foreign countries to perform reviews. [[Docket number 2358.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
In Section 80.1450, EPA proposes expanded registration requirements applicable to renewable fuel producers. The commenter (2383) requests that EPA eliminate from the registration requirements information under section 80.1450(b)(1)(v) regarding facilities that commenced

construction prior to December 19, 2007. EPA further proposes that as part of the re-registration process, each producer must include an "independent third-party engineering review" of information regarding each facility's fuel and feedstock production, feedstocks, production processes, and energy sources. The commenter believes such an independent review will produce no new information, will only confirm information the facility has already certified is accurate, and will be expensive. [[Docket number 2383.1, pp. 59-60]]

The commenter believes there is no basis or need for EPA to require the types of records specified under section 80.1450(b)(1)(v) (records of costs of additions, repairs, replacements, estimated life of facility, economic and technical limitations to meeting 20 percent GHG performance standard) from ethanol production facilities that commenced construction before December 19, 2007. The commenter requests that EPA eliminate the requirements from the final rule. [[Docket number 2383.1, p. 59]]

The commenter also believes that EPA's suggestion that renewable fuel producers must reregister every three years is too frequent. Given the burden and cost of re-registering, the commenter recommends that producers should not have to re-register more frequently than every five years. Further, the commenter believes EPA should eliminate its proposed section 80.1450(d)(2) that requires producers to update registration within seven days for any changes to a renewable fuel facility "not affecting the renewable fuel category for which the producer is registered." Such requirement serves no regulatory purpose and is unnecessarily burdensome. [[Docket number 2383.1, p. 60]]

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) noted that EPA proposes that every facility complete an on-site engineering review of their facility performed in conjunction with his or her initial registration for the new RFS program in order to establish the proper basis for RIN generation, and every three years thereafter to verify that the fuel pathways established in their initial registration are still applicable. The commenter believes that grandfathered and deemed compliant facilities should not be subject to such a requirement. The commenter points out that EPA is requiring every facility to complete such an engineering review, but is advocating a "generic" fuel pathway in lieu of individual plant carbon footprints. (2511.1,p .6)

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) notes that EPA's proposal requires a number of new compliance and certification provisions that will place a significant regulatory compliance burden on the industry, the majority of which is comprised of small businesses. Many of the proposed compliance provisions do not have practical application and will not work in practice as part of the day-to-day operation of producing biodiesel, nor do they offer regulatory benefit and are not justified in the proposal. The commenter recommends that the agency work with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and overly burdensome. [[Docket number 2435.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) notes that as proposed, all renewable fuel producers would be required to make a showing to EPA, certified by an independent 3rd party, to establish the pathway for the renewable fuels produced at each facility so that the renewable fuels produced at each facility can be classified appropriately under the RIN system. Clearly, this will be a burdensome process for renewable fuel producers and it will take considerable time for all renewable fuel producers to complete the registration process. The commenter believes it is imperative that EPA provide sufficient lead time at the beginning of this program to allow these registrations to occur. If sufficient time is not provided, it could limit the availability of RINs. [[Docket number 2472.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter noted that there is not sufficient time before January 1, 2010, for foreign and domestic renewable fuel producers to satisfy the requirements for registration under proposed section 80.1450. (2505.2, pp.1-3) (See Docket Number 2505.2, pp.1-3 for a detailed discussion of this issue)

The commenter (2505.2) believes that it is imperative that EPA provide sufficient lead time at the beginning of this program to allow these registrations to occur. If sufficient time is not provided, it could result in a shortage of RINs, because renewable fuel producers will not be able to assign RINs to the fuels that they produce unless they are registered under the new rules. (2505.2, pp.10-11)

Document No.: EPA-HQ-OAR-2005-0161-1001
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC
Comment:
The commenter (1001.1) noted that the proposal includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers, including possible on-site engineering reviews by a certified Professional Engineer. Many of these new requirements appear to offer little or no regulatory benefit and are not thoroughly justified in the proposal. The commenter recommends that the agency work with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and overly burdensome. (1001.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-1005
Organization: Cotner Consulting Services
Comment:
The commenter (1005.1) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working

with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1005.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1010
Organization: CC Gas Systems, LLC
Comment:
The commenter (1010.1) noted that the proposal includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers, including possible on-site engineering reviews by a certified Professional Engineer. Many of these new requirements appear to offer little or no regulatory benefit and are not thoroughly justified in the proposal. The commenter recommends that the Agency work with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and overly burdensome. (1010.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-1011
Organization: Atlantic BioFuels
Comment:
The commenter (1011.1) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1011.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1012
Organization: Glenwood Farms
Comment:
The commenter (1012.1) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1012.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1025
Organization: Law Offices of David Wilcox
Comment:
The commenter (1025) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1025, p.5)

Document No.: EPA-HQ-OAR-2005-0161-1028
Organization: Citizen

Comment:
The commenter (1028) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1028, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1029
Organization: C.I.B.
Comment:
The commenter (1029) noted that the proposed rule includes many new requirements which appear to offer little or no regulatory benefit while adding significantly to biodiesel producers' compliance burdens. Since most producers are small businesses, many are incapable of complying with these extremely complex regulations. The commenter recommends working with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and burdensome. (1029, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1043
Organization: University of Georgia Engineering Outreach Service
Comment:
The commenter (1043.1) noted that the proposal includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers, including possible on-site engineering reviews by a certified Professional Engineer. Many of these new requirements appear to offer little or no regulatory benefit and are not thoroughly justified in the proposal. The commenter recommends that the Agency work with the National Biodiesel Board to simplify or eliminate registration, certification, and reporting requirements that are impractical and overly burdensome. (1043.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter believes that for overseas installations, independent engineering review, if ever required, should also be allowed to be conducted by a professional engineer recognized by the country in which the installation is located. (2016.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
MnSP is extremely opposed to the portions of this proposed EPA rulemaking that contains numerous and burdensome registration, recordkeeping and reporting requirements that outweigh any benefit. This rulemaking includes a multitude of new registration, recordkeeping, and reporting requirements for biodiesel producers including proposed on-site engineering reviews by a licensed Professional Engineer.

Our Response:

Registration Info

In order to implement and enforce the new restrictions on qualifying renewable fuel under RFS2, we are revising the registration process for renewable fuel producers and importers. Many commenters argue that the expanded registration requirement is unnecessary and burdensome. EPA disagrees and believes that the information to be collected through the expanded registration process is essential to generating and assigning a certain category of RIN to a volume of fuel. Additionally, the information collected is essential to determining whether the feedstock used to produce the fuel meets the definition of renewable biomass, whether the lifecycle greenhouse gas emissions of the fuel meets a certain GHG reduction threshold and, in some cases, whether the renewable fuel production facility is considered to be grandfathered into the program. Therefore, we are requiring producers, including foreign producers, and importers that generate RINs to provide us with information on their feedstocks, facilities, and products, in order to implement and enforce the program and have confidence that producers and importers are properly categorizing their fuel and generating RINs.

Re-registration

Several commenters argue that they should not be required to update their RFS1 registration for purposes of RFS2. EPA believes that re-registration is necessary because the information being collected for purposes of RFS2 is greatly expanded from that collected under RFS1 due to the additional requirements imposed by EISA. More detailed information on feedstocks, processes and energy sources is necessary under RFS2 to ensure the proper RIN type is generated. This type of information was not necessary or required under RFS1, so even if a party is already registered under the RFS1 program, that party will need to re-register for purposes of RFS2 to provide the additional information.

Registration for Grandfathered Facilities

Several commenters argue that those facilities that are grandfathered under RFS2 should not be subject to the registration and engineering review requirements proposed for RFS2. However, EPA believes that producers of renewable fuel from grandfathered facilities must confirm their eligibility to be grandfathered and must provide information that demonstrates when the facility commenced construction, and that establishes the baseline volume of the fuel. However, in response to comments and to reduce demand on engineering resources, EPA is allowing grandfathered facilities an additional six months to register and submit their engineering review.

Registration for Foreign Producers and Importers

EPA proposed that foreign producers of renewable fuel meet the same requirements as domestic producers, including registering information about their feedstocks, facilities, and products, as well as submitting an on-site independent engineering review of their facilities at the time of registration for the program and every three years thereafter. These proposed requirements apply to all foreign renewable fuel producers who plan to export their products to

the U.S. as part of the RFS2 program, whether the foreign producer generates RINs for their fuel or an importer does. NBB argues that facilities located in the U.S. should not have to conduct the engineering review of the facility as it is unnecessary since EPA has the authority to inspect the facilities at any time and conduct their own review, but that foreign facilities should be required to conduct third-party engineering reviews. In contrast, DuPont Applied BioSciences argues that domestic and foreign facilities should be subject to the same engineering review requirements. EPA believes that the application of the facility registration and engineering review requirement should be consistently applied to both domestic and foreign producers so that EPA has the information necessary ensure from the beginning of the RFS2 program that the correct types of RINs are being generated by facilities. Without the registration information, RINs will not properly generated from the beginning of the program by both domestic and foreign producers and EPA will have to take remedial action and invalidate many RINs, which will hinder the program as a whole.

Engineering Reviews

A number of commenters argue that engineering reviews are not necessary. EPA is finalizing the proposed requirement for an on-site engineering review of facilities producing renewable fuel due to the variability of production facilities, the increase in the number of categories of renewable fuels, and the importance of ensuring that that RINs are generated in the correct category. Without these engineering reviews, we do not believe it would be possible to implement the RFS2 program in a manner that ensured the requirements of EISA were being fulfilled. Additionally, the engineering review provides a check against fraudulent RIN generation. In order to establish the proper basis for RIN generation, we are requiring that every renewable fuel producer have the on-site engineering review of their facility performed in conjunction with his or her initial registration for the new RFS program. Additionally, the on-site engineering review must be conducted every three years thereafter to verify that the fuel pathways established in the initial registration are still applicable. Producers are required to submit a copy of their independent engineering review to EPA, for verification and enforcement purposes.

Independent Third Party Engineer

Commenters argue that having the facility engineering review conducted by an independent third party is unnecessary since most facilities could have their review conducted by on-site engineers who have in-depth knowledge of the facility and its processes, heat sources and feedstocks. EPA argues that it is necessary to have an independent party conduct the engineering review because an independent party can maintain impartiality and objectivity in evaluating the facilities and their processes. The independent party must be a licensed professional engineer (P.E.), or foreign equivalent who works in the chemical engineering field. The independent third party must provide to EPA documentation of his or her qualifications as part of the engineering review, including proof of appropriate P.E. license or foreign equivalent.

Timing

Many commenters argue that completing the registration and third-party engineering requirements will take a significant amount of time, and that EPA would need to provide ample time for regulated parties to complete these requirements prior to the start of the RFS2 program. The agency recognizes that there are significant concerns involving timing necessary and ability to produce a completed engineering review to satisfy registration requirements. Since the publication of the RFS2 NPRM, we have delivered consistently a message stating that advanced planning and preparation was necessary from all parties, EPA and the regulated community inclusive, for successful implementation of this program. Furthermore, in an effort to reduce demand on engineering resources, we are allowing grandfathered facilities an additional six months to submit their engineering review. This will direct the focus of engineering review resources on producers of advanced, cellulosic and biomass based diesel. EPA fully expects these producers of advanced renewable fuels to meet the engineering review requirement; however, if they are having difficulties producing engineer's reports prior to July 1, we ask that they contact us.

Registration Updates

Commenters argue that registration updates every three years are unnecessary and that the registration should be a one-time occurrence. However, since operations change over time EPA believes that updates are necessary to confirm that the producer is continuing to generate the proper RIN type based on its feedstocks, processes and product. Additionally, registration updates must be submitted if a producer makes changes at his facility that are not included in his original registration.

Handling of Information Claimed as Confidential Business Information (CBI)

EPA acknowledges that some information required to be submitted under the RFS2 regulation may be claimed as CBI by the submitter. EPA is required to treat such information in accordance with our regulations at 40 CFR part 2. In addition, EPA has issued guidelines and policies for handling of information claimed as CBI in order to implement these regulations.

4.2 RIN Tracking and Price Reporting

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
With regards to Part (e)(3)(x), the commenter (2505.2) strongly disagrees with this proposal. EPA does not need this information for compliance purposes, and it is highly sensitive confidential business information that EPA should not require parties to submit unless it is absolutely necessary for compliance. (2505.2, p.12)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)

Comment:
The commenter (2155.1) believes that in the event that a RIN generator inadvertently attaches an invalid RIN (incorrect batch number, duplicated RIN, typo, etc.) to valid gallons sold, and said generator subsequently goes out of business, EPA shall regenerate or replace those RINs in order to maintain the intent of the law. The commenter also believes that the RIN generator should be allowed to generate RINs on a point of sale and/or point of import basis until such time allows for the implementation of EPA's EMTS RIN verification and tracking tools. This will limit the negative impacts and disincentives created by RINs generated at the end of calendar years but not sold until the following year. (2155.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) strongly opposes the requirement to provide pricing information with transactions. They feel this type of information gathering is the responsibility of the SEC. In their review of the EISA, they were unable to identify the provisions that require the gathering of this information from any party. (1044, p. 3)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) believe that the RIN and pathway system as proposed by EPA will make it virtually impossible to track the emissions of specific gallons. This will greatly reduce the usefulness of the RIN system in encouraging market differentiation. EPA should strive to incorporate more specificity in the RIN system, aiming to assign more refined point-assessments of emissions associated with each batch of renewables fuels and tracking that rather than just pathways in the RIN. Simply expanding the number of digits in the RIN code will remove the current constraint, which limits tracking to just pathway letters. Second, the pathway system needs to include a better way for novel and better pathways to be recognized in a timely fashion. (2129.1, p. 15)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
With regards to EPA requiring reporting of RIN prices, the commenter (2154.1) considers this information to be Business Confidential and object to its inclusion in the RIN reporting requirements. EPA should eliminate this when promulgating the final rule. (2154.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:

The commenter (2233) notes that as the RFS2 program is currently proposed, RIN costs can infinitely increase and at some point a very high RIN price will have a negative impact on the program. The commenter suggests that EPA consider establishing a RIN cap or ceiling. EPA would make paper RINs available at this value and thus RIN prices would not rise above this ceiling price. [[Docket number 2233.2, pp. 13-14]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter believes that EPA provides no evidence that the RIN market is not working, and requires EPA to "assess the general health and direction of the market and overall liquidity of RINs." The commenter states that the RIN market is already transparent, and parties should not be required to submit pricing information to EPA, which may then be available to the public. Price information is considered confidential business information and the disclosure of this sensitive information should not be required. None of EPA's asserted benefits justifies requiring this information. [[Docket number 2249.2, p. 42]]

The commenter adds that there is ample information in the marketplace as to the supply of renewable fuels, the prices of those fuels, and obligated parties are well aware of RIN pricing in the marketplace. There is simply no support to claim that RIN prices will provide any additional information of which the regulated entities are not already aware. In sum, the commenter believes that the price of RINs is confidential business information and EPA should remove the requirement to report RIN prices. [[Docket number 2249.2, pp. 42-43]] [[See docket number 2249.1, p. 5 for additional discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) recommends that all RIN information pertaining to value or financial position of the company be kept confidential. The commenter believes the EPA can obtain enough RIN market perspective without requiring companies to give specific company pricing information. (2400.2, p.10)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:

The commenter rejects EPA's proposal to include RIN pricing on the RIN Transaction Reports. RIN values are not necessarily known at the time of a renewable fuel sale; and RIN values are not a strong measure of industry health. Feedstock prices, and diesel and gasoline prices are a much stronger indicator of industry health and these items are published in readily accessible forms. EPA should develop the expertise of using the feedstock and petroleum fuels prices to gauge the health of the renewable fuels industry and for setting renewable fuel standards. (0994.1, p.13)

Document No.: EPA-HQ-OAR-2005-0161-1002

Organization: Fuel Marketing Corporation
Comment:
The commenter (1002) has concerns over the requirement that price information be submitted with each transaction. The commenter strongly feels this is strictly private information, and such information is not needed to access the market conditions as there are reporting services the industry uses to evaluate pricing that the EPA can access as well. The commenter also questions the security of such information, especially the quantities of such information being stored; make it more of a target for intrusion for those seeking such information. (1002/1002.1, p.3)

The commenter also feels that including pricing information by transaction basis will dramatically impact the technical requirements needed to implement the EMTS system for the user, increasing the amount of data entry for those that cannot automate, and prevents the ability to send volume reporting as stated above which will have the positive effect of reducing the amount of transaction the EMTS system will handle. (1002/1002.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) opposes EPA's proposal to require that RIN prices be reported to EPA. The commenter recommends that EPA should follow the same RIN pricing reporting requirement as set in RFS1. Reporting RIN pricing, in general, could have an adverse affect on Confidential Business Information (CBI) and Corporate Intelligence (CI). (2124.1, p.30)

The commenter also noted that that the EPA lacks specific statutory authority to require burdensome and intrusive reporting of RIN price information with regard to the price of RINs in transactions (whether purchases, trades or sales). (2124.1, p.31) [See more detailed information on this issue in Docket Number 2124.1, pp.31-32]

The commenter noted that a downstream party should not be required to adjust records, reports and compliance calculations because an upstream party made a mistake and distributed invalid RINs. The proposed regulation should be edited such that the upstream party makes peace with EPA and EMTS when an invalid RIN is discovered and downstream parties will not be bothered. (2124.1, pp.34-35)

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) opposes the proposal to include requirements for RIN price reporting to EPA as a result of RIN purchases, sales or trades. Public disclosure of company-specific RIN pricing data could lead to unintended market manipulation and price volatility. Moreover, the prices of RINs do not ensure that the applicable level of renewable fuel has been added to a transportation fuel nor are they needed to ensure that the requirements of the RFS program are satisfied. [[Docket number 2135.1, p. 22]]

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)

Comment:

The commenter strongly disagrees with the EPA's position on the need to capture RIN values for separated and assigned RINs. This is not the function of the EPA to gather market (pricing) information and to then hold that information publicly. (2155.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2341
Organization: Noble Americas
Comment:
The commenter also believes that pricing information is of significant commercial value and could disrupt markets if inadvertently disclosed, and EPA should not require price reporting. Since price errors are the most common reason for invoice corrections, including pricing information in the data required for each renewable fuel and RIN transaction managed through the EMTS will not only increase the quantity of data being processed by the EMTS system, it will create unintentional RIN errors which will further increase the burden on EMTS. (2341, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter is opposed to submitting the price information for assigned RINs. The RIN value is not a line item on the invoice when selling volumes of renewable fuels with RINs. The commenter proposes that EPA source RIN pricing information from publicly available RIN trading groups on a stated periodic basis. (2511.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2464
Organization: Musket Corporation
Comment:
The commenter (2464.1) opposes a requirement for the reporting of confidential RIN prices to EPA. (2464.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2537
Organization: Musket Corporation
Comment:
The commenter also opposes a requirement for the reporting of confidential RIN prices to EPA. The commenter believes that the inclusion of RIN prices in the regular reports is unnecessary if EPA's intent is solely to monitor market disruptions, since several industry-standard reporting services publish RIN prices daily. The quality of that price data is good enough for major firms to accept for marked-to-market treatment. For individuals to report price transactions to EPA is burdensome, unnecessary and creates the risk of the loss of confidential business information. [[Docket number 2537, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter disagrees with EPA's proposal to compel parties to report their RIN transaction prices. 18 RIN price data is currently available from a variety of sources, including several trade

publications such as OPIS Ethanol and Biodiesel Information Service and Platt's Oilgram Report, and published price data from the Chicago Board of Trade and NYMEX. (2471.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) does not support reporting RIN prices through the EMTS system. Pricing information is not required or needed to implement the objectives of EISA. If EPA needs this type of information to make decisions around such things as waiver requests, there are commercial services (e.g., Biofuelsconnect.com, OPIS, Platts) that can satisfy this need. (2145.1, pp.6-7)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) opposes reporting RIN prices as business confidential information that could be subject to FOIA. The commenter also opposes the requirement for renewable fuel prices and volumes. [[Docket number 2233.2, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter strongly opposes the requirement to report RIN prices. RIN prices are business confidential information that could be subject to Freedom of Information Act requests. In addition, RINs purchased with renewable fuel are often, if not always, not priced separately. Thus for anything other than pure RIN transactions, RIN prices are not available. [[Docket number 2393.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter also opposes EPA's proposal to require reporting of RIN prices. This requirement, as well as the requirement for production outlook reports, is unnecessary and raises substantial business confidential issues that EPA does not address in the Proposed Rule. Price information is considered confidential business information and should not be required to be disclosed. EPA should eliminate this requirement from the final rule (2329.1, p. 103-104)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports the EPA moderated transaction system that EPA has proposed with one important exception. The commenter strongly opposes the requirement to report RIN prices. RIN prices are business confidential information that could be subject to Freedom of Information Act requests. In addition, RINs purchased with renewable fuel are often, if not always, not priced separately. Thus for anything other than pure RIN transactions, RIN prices are not available. [[Docket number 2393.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports the development and implementation of the EMTS system. The commenter does not support reporting RIN prices through the EMTS system. Pricing information is not required or needed to implement the objectives of EISA. If EPA needs this type of information to make decisions around such things as waiver requests, there are commercial services (e.g., Biofuelsconnect.com, OPIS, Platts) that can satisfy this need. (2145.1, pp.6-7)

Document No.: EPA-HQ-OAR-2005-0161-1002
Organization: Fuel Marketing Corporation
Comment:
The commenter (1002) has grave concerns on recording pricing information on a transaction basis. The commenter also has concerns of using a transaction based system instead of volumes. (1002/1002.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
Commenter [[2071]] proposes that quarterly pricing should be used rather than annual pricing, given the volatility of the price. Within the past year, retail gas prices have ranged from nearly $4 per gallon last summer to $1.80 in January 2009.More frequent pricing will come closer to replicating market conditions. [[#2071.1 p.7]]

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
The commenter (2172) is opposed to the submission of Confidential Businesses Information regarding the pricing of Renewable Fuel Identification numbers (RINs).

Our Response:

A group of commenters suggested that EPA track emissions of specific gallons of renewable fuel and that the RIN number be increased to provide a means for expanding RIN pathway information collected. The RIN system has been developed to verify the production (and presumed use) of the different categories of renewable fuels required by the RFS2 standards. Any additional use of the RIN for greater differentiation of environmental performance of renewable fuels is beyond the scope of this rule.

Another commenter suggested that EPA set a cap, or ceiling, on the price of RINs in RFS2 and further suggested that EPA make paper RINs available at the ceiling. The RIN concept was developed as a market based system where RIN price has the potential to drive desirable outcome through the economic incentives associated with supply and demand. That is, a higher RIN price would foster development of the renewable product that is associated with

that RIN. Additionally, EISA only provides for EPA generated credits for use with the cellulosic biofuel standard and only for the situation where EPA has determined that a given year's cellulosic standard will not be met and sets an adjusted cellulosic standard. There are general waiver provisions that may be used in cases of localized, State, or national economic hardship should conditions warrant such an action.

A majority of commenters stated their opposition to the collection of RIN price data with transaction submissions, due to Confidential Business Information (CBI) concerns, other services being able to provide this information, marketplace delays and undue stress on the EMTS from disagreements in RIN Price. EPA decided that the price information has great programmatic value because it will help us anticipate and appropriately react to market disruptions and other compliance challenges, assess and develop responses to potential waivers, and assist in setting future renewable standards. In addition, EPA decided that highly summarized price information (e.g., the average price of RINs traded nationwide) may be valuable to regulated parties, as well, and may help them to anticipate and avoid market disruptions. Also, EPA will not require the matching of the exact RIN price to alleviate the burden of resubmission due to price mistakes. However, the price information must be accurate rounded to the nearest cent (US Dollar) at the time of sending the transactional information to EMTS. With regard to concerns about handling of information claimed as CBI, EPA acknowledges that some information required to be submitted under the RFS2 regulation, including individual price information and certain other aspects of RIN transactions, may be claimed as CBI by the submitter. EPA is required to treat such information in accordance with our regulations at 40 CFR part 2. In addition, EPA has issued guidelines and policies for handling of information claimed as CBI in order to implement these regulations.

4.3 Reporting and Attest Engagements

4.3.1 EMTS

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) notes that the proposed rule requires a list of all RINs used for compliance and that Section 80.1452(c)(1)(iii)(E) also requires this list. The commenter recommends that this redundancy be removed by restating §80.1452(a)(1)(x) to reference the list provided in §80.1452(c)(1)(iii)(E). [[Docket number 2233.2, p. 14]]

The commenter recommends that EMTS be designed with the capability to accept and requirement to submit the obligation report information within its framework. The obligated parties transportation fuel production volume, resulting RVOs, and deficit RVOs are all that remain for EMTS to capture so that all RFS reporting information is in a common system. [[Docket number 2233.2, p. 14]]

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) adds that they would support a RIN transaction environment in which a sophisticated, well-managed and enforced EMTS became the central distribution point for Producer/Importer RINs mandatorily transferred directly into it for subsequent distribution/sale only to Obligated Parties. SBRs agree that the purchase of separated RINs should be restricted to obligated parties only. Allowing non-obligated parties to purchase segregated RINs can lead to increased market price volatility, speculation and perceived market longs/shorts, none of which furthers compliance with the Reformulated Fuels Standard. [[Docket number 2135.1, p. 22]]

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) opposes the provision for a Federally run trading platform and believes this is a responsibility of private business and not that of government. The commenter points out that there are no other government run trading boards. (1044, p. 3)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that Part (e)(3), which requires that after EMTS starts, obligated parties will have to report within 3 days to the transaction, is unworkable.

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
The commenter (2172) believes EPA could allow for a greater time period, 10 days, before a renewable fuel producer has to transfer RINs thus allowing time for payment to occur.

Our Response:

A commenter suggested that we eliminate the requirement of listing RINs used for compliance and that we build the capability to accept obligated party information into the EMTS framework. The Agency is adopting EMTS for RFS2 RIN generation activities and for transactions involving RFS2 RINs. While the use of EMTS will reduce the burdens on most regulated parties, including obligated parties, it does not replace all functions of quarterly and annual reports submitted through CDX. EMTS will eliminate the need to list RFS2 RINs used for compliance, but it will not manage deficits and RVO calculations.

Regarding the comment that EMTS be the basis for a direct RIN transfer system, EPA addressed a number of alternative options in the FRM preamble. It was determined that given the significant challenges associated with a change to the requirement that RINs be transferred with volume and the opposing views among stakeholders, we would not make any changes.

A commenter opposes a federally run trading platform pointing out that this is a function for the private sector. The characterization of EMTS as a trading platform is a misconception. Implementation of EMTS incorporates requirements necessary to confirm RIN generating activities and transactions, thus ensuring overall compliance with RFS2. EMTS does not broker transactions, nor does it post holdings of RIN accounts; the information submitted to EMTS is based on commercial transactions that have been completed and are documented by PTDs.

EPA has concluded that five days, or a business week, is an appropriate amount of time for both parties to receive or provide necessary documentation in order to interact with EMTS accurately and timely. "Real time" will be defined as within five (5) business days of a reportable event (e.g., generation and assignment of RINs, transfer of RINs).

4.3.2 Monthly Reporting

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that reporting should remain quarterly. Monthly reporting will not provide adequate time for obligated parties to complete RIN tracking/reconciliation with counterparties - it barely works with quarterly reporting now.

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
If, as the commenter (2393) recommends, EMTS is implemented concurrently with RFS2 startup, no increased reporting frequency is justified. RFS2 should not start up without EMTS to avoid having to create a temporary, interim RFS2 system that will be wasteful of resources, both those of industry and of EPA. [[Docket number 2393.1, pp. 13-14]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) prefers to keep the reporting on a quarterly basis to ensure accuracy and preciseness of reports submitted to the EPA. If the EPA were to need any data for statistical purposes, they will have real-time information, especially with EMTS which should eliminate the need for monthly reporting. (2400.2, p.9 and p.11)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) opposes increasing the reporting frequency from quarterly to monthly. EPA should strive to align the roll out of the EMTS system with the implementation of the RFS2 regulations. There is no justification to increase the reporting requirements simply because EPA

has failed to both finalize the RFS2 regulations and to roll out the EMTS in a timely manner. [[Docket number 2233.2, p. 14]]

Document No.: EPA-HQ-OAR-2005-0161-2341
Organization: Noble Americas
Comment:
The commenter (2341) believes that monthly reporting substantially increases the cost of reporting and should not be required. If it is required, the deadline for reporting should be 60 days after the end of the month (rather than 30 days) to allow sufficient time to reconcile and perfect the data. The commenter believes that EPA should also consider elimination of quarterly transaction reporting (RFS0200) once the EMTS system is fully operational in year two. (2341, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) noted that even if there ends up being a timing disconnect between the implementation of the rule requirements and the initiation of the EMTS, monthly reporting is not warranted. At a minimum, monthly reporting should only apply to renewable producers as the accuracy of the RIN information is critical to the system. (2154.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) believes that given the relatively short period of time until the implementation of the EMTS, EPA should continue with quarterly reporting. Monthly reporting will not solve RIN validation issues. (2155.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) does not support a monthly reporting requirement for 2010 as a lead in to the EMTS. [[Docket number 2130.1, p. 9]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that monthly reporting should not be required in 2010 for all RIN-owning parties. The RFS2 regulations will be effective when the EMTS is activated, probably 1/1/11. Therefore, there is no need to submit monthly reports when EMTS is operational. (2124.1, p.34)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:

The commenter agrees with EPA's proposal to provide faster and more efficient validation of RINs. Although the commenter does not believe EPA can implement the RFS2 for an effective date of January 1, 2010, the commenter does not oppose requiring monthly transaction reports until the EMTS is operational. Parties should be able to adjust their reporting from quarterly to monthly without significant burden, and it would provide EPA with information sooner to validate RINs to avoid the problems with finding potential problems down the road. (2329.1, p. 103)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) states that the increased frequency of reporting is a change that would invoke a financial burden; however, in the big picture, realizes this important aspect to the EISA needs support. The commenter hopes the implementation and use of the proposed EMTS system would shift reporting to an issue of data query by the agency and relieve them of the reporting issues including attestation. (1044.1, p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2018.1) noted that RFS2 will increase reporting frequency from a quarterly time cycle to monthly in that period of time between RFS2 going into effect and EMTS becoming operational. Once EMTS is operational, reporting frequency increases to "near real-time", or no less than every 3 days. The commenter supports such modifications and encourages EPA to adopt the rule as proposed in these areas. The commenter believes that the proposed increased reporting frequency does not address the demand side of the economic balance, leaving obligated parties to an annual reporting frequency. The commenter recommends that EPA increase the reporting frequency for obligated parties.

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that monthly reporting should not be required in 2010 for all RIN-owning parties. The RFS2 regulations will be effective when the EMTS is activated, probably 1/1/11. Therefore, there is no need to submit monthly reports when EMTS is operational. (2124.1, p.34)

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
The commenter (2172) believes that producer of renewable fuel be required to submit batch RIN transaction reports on a monthly basis for 2010 is extremely burdensome for MnSP and other regulated parties, EPA states that the reason for these reports is to assist parties in indentifying errors before the errors result in violations(s). MnSP does not believe that an increased frequency in reporting is needed or warranted and suggests that any RINs generated prior to EMTS implementation could trade under a separate category and disclosure since RIN traders

using EMTS has the ability to instantly determine if the RINs being traded were created before EMTS and thus poses a greater risk.

Our Response:

The NPRM discussed changing the frequency of reporting for RFS2 RIN generation activity and transactions from quarterly to monthly, in the event that EMTS would not be available for use at the start of the program. EMTS will be available and its use will coincide with the start of the RFS2 program.

EPA acknowledges that some information required to be submitted under the RFS2 regulation may be claimed as CBI by the submitter. EPA is required to treat such information in accordance with our regulations at 40 CFR Part 2. In addition, EPA has issued guidelines and policies for handling of information claimed as CBI in order to implement these regulations.

4.3.3 Additional Reporting Information

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) questions EPA's proposal to further burden terminal operators and others in the distribution system with new reporting requirements. It is unclear what information these parties could give the EPA that would provide useful or new information not already available to EPA through EIA's Petroleum Supply Monthly data. [[Docket number 2233.2, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2018.1) suggests that EPA should consider requiring an "estimated" RFS0300 report each quarter with the accompanying RFS0200 and associated "USE" records. A final RFS0300 report would be made then on an annual basis. This could be set up similar to the quarterly estimated tax approach utilized by the IRS and required of corporations where prior year obligations would serve as the quarterly basis. (2018.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2018.1) recommends that EPA require a reporting of the last batch number used by either a producer or importer of renewable fuel during the first interim period (RFS1). This last batch number would then be made publicly available on the transition date and would be utilized by industry to self monitor and assure that subsequent batches under RFS2 were generated at a batch number greater than that reported. (2083.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that EPA should provide clear guidance to producers that propose certain documentation or records to demonstrate that their fuel meets the qualifying criteria. There are likely various existing forms of documentation upon which EPA can rely and, thus, limit the potential documentation burden created by EISA and the proposed RFS2 regulations. (2471.1, p.13)

The commenter also believes that EPA should use reports under RFS2 both to ensure parties' compliance and to monitor the overall health of the program. While the commenter does not endorse the establishment of position limits or caps on the total number of unassigned RINs that a party may buy or hold, they do believe that, in a tight RIN market, EPA should scrutinize reports to prevent obvious attempts to hoard RINs or to manipulate the market. (2471.1, p.15)

The commenter noted that regulated parties generally have struggled to identify the correct "transaction date" for RIN Transaction Reports under RFS1. This issue is not inconsequential, as the choice of transaction date can influence whether a party maintains compliance with the quarterly balancing requirements for assigned RINs. The commenter believes that EPA should clarify this ambiguity by adopting as a default position that the "transaction date" is the date of the product transfer document or other document (e.g., invoice) that conveys RINs from buyer to seller. (2471.1, p.17)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) is concerned about EPA's proposed section 80.1452(e)(2)(xi) that renewable fuel producers must now report "the type and volume of co-products produced" with each batch of renewable fuel. This proposed requirement is burdensome, costly, and unnecessary D-code classification is not linked to the level of co-product produced at a facility and reporting the quantity of co-product production serves no regulatory purpose under EISA. [[Docket number 2383.1, p. 59]]

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that EPA needs to rethink the concept of the Batch Report. The supposition that every gallon of renewable fuel in a tank with assigned RIN numbers will be sold or will be sold as renewable fuel is faulty. Having to assign a batch RIN number for the total batch volume will create extra work, requiring facilities to assign RIN numbers and then retire RIN numbers for non fuel sales and for tank heel volumes. Under RFSI, assigning RIN numbers prior to a renewable fuel sale was simple and avoided having to generate and retire RIN numbers for fuel volumes that were not part of the renewable fuel program. (0994.1, p.11)

The commenter noted that EPA will have to create a new RIN Retire code to deal with the circumstance when RINs are retired because a heel volume is not sold from a tank, and that heel

becomes part of the next batch created in that tank. While the commenter sees many advantages of the EMTS, the Batch Report causes facilities to generate more transactions to retire RINs than in RFS1. If retiring RINs becomes a significant burden, facilities will generate a Batch Report for each single sale in which the batch volume and RIN number are tied to that single sale. The commenter also noted that Producers will have to have two accounts in the EMTS RIN Bank: one account will be for valid Generated RINs (from Batch Reports) and one account for Separated RINs. (0994.1, pp.11-12)

The commenter rejects the idea of requiring all the additional information on the RIN Generation Report. These results can always be verified by examining the feedstock purchase orders and the test results from the biofuel made from these purchases as part of the attest engagement. The request for additional information such as co-products produced have nothing directly to do with verification that the feedstock is qualified to produce the specified category of biofuel. The RFS reports need to be kept as simple as possible. (0994.1, p.12)

The commenter rejects the requirement that feedstocks need to be certified that they are the proper feedstocks for the specified category of biofuel product. The commenter also rejects the statement that a renewable fuel producer who makes renewable fuel that does not qualify under RFS2 must report this fuel and state why it does not qualify. If a producer makes a product that does not use approved feedstocks and does not produce a fuel that qualifies under one of the four (or 6) D codes, then the product is not renewable fuel. Therefore this product does not need to be reported at all to the EPA. (0994.1, pp.12-13)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter noted that EPA should clarify the rules for retiring RINs. The rules do not address the situation where a party exports cellulosic renewable fuel, or advanced renewable fuel. (2505.2, p.9)

Document No.: EPA-HQ-OAR-2005-0161-1969
Organization: SeQuential-Pacific Biodiesel
Comment:
The commenter (1969) states that as a Renewable Fuel Producer committed to sustainable Biodiesel production from renewable resources, they have been fortunate to survive this economic contraction. A huge piece has been the added value of the Renewable Identification Numbers (RINs). The small but steady RIN revenue stream allowed the commenter to keep our doors open and prevent a complete plant shut down and lay offs. In recent months they have seen the value of the RINs decrease sharply. One of those factors is the rule that obligated parties are only required to report RINs on an annual basis. This creates an uneven demand for RINs throughout the year. The commenter strongly encourages EPA to change the reporting requirements of obligated parties so they are identical with the responsibilities of renewable fuel producers. Quarterly reporting would create a level playing field for both obligated parties and renewable fuel producers thus smoothing the volatile market prices. [[Docket numbers 1969.1, p. 1 and 2027, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) finds that the reporting of the volume and type of co-products produced with the renewable fuel to be ancillary to the determination of the fuel pathway the renewable fuel qualifies for and poses an additional layer of complexity to the reporting process for Producers which is unnecessary. The commenter respectfully submits that this item be removed from the Recordkeeping Requirements for Renewable Fuel Producers. (1033.1, p.3)

Our Response:

Several commenters expressed concern for additional reporting burdens associated with RFS2. Some referenced alternate means of collecting data such as EIA's monthly data reports. However, in order to enforce the requirements of EISA and RFS2, EPA must be able to confirm claims of individual renewable producers for the products they make, the feedstocks they use and the processes employed. Part of the assessment includes reviewing co-products generated which were considered during EPA's life cycle assessment. We are requiring that co-product production be identified for each batch of renewable produced, and that each quarter the volumes of co-product produced at a facility be reported by co-product type.

Some commenters suggested that EPA require obligated parties to demonstrate quarterly use of RINs for compliance. Such a requirement, while it may provide for more constant demand for RINs, conflicts with the statutory requirement for an annual compliance program.

The Clean Fuels Clearing House suggested that EPA require reporting of the last batch number used by a producer or importer and that EPA publish this information for industry self monitoring. EPA understands the potential utility of such information, but after considering the added burden of this one-time data collection and limitations for a practical implementation – modifications of RFS1 ICR, conflicting collection methods with EMTS, and limited resources, EPA chose not to pursue this idea.

A comment regarding the use of EMTS data to monitor hoarding is being considered for future development. The same commenter suggested that EPA clarify the definition of "transaction date." Just as with RFS1, the date of the commercial document (PTD) which transfers ownership of RINs from one owner to another is the date that shall be used by both the buyer and seller of RINs.

A commenter suggested that EPA reconsider the concept of a batch. We believe that the definition of a batch, as carried over from RFS1, provides RIN generators with a range of flexibility to accommodate a variety of process methods (i.e., generating RINs in a batch tank or generating RINs as product is being shipped out of the facility. The same commenter suggested that new RIN retirement codes need to be incorporated into the EMTS system, however the producer may want to examine whether or not it makes sense to align RIN generation with volume that is leaving the facility. The commenter is also correct that a RIN owner with have separate accounts for assigned and separated RINs. Finally, the commenter suggested that feedstocks do not need to be certified. The statutory requirements that are the basis for RFS2

require such certification. EPA has taken steps to ease the burdens of certification where practicable.

A commenter suggested that EPA clarify rules for exporters separating RINs. The FRM preamble discusses the requirements for exports given the fungible nature of RINs. The exporter will determine its RVO based on the type of renewable and the volume being exported.

4.3.4 Attest Engagements

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the proposed attest engagement requirements should be greatly minimized by EMTS, in particular noting the attest of the PTDs and transactions between the transferor and transferee. The commenter believes that the RFS2 regulations should be flexible when requiring information submission to EPA within a short period of time after a renewable fuel is produced or imported. (2124.1, p.35)

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter also provided public testimony regarding the hopefulness that this system would eventually become a data inquiry system and alleviate the burden of reporting and the attestation audits. Furthermore, the commenter suggests EPA consider a "vesting" program for data entry to ensure future compliance with the renewable fuels producers and hopes this will build relationships and foster a sense of trust between all regulated parties and the Agency. (1044.1, p. 3)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) believes that the attest requirements as proposed in '80.1464 for an obligated party should be modified to exclude the attestation of RIN transaction reports. The commenter also noted that the attest requirements in §80.1464 say "The requirements regarding annual attest engagements in §§80.125 through 80.127, and 80.130, also apply" to these RFS2 attest procedures. Since §§80.125 and 80.130 are limited in scope to refiners and importers, §80.1464 should be revised to account for that. The lead-in sentence of §80.1464 could be reworded: "As the requirements regarding annual attest engagements in §§80.125 through 80.127, and 80.130 apply to refiners and importers in Subpart F, so do those requirements also apply to obligated parties, exporters, renewable fuel producers, RIN-generating importers, and other parties owning RINs with regard to any attest engagement procedures required under this Subpart M." (2145.1, pp.7-8)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2), with regards to EPA's proposal to require auditors to attest PTDs, believes that it is duplicative and overly burdensome to require this for parties that receive PTDs. In addition, given the EMTS system, it appears that the attestation requirements will no longer be necessary and should be eliminated. (2505.2, p.13)

Our Response:

Commenters suggested that with the use of EMTS, that Attest requirements could be eliminated or greatly reduced. The purpose of the Attest is for EPA to receive third party verification of information submitted to EPA as well confirmation that records required to be retained by the regulated community are being kept. While the requirements for RFS2 reports have changed from RFS1 and the introduction of EMTS will simplify some data transactions and will result in data of better quality, the requirement for third party verification must still be met through the Attest process.

4.4 Product Transfer Documents (PTDs)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter believes that EPA needs to drop its proposal that PTDs contain complete RINs. [[Docket number 2233.2, p. 9]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that RIN numbers should not be required to appear on a PTD in their entirety. PTDs should be required to show the number and type of gallon-RINs being transferred, but not all 38 digits. The commenter believes that these proposed regulations could cause problems when the PTD shows 38 digits that do not match the RINs transferred within EMTS. (2124.1, p.34)

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) believes that Renewable fuels PTDs should not be required to duplicate information already entered into the EMTS. The proposed regulations require the 38-digit RIN (reference §80.14538) and the number of RINs by type and RIN generation year (reference §80.1453(d)). The renewable fuel PTD should only be required to show the quantity of RINs

being transferred. A replication of any of the data contained in the EMTS is unnecessary especially the 38-digit RIN as it will always be prone to error. One of the most significant benefits of the EMTS is the elimination of transcription errors and this benefit should not be lost. The commenter also believes that no additional PTD documentation for separated RIN transactions should be required other than what is contained in the EMTS. (2145.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) believes that with the implementation of EMTS, EPA should only require the volume of RINs transferred to be stated. There is no need to continue to incorporate the entire 38-digit RIN on any invoice or PTD. Requiring the 38 digit number be present on the PTD could create an issue if the number is incorrectly printed or does not match the RIN number within the EMTS system. Other than the number and type of gallon-RINs being transferred, no additional information is needed on the PTD. The commenter recommends that the PTD or invoice only contain the number of RINs being transferred as stated in the EMTS section (IV. E.2). (2400.2, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should eliminate the requirement for renewable fuel producers to provide a PTD the "same day" as they transfer title to the renewable fuel. Experience under the RFS1 program suggests that this is an unnecessary and impractical requirement. This PTD requirement will be especially unworkable for foreign renewable fuel producers. The commenter proposes that EPA require "timely" delivery of PTDs or "within 10 business days". (2505.2, p.9)

The commenter believes that once EMTS is in place, regulated parties should not be required to send each other PTDs. After EMTS, the rules should provide that all that is required to be sent to a counter party is reference to the EMTS activity ID number. (2505.2, p.12)

Our Response:

With the implementation of EMTS, EPA agrees that parties trading Renewable Identification Numbers (RINs) will no longer need to include the RIN in its entirety on a Product Transfer Document (PTD). However, in order to complete an EMTS RIN transfer, certain buy and sell transaction elements must match. Therefore, a PTD must be used to transfer generic RINs with identifying transactional information used for matching. EPA has removed the requirement for parties to include the RIN in its entirety on a PTD, but RIN identifying information must be included on a PTD, such as RIN type, generation year, and assignment.

EPA maintains that a PTD must be used to transfer ownership of assigned and separated RINs. A product transfer document is the physical document where renewable fuel and RIN ownership are transferred between parties. While EMTS buy and sell transactions contain an optional PTD field for a user specified PTD number, EMTS does not generate PTD numbers.

The optional PTD number element can assist both trading parties match records with EMTS transactional information and reports for annual attest engagements.

EPA maintains that if assigned RINs are being transferred separately from the PTD transferring a volume of renewable fuel, then the document listing the assigned RINs must be provided to the same person on the same day as the PTD used to transfer ownership of the volume of renewable fuel. Assigned RINs may not be transferred without simultaneously transferring a volume of renewable fuel.

4.5 Recordkeeping

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that producer record keeping requirements are not cost-effective and are difficult to enforce. (2112.1, p.13)

Our Response:

EPA maintains that the recordkeeping requirements in RFS2 are necessary to support enforcement of the proper generation and use of RINs for compliance purposes. Furthermore, we believe that most parties would keep basic records regarding their products and RINs, and records regarding transactions involving their products and RINs, in the normal course of business.

4.6 EPA Moderated Transaction System (EMTS)

4.6.1 General Comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter is in support of the EMTS concept and encourages EPA to take a much more active role in the initial generation of RINs as well as the clearing of RIN transactions between principal parties. Without involvement and enforcement by EPA the number of erroneous and fraudulent RINs will continue to propagate. (2019.1, p.1) [[See Docket Number 2019.1, pp.1-2 for additional specific comments regarding regulatory text responding to EMTS]]

The commenter provided detailed comments on the issues related to the duplication of renewable fuel credits, known as RINs, and their detrimental effect on the effectiveness of the renewable

fuel standard. Such occurrences are frequent and have a very costly impact on legitimate biofuel producers and considerable exposure to liability on behalf of the obligated parties under these regulations. (2319.1, p.1) [[See Docket Number 2319.1, pp.1-2 for a discussion on this issue of duplication of RIN credits]]

The commenter (2014.1) provided specific comments regarding regulatory text responding to the EMTS and invalid RINs. [[See Docket Number 2319.1, pp.3-6 for these detailed comments]]

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) supports EPA's recognition that improvement is needed in screening and tracking RIN credits. The proposed EPA-Monitored Transaction System (EMTS) offers a viable approach that would maintain basic RIN handling requirements from RFS1 and presumably bring greater integrity to the market. A strong policing system, of course, should be an essential element of such a mechanism. [[Docket number 2135.1, pp. 21-22]]

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) supports EPA's development of the EMTS. This system, when implemented, will help alleviate the burden of tracking RIN transactions and hopefully reduce complication of non-legitimate RINs in the marketplace. However, it is imperative that the EMTS recognize the time requirements to verify data and transactions. The commenter believes the EMTS tool can reduce the perceived complications of placing the obligation with final fuel providers. EPA should be designing the EMTS to accommodate this approach. (2154.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) supports EPA's decision to build on the current RFS1 program, as well as to move toward an EPA moderated trading system. The commenter also supports various proposals by EPA, which it believes would improve renewable fuel producers' ability to compete in the RIN market, but believes there is ample access to RINs and rejects attempts by EPA to become a market regulator. (2157 p. iv)

Organization: Independent Fuel Terminal Operators Association (IFTOA).
Comment:
The commenter (2345) believes the EPA EMTS could be a system that would provide the regulated community with the needed information and transparency regarding RIN transactions to facilitate a more liquid RIN market. The commenter provides recommendation to EPA for

making EMTS as useful as possible. [[Docket number 2345.1, p. 2]] [[See docket number 2345.1, pp 2-3 for the EMTS recommendations.]]

Document No.: EPA-HQ-OAR-2005-0161-2345
Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
Regarding the Renewable Identification Numbers questions and approaches outlined in the preamble, the commenter (2369) supports separating RINs from the biofuel and an EPA Moderated Transaction System. In the electricity market, Independent System Operators (ISO) frequently manage the renewable electricity credits (REC) trading. Entities that participate in the REC market through the ISOs, generated the credits or need them for compliance. Within such systems, there are few speculators or marketers who may participate. The commenter believes that a similar system in the fuels market whereby the RINs are separated from the fuel and sold in the platform managed by the EPA through an EPA Moderated Transaction System appears to be logical, especially if the participants are limited to those who generate and sell RINs and those who need to purchase RINs. [[Docket number 2369.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) supports EPA's proposed use of the EMTS for tracking RINs. The commenter believes use of EMTS will help eliminate certain errors related to using and tracking individual RINs, eliminate administrative errors, and should help save time and resources. Early-stage screening will help ensure that RINs are valid, and EPA's proposal that RIN records move toward generation in "real time," when renewable fuel is produced, would alleviate some of the problems with delayed reporting under the current system. The commenter also supports EPA's proposal to allow parties to opt-in to EMTS in 2010. [[Docket number 2383.1, p. 60]]

Document No.: EPA-HQ-OAR-2005-0161-2472
Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter fully supports continuation of the 38 digit RIN-structure. This current methodology can easily manage all expected changes associated with RFS2 (i.e., revising D codes) and will minimize the cost to all users by avoiding costly IT infrastructure restructuring. (2124.1, p.29)

Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) does not support the proposed EPA-moderated RIN trading system as a vehicle to facilitate RIN purchases and sales beyond the voluntary listing of contact information by buyers and sellers. [[Docket number 2472.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy

Comment:
The commenter (2105.1) believes that EPA should report on the feasibility of the RIN trading system. While the EPA plans to create an automated, real-time system, it does not yet exist. Until such a system is in full operation, the incidence and cost of reporting error is likely to increase as blending requirements increase dramatically under RFS2. The commenter requests an analysis of the RIN system in order to better understand the market and its feasibility and efficiency. (2105.1, p.5)

Our Response:

We introduced the EPA Moderated Transaction System (EMTS) in the NPRM as a new method for managing the generation of RINs and transactions involving RINs, designed to resolve the RIN management issues of RFS1 that lead to widespread RIN errors, many times resulting in invalid RINs and often tedious remedial procedures to resolve those errors. In response to the generally broad acceptance of the EMTS concept, we are instituting the use of EMTS for all RFS2 RIN generation and transactions beginning July 1, 2010.

We believe that EMTS will significantly reduce the number of invalid RINs that have been generated – inadvertently, in many cases – under RFS1. In cases in which invalid RINs do make their way into EMTS, we have designed the system in such a way as to enable EPA to take corrective action swiftly, as several of the commenters have emphasized is necessary. We disagree with the comment that EPA is attempting to act as a market regulator with the institution of EMTS. Rather, we view EMTS as offering a neutral platform through which RIN transactions can be carried out with reduced burden on industry. While the 38-digit RIN information will remain intact as the basis of EMTS transactions, the system will conduct these transactions in a more generic, and therefore simpler, way than has been done under RFS1.

4.6.2 PTD and Attest Engagements Under RFS2

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) believes that there should be no need for the entire 38 digit RIN to be on the PTD. Also, the attestation requirements should be simplified due to the presence of EMTS. (2154.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) states that, under the EMTS environment, the RIN should not be required on the PTD. [[Docket number 2233.2, p. 11]]

Our Response:

While we believe that EMTS will simplify and reduce burdens on the regulated community, it is important to point out that EMTS is strictly a RIN tracking and managing tool designed to facilitate reporting under the Renewable Fuel Standard program. Product transfer documents are the commercial documents used to memorialize transactions of RINs between a buyer and a seller in the market. The EMTS will rely on references to these documents, which can take many forms, but it is not capable of replacing those documents. In addition, the entire 38-digit RIN will not be required to be listed on the PTD as the generic RIN information is sufficient as long as both parties accept the trading of RINs on a generic basis. Attest engagements are used to verify that the records required to be kept by regulated parties, including information retained by a regulated party as well as information reported to EPA such as laboratory test results, contracts between renewable fuel/RIN buyers and sellers, feedstock documentation, etc. is correctly maintained or reported. The information reported via EMTS is but a subset of the information required to be maintained in a regulated party's records, and both PTDs and attest engagements are necessary to ensure that the information collected and tracked in EMTS concurs with actual events.

4.6.3 Start-up of EMTS

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports a mandatory start date for EMTS coincident with the rest of RFS2 which they presume [per the commenter's comments in Chapter 2 of this Summary and Analysis of Comments document] will be January 1, 2011. [[Docket number 2393.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) supports the proposed Moderated Transaction System (EMTS) and urges EPA to keep the program on schedule and to require its use as soon as possible by all parties who hold or transact RINs. [[Docket number 2130.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports a January 1, 2011 start date for EMTS and the alignment of the RFS2 implementation date with the EMTS start date. A fter EMTS has been in place for a year, EPA should review the RFS and RFS2 regulations and drop any requirements that are no longer warranted. The commenter also believes that once the EMTS is in place, EPA should review and simplify the attest engagement requirements. [[Docket number 2233.2, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2249

Organization: National Biodiesel Board (NBB)
Comment:
While the commenter (2499.2) generally supports EPA's proposal to move toward an EPA moderated transaction system, however they have concerns regarding the implementation. The commenter would like EPA to be aware of the IRS requiring our members to become active participants in the ExStars system, which is designed to report the sale of taxable biodiesel. To reduce the implementation burden, the commenter asks EPA to consider EMTS implementation alongside ExStars implementation.

Document No.: EPA-HQ-OAR-2005-0161-2014
Organization: Clean Fuels Clearinghouse
Comment:
The commenter (2014.1) recommends that in the event of a mid-year implementation of RFS2 that EPA take additional steps to accelerate the implementation of EMTS to coincide with the same date. In the event that the entire EMTS system could not be made active on the same date as RFS2, then as a minimum the priority should be placed on making that portion of EMTS that addresses renewable biomass and RIN batch generation active and fully functional on the RFS2 effective date. (2083.1, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2017
Organization: Aloha Petroleum, Ltd.
Comment:
The commenter (2017.1) endorses a "closed" system for RIN transactions and management as the EPA proposes. The initiation of this new RIN management system should coincide with the start of the RFS2 program. Sufficient time should be allotted for companies to purchase and install new hardware and software programs, train personnel and learn the new system. In fact, starting the EMTS system prior to RFS2, even if only in "beta" mode, would be helpful in making the transition from the current system to EMTS. (2017.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) noted that the Proposed Rule indicates that if EMTS is not in place at the start of RFS2, parties will be required to file reports similar to the current process under RFS1, but on a monthly rather than a quarterly basis. The commenter disagrees with this proposed change in the reporting schedule. Monthly reporting frequency is impossible in the present 38-digit code system due to on-going problems with invalid RINs and transfer delays, which in turn have required parties to continuously revisit and re-file their RFS1 reports. A monthly reporting requirement will exacerbate these delays and re-filings and will not produce any commensurate benefit of improvements to RIN integrity. Until EMTS is in place, the current quarterly reporting timeframes should be maintained. (2471.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:

The commenter (2505.2) noted that while the EMTS system will be a helpful new tool, participation in the program should be voluntary.

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
The commenter (2172) noted that EPA needs to also be aware that IRS has indicated that biodiesel producers will most likely be required to participate in the IRS ExStars tax reporting system, a system using only IRS approved software, which may also place significant demands on renewable fuel producers IT staff.

Our Response:

We are requiring the use of EMTS for all RFS2 RIN generation and transactions beginning July 1, 2010. We appreciate commenters' concerns over having sufficient time to implement the new system, which is why EPA has utilized an open process for the development of EMTS since it was first introduced in the NPRM, conducting workshops and webinars and soliciting stakeholder participation in its evaluation and testing. EPA pledges to continue to work with the regulated community, as a group and individually, to ensure EMTS is successfully implemented. EPA anticipates that with this level of assistance, regulated parties will not experience significant difficulties in transitioning to the new system, and EPA believes that the many benefits of the new system warrant its immediate use. Due to limitations, EPA chose not to integrate EMTS with IRS ExStars tax reporting system at this time. However, EPA will look for future integration opportunities.

4.6.4 Timing of Transaction Reporting

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) believes that three days to enter RIN transactional information into EMTS is not feasible. The commenter thinks a more reasonable approach would be to require sellers to enter data within 7 days and provide purchasers an additional 7 days (for a total of 14 days following the activity). Given the complexity of the 4 tiers of renewable fuels and establishment of the new D code, this additional time will be particularly important at the start of the program. (2154.1, pp.6-7)

Our Response:

In order for EMTS to be a "real time" system, we must require that the information comes in a timely manner. EPA has concluded that five days, or a business week, is an appropriate amount of time for both parties to receive or provide necessary documentation in order to interact with EMTS accurately and timely. "Real time" will be defined as within five

(5) business days of a reportable event (e.g., generation and assignment of RINs, transfer of RINs).

4.6.5 Technical Elements of EMTS

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2081
Organization: Novogy, Inc.
Comment:
The commenter (2081) seeks to confirm that RINs generated and for the production and separation of cellulosic biogas would be eligible to utilize the envisioned EPA monitored trading system. [[Docket number 2081.1, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
Although not included specifically in the Proposed Rule but a concern to the commenter (2249) is the security of the EMTS system. Using node capability may place users at an increased risk of data misplacement. The information being exchanged is sensitive, and as such the commenter requests the EPA clarify the potential risks and take steps as necessary to ensure the security of sensitive data provided in the EMTS system. [[Docket number 2249.2, p. 43]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter recommends that EMTS generate a unique transactional ID for each transaction that which the Transferor may reference in their commercial documentation sent to the Transferee by which the Transferee will be able to readily match and reconcile with EMTS and subsequently acknowledge the transaction.

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors
Comment:
The commenter (2172) also has significant concerns about the security of the EMTS network. As a large producer of biodiesel, it appears that because of the design of the MnSP computer network, MnSP will most likely need to become a node on the EMTS network. EPA needs to be sensitive to the fact that any time a node is placed on a computer network, a potential door for security breach is opened. MnSP requests that EPA clearly and precisely document to users the network safeguards that will be used to protect the sanctity of the system.

Our Response:

Under the final RFS2 regulations, EMTS will be the platform for generation of and transactions involving all RINs beginning with the effective date of the regulations. Therefore,

RINs associated with cellulosic biogas will indeed be eligible, in fact required, to be exclusively generated and traded within EMTS.

EPA acknowledges that some information required to be submitted under the RFS2 regulation may be claimed as CBI by the submitter and this includes some data that may be submitted via EMTS. EPA is required to treat information claimed as CBI in accordance with our regulations at 40 CFR Part 2. In addition, EPA has issued guidelines and policies for handling of information claimed as CBI in order to implement these regulations. EPA is required to develop system security plans (SSPs) that are compliant with our regulations and with various standards, including the current version of NIST 800-53, related to government information systems. We are also required to periodically review and update our technical controls.

We appreciate the comment on the need for a unique ID for each transaction that takes place within EMTS. We have determined that such information should be part of the record for each RIN transaction and have added it into the system design.

4.6.6 Batch Reporting Via EMTS

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that EPA needs to rethink the concept of the Batch Report. The supposition that every gallon of renewable fuel in a tank with assigned RIN numbers will be sold or will be sold as renewable fuel is faulty. Having to assign a batch RIN number for the total batch volume will create extra work, requiring facilities to assign RIN numbers and then retire RIN numbers for non fuel sales and for tank heel volumes. Under RFSI, assigning RIN numbers prior to a renewable fuel sale was simple and avoided having to generate and retire RIN numbers for fuel volumes that were not part of the renewable fuel program. (0994.1, p.11)

The commenter noted that EPA will have to create a new RIN Retire code to deal with the circumstance when RINs are retired because a heel volume is not sold from a tank, and that heel becomes part of the next batch created in that tank. While the commenter sees many advantages of the EMTS, the Batch Report causes facilities to generate more transactions to retire RINs than in RFSI. If retiring RINs becomes a significant burden, facilities will generate a Batch Report for each single sale in which the batch volume and RIN number are tied to that single sale. The commenter also noted that Producers will have to have two accounts in the EMTS RIN Bank: one account will be for valid Generated RINs (from Batch Reports) and one account for Separated RINs. (0994.1, pp.11-12)

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:

The commenter (2499.2) believes that the proposal requiring importers and producers of renewable fuel to submit batch reports RIN transaction reports on a monthly basis for 2010, is extraneous and onerous. [[Docket number 2249.2, p. 43]]

Our Response:

We are finalizing our proposed approach to screen and assign RINs at the point when RINs are generated through production or importation of renewable fuel. However, we will continue to allow producers and importers to generate RINs at the renewable fuel point of sale as long as this practice, if adopted by a RIN generator, is applied consistently. We believe that this allowance will obviate the need for a RIN generator to retire RINs associated with heel volumes or other volumes of fuel that will not be subject to the regulations under Subpart M.

As for the frequency of report submissions, given that participation in EMTS will be required of all parties who own RINs beginning with the effective date of the RFS2 regulations (July 1, 2010), RIN generation ("batch reports") and transaction reports will be due on a quarterly, not monthly, basis.

4.7 Prohibited Acts and Liability for Violations

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
Regarding the proposal to impose liability on parties that use or transfer invalid RINs, regardless of whether the RIN was acquired in good faith, the commenter (2358) believes it is unfair to impose liability on parties unless they knew or should have known that the RIN was invalid. Strict liability will discourage parties from participating in the sale of renewable fuels. [[Docket number 2358.1, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) questions what type of enforcement actions can the EPA take against a foreign producer? Even if a supply agreement between Importer and Foreign Producer states that the Producer will comply and document RFS2 requirements, will not the Importer be the non-compliant and enforced upon entity by EPA, as opposed to an entity outside of EPA's jurisdiction? The commenter believes that if ILUC temporarily drops out of this rule-making, then this issue would most likely be of a lesser concern. The Importer would have to document that the Producer has complied with the FRARs fuel registration process and meets ASTM standards. Both are easily done by EPA records review and physical testing of the product. (2155.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2341
Organization: Noble Americas
Comment:
The commenter (2341) noted that the rules governing the assignment of the advanced categories are complicated such that errors could result, which would invalidate the RIN. The commenter believes that rather than invalidate the advanced RIN entirely, it should be instead downgraded to category 4 (assuming that it meets those lesser requirements). This would partially preserve the economic value of the RIN and reduce disruptions to Obligated Parties. (2341, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) noted that while the EMTS system will be a helpful new tool, participation in the program should be voluntary. Where parties purchase RINs that have been cleared through the EMTS system, they should be able to rely on those RINs and held harmless if the RIN is later found to be invalid for some reason. The commenter believes that liability for the invalid RIN should fall on the party that caused the RIN to be invalid, not a party that innocently acquires an invalid RIN. (2505.2, p.)

Our Response:

Shell Oil, SIGMA and NACS argue that parties should not be liable for invalid RINs that they receive in good faith. However, EPA believes these enforcement provisions are necessary to ensure the RFS2 program goals are not compromised by illegal conduct in the creation and transfer of RINs. As with RFS1, under RFS2 there is no “good faith” provision to RIN ownership. An underlying principle of RIN ownership is still one of "buyer beware" and RINs may be prohibited from use and retired at any time if they are found to be invalid. However, because of the “buyer beware” nature of the program, EPA is offering the option, thought EMTS, for a RIN buyer to protect themselves by accepting or rejecting RINs from specific RIN generators or from specific classes of RIN generators.

Commenter Noble Americas argues that improperly generated advanced RINs should not be invalidated, but should instead be downgraded to a lower category of RIN. EPA believes that in order to maintain the integrity of the RIN program, improperly generated RINs must be considered invalid, and, therefore, must be retired. EPA believes that the registration process, combined with the safeguards in EMTS will greatly limit situations in which a RIN is generated in an incorrect category.

PMCI questions EPA’s jurisdiction over foreign producers of renewable fuel that is imported into the U.S. In order for a foreign producer to generate RINs under the RFS2, the producer must commit to allow EPA inspections of their facilities and records, and are subject to U.S. substantive and procedural laws for civil and criminal enforcement under the Clean Air Act. If an importer plans to generate RINs for renewable fuel produced by a foreign producer, the importer is responsible for ensuring that the RINs are properly generated and would be liable for a violation if the RINs improperly generated.

4.8 Retail Dispenser Labeling for Gasoline with Greater than 10 Percent Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
Depending on the outcome of ongoing DOE/EPA/CRC testing for mid-level blend use in the legacy fleet, the commenter (2130) states that stronger preventive measures may be needed, as well as product liability relief to enable E10+ distribution and marketing, or widespread E85 use. EPA's proposal to require labels on pumps that dispense gasoline with greater than 10% ethanol content is the minimum mechanism necessary to prevent misfueling. [[Docket number 2130.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) supports the proposal to require a new warning label for marketers who sell, dispense or offers for sale ethanol blends containing more than 10% v/v ethanol. This label would advise consumers that such fuel is for use only in flexible fueled vehicles (FFVs), may damage non-FFVs and warns that putting such fuel into non-FFVs is against federal law. While the commenter opposes using the label as the sole mechanism to prevent misfueling should EPA grant a partial waiver, a label is an important communication and educational tool. (2132.1, p.6) [[See Docket Number 2132.1, pp.15-16 for a detailed discussion on Pump Labeling for E10+]]

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) believes that refiners and blenders should be held harmless for claims of damage to engines arising out of increasing ethanol content of gasoline above 10% by volume if and when such blends are approved for sale and the refiner or blender chooses to fulfill his obligation for RINs by producing or marketing such product. [[Docket number 2135.1, p. 21]]

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) supports EPA's labeling provision and suggests that the exact wording will have to depend on the outcome of E15 section 211(f) waiver review. (2143.2, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) is concerned about rolling out large volumes of E85 or a mid level ethanol gasoline and selling these in the same market as E10. All three fuels will be sold from dispensers with the same size nozzles, which can be used to fuel either FFVs or standard

gasoline vehicles. E85 and mid level ethanol gasoline will have to be priced lower than E10, if large volumes of these fuels are needed for mandate compliance. This lower price will probably encourage consumers to use E85 and mid level ethanol gasoline in vehicles that will be damaged by these fuels. [[Docket number 2233.2, p. 19]]

The commenter believes that EPA must undertake a robust public information campaign to educate the population about the potential effects of misfueling and supports an approach that addresses misfueling using both methods–advisory and preventative. The commenter adds that the fuel manufacturer (i.e., refiners, blenders, importers) cannot and should not be held responsible for ensuring that consumers choose compatible products when fueling their vehicle. The commenter also believes that fuel retailers and suppliers cannot and should not be responsible for customers misfueling their vehicles in the presence of adequate, government directed measures to advise/prevent against its occurrence. [[Docket number 2233.2, pp. 20-22]] [[See docket number 2233.2, pp. 20-22 for further discussion of these issues.]]

The commenter urges EPA to drop the provisions covering E10+ labeling requirements when finalizing the RFS2 rule. Since EPA is not proposing to approve an E10+ fuel at this time, the commenter believes it would be more appropriate and make more sense for EPA to establish the E10+ labeling requirements after they have approved an E10+ fuel. [[Docket number 2233.2, p. 38]]

Document No.: EPA-HQ-OAR-2005-0161-2241
Organization: Outdoor Power Equipment Institute (OPEI); Alliance for a Safe Alternative Fuels Environment (AllSAFE)
Comment:
The commenter (2241.1) noted that labeling alone would not be a sufficient safeguard to prevent widespread misfueling. However, as an initial measure, labeling should be required. To improve the pump labeling provisions, EPA should adopt a single uniform and clear label and not allow for alternate labels. Second, the proposed pump label refers only to vehicles. EPA must include strong language that indicates that (other than flex-fuel motor vehicles), vehicles, portable gas containers, boats, and nonroad vehicles and equipment should not be fueled with blends above E10. EPA must also strengthen language to ensure that labels are visible to consumers. Rather than require that a label be in "the immediate area" of the pump stand, the commenter suggests that EPA explicitly require that pump labels be on each pump and in plain view of the person operating the pump. EPA should require that the label inform consumers that ethanol blends contain less energy than regular gasoline, and that vehicles and equipment operating on them will not realize advertised fuel efficiency. (2241.1, pp.13-14)

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) believes that believes EPA's proposed retail dispenser labeling is sufficient to prevent most retail customer misfueling. Imposing fines on retailers is unfair as most retail sales are self-service sales. Additionally, it is unrealistic to expect store personnel to police motorists dispensing fuel. [[Docket number 2358.1, pp. 11-12]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) is concerned about misfueling and the distinct potential liabilities involved. The commenter believes EPA should clearly specify the steps that fuel suppliers and marketers can take to minimize these liabilities and provide limited relief from liability. [[Docket number 2384.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) believes that EPA must undertake a robust public information campaign to educate the population about the potential effects of misfueling. The commenter supports an approach that addresses misfueling using both advisory and preventative methods. Whichever method(s) are chosen, such measures must provide retailers and suppliers with liability protection should misfueling take place. The commenter states that fuel retailers and suppliers cannot and should not be responsible for customers misfueling their vehicles in the presence of adequate, government directed measures to advise and prevent its occurrence. [[Docket number 2393.1, pp. 19-21]] [[See docket number 2393.1, pp. 19-21 for further discussion of the misfueling issue.]]

The commenter further states that to ensure that consumers are aware of the presence of ethanol, there will have to be a significant effort towards consumer awareness. The commenter believes that both the government and industry should be responsible for educating the consumer on the options and benefits of ethanol. Where a retailer decides to sell E85, it is that retailer's responsibility to advertise his specific product in his market. Additionally, automakers should reach out to all FFV owners to ensure that those consumers are aware of the types of fuel that their vehicle can use (including reminders on vehicle fill stems, etc.). [[Docket number 2393.1, p. 26]]

In addition, the commenter requests that EPA clarify the legality of the use of retail blender pumps for dispensing blends between E10 and E70. [[Docket number 2393.1, p. 70]] [[See docket number 2393.1, pp. 69-70 for discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) noted that §80.1469 contains requirements for the labeling of gasoline containing greater than 10 volume percent ethanol. The commenter agrees that under existing law, such fuel can only be used in FFVs and that consumers should be advised that is the case and that any misfueling is a violation by the consumer and is a violation of federal law for which the consumer would be liable. (2505.2, p.14)

Our Response:

Based on the public comments and the fact that EPA has not completed its evaluation of the E15 waiver petition, we believe that it is appropriate to defer finalizing labeling requirements for >E10 blends at this time. This will afford us the opportunity to complete our analysis of what measures might be appropriate to prevent misfueling with >E10 blends before this may become a concern in the context of the RFS2 program.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 5
Program Changes and Flexibilities

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

5. PROGRAM CHANGES AND FLEXIBILITIES

5 PROGRAM CHANGES AND FLEXIBILITIES

What We Proposed:

The comments in this section correspond to Section IV of the preamble to the proposed rule and address changes to the RFS program and flexibilities offered under the program. A summary of the comments received and our response to those comments are located below (and also in section III of the preamble to the final rule).

5.1 Small Refinery and Small Refiner Flexibilities

5.1.1 Extension of the Temporary Exemption for Small Refineries and Small Refiners

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter (2105.1) believes that EPA should institute a temporary delay of implementation of the RFS2 rule for small refiners. The commenter believes that the statutory language in the EISA does not interfere with EPA's ability, under the provisions of the Regulatory Flexibility Act (RFA), to grant relief to regulated small entities upon which the rule will have a significant economic impact. A delay in implementation for small refiners would also lessen the regulatory burden of this rule. (2105.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that provisions should be provided to allow a delay or phase-in for small refiners. The commenter is a member of an ad-hoc coalition of Small Business Refiners (SBR) and agrees with the comments provided by the group. The SBR Coalition believes that EPA does have the legal discretion to allow small refiners and small refineries owned by SBRs to delay their entry in to the RFS2 program for as long as five years. The commenter recommends that the RFS2 compliance date for small entities be delayed until at least 2014. (2118.1, p.2)

The commenter takes issue with the Department of Energy (DOE) "Small Refinery Exemption Study" released in January of 2009 determining that small refineries would not face disproportionate economic harm by their participation in the RFS Program. Such a limited investigation into the impact on small refineries could not have resulted in any in-depth analysis as to the financial impact. Before EPA adopts the final RFS2 regulations that, DOE should conduct another study which properly evaluates the impact on small refineries. (2118.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2135

Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter states that EPA does have legal authority to permit a delay (or phase-in) of the RFS2 program under the CAA. The SBR Coalition submits that EPA's legal concerns relative to both the suggested delay and the phase-in are unsustainable in view of EPA's past exercises of discretion under the RFS1 program and also in view of the extensive discretion afforded to EPA under Section 211(o) of the CAA. [[Docket number 2135.1, pp. 15-16]] [[See docket number 2135.1, pp 15-19 for extensive discussion of this issue.]]

The commenter makes the following specific comments/recommendations: that the Department of Energy should be directed to reopen and reassess the Small Refineries Exemption Study by June 30, 2010 as suggested by the Senate Appropriations Committee in January 2009; and that the RFS2 effective date for small entities should be delayed at least until 2014.

Document No.: EPA-HQ-OAR-2005-0161-2311
Organization: Wyoming Refining Company
Comment:
The commenter (2311.1) urges EPA to review and exercise its legal authority to provide additional flexibility and relief for small refiners as recommended by the Small Advocacy Review Panel. (2311.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2498
Organization: North Atlantic Refining Ltd.
Comment:
The commenter urges EPA to grant small refiners as much time to prepare for the burdens of RFS2 as was provided under RFS1, thereby delaying small refiner compliance to January 2014. This extension would provide invaluable time for small refiners to adjust to the new requirements and to take steps to mitigate their burdens.

The commenter also urges EPA to finalize its proposal to allow small refiners to apply for future extensions of their exemption based on case-by-case showings of economic hardship. The commenter recommends that EPA adopt a policy of liberally granting such extension requests. Doing so would alleviate the significant burdens facing small refiners, and would be consistent with U.S. small business relief policies. (2498.1, pp.4-5)

Document No.: EPA-HQ-OAR-2005-0161-2396
Organization: CVR Energy
Comment:
The commenter (2396.1) requests that EPA reopen and reassess the Small Refineries Exemption Study by June 30, 2010 as suggested by the Senate Appropriations Committee in January 2009. The commenter would also like EPA to delay the effective date for SBRs until at least 2014 and/or grant an automatic exemption extension for those qualifying for an extension under the original RFS rule.

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.

Comment:
The commenter (2400.2) recommends that EPA maintain the exemption set forth in RFS1 and allow small refinery exemption through December 31, 2010. (2400.2, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2130
Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) agree with EPA's continuance of the RFS1 temporary small refiner/small refinery exemption through December 31, 2010, recognizing that RFS2 will probably be implemented on or before this date for all obligated parties. The commenter urges EPA to not extend the exemption beyond this date since all parties have been well aware of the statute's timeline, including small refineries and qualified small refiners should have been striving to achieve compliance by the end of 2010 since EISA passage. (2132.1, pp.17-18)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that the small refinery exemption should not be extended; and the small refiner exemption should be eliminated. (2329.1, p. 86) [[See Docket Number 2329.1, pp.86-87 for a detailed discussion of this issue]]

Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) supports EPA's intention not to extend the RFS1 small refiner exemption. [[Docket number 2130.1, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA should not promulgate an exemption for small refiners. The Energy Policy Act of 2005 very specifically provides an exemption for small refineries. Nowhere does the Act provide a similar exemption for small refiners. EPA should not extend the exemption for an additional two years. The law includes a provision that allows an extension of the small refinery exemption upon a showing of undue economic hardship by individual small refineries. The commenter believes that EPA should limit any exemption extension to situations where the party seeking the exemption qualifies as a small refinery and can make such a showing. (2505.2, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) believes that EPA should not promulgate an exemption for "small refiners." EPAct 2005 very specifically provides an exemption for "small refineries." Nowhere does the Act provide a similar exemption for "small refiners." Thus, EPA should never have provided this small refiners' exemption. Now, EPA is proposing to extend the exemption for an

additional two years. The commenter states that EPA should not extend this exemption. The law includes a provision that allows an extension of the small refinery exemption upon a showing of undue economic hardship by individual small refineries. EPA should limit any exemption extension to situations where the party seeking the exemption qualifies as a small refinery and can make such a showing. Any exemption should only apply to the specific small refinery that has petitioned for an extension, not the entire universe of small refineries. [[Docket number 2393.1, pp. 12-13]]

Our Response:

The RFS1 program regulations exempt gasoline produced by small refineries from the renewable fuels standard through December 31, 2010 (at 40 CFR 80.1141), per EPAct. As EISA did not alter the small refinery exemption in any way, we are retaining this small refinery temporary exemption in the RFS2 program; however, the exemption will now apply to all transportation fuel produced by small refineries (including diesel and nonroad fuels), as EISA also covers transportation fuels, not just gasoline. Likewise, as we extended under RFS1 the small refinery temporary exemption to the few remaining small refiners that met the Small Business Administration's (SBA) definition of a small business (1,500 employees or less company-wide), we are also finalizing a continuation of the small refiner temporary exemption through December 31, 2010 for transportation fuels produced by these refiners.

Some commenters mentioned the opportunity for relief based on a case-by-case hardship demonstration, and we note (as discussed in Section III.E.2 of the preamble to the final rule) that EPAct also authorizes EPA to grant an extension for a small refinery based upon disproportionate economic hardship, on a case-by-case basis. We believe that these avenues of relief can and should be fully explored by small refiners who are covered by the small refinery provision. In addition, we believe that it is appropriate to allow petitions to EPA for an extension of the temporary exemption based on disproportionate economic hardship for those small refiners who are not covered by the small refinery provision (again, per our discretion under section 211(o)(3)(B)); this would ensure that all small refiners have the same relief available to them as small refineries do. Thus, we are finalizing a hardship provision for small refineries in the RFS2 program, that any small refinery may apply for a case-by-case hardship at any time on the basis of disproportionate economic hardship per CAA section 211(o)(9)(B). We are also finalizing a case-by-case hardship provision for those small refiners that do not operate small refineries using our discretion under CAA section 211(o)(3)(B). This provision will allow those small refiners that do not operate small refineries to apply for the same kind of hardship extension as a small refinery. In evaluating applications for this hardship provision EPA will take into consideration information gathered from annual reports and RIN system progress updates, as recommended by the SBAR Panel, as well as information provided by the petitioner and through consultation with DOE.

As discussed in Section III.E of the preamble to the final rule, EPAct required that DOE perform a study by December 31, 2008 on the impact of the renewable fuel requirements on small refineries (section 211(o)(9)(A)(ii)(I)), and whether or not the requirements would impose a disproportionate economic hardship on these refineries. In the small refinery study, "EPACT 2005 Section 1501 Small Refineries Exemption Study", DOE's finding was that there is no

reason to believe that any small refinery would be disproportionately harmed by inclusion in the proposed RFS2 program. Further, the finding was that there appeared to be no shortage of RINs available under RFS1, and EISA has provided flexibility through waiver authority (per section 211(o)(7)). Further, in the case of the cellulosic biofuel standard, cellulosic biofuel allowances can be provided from EPA at prices established in EISA (see regulation section 80.1456). DOE thus determined that small refineries would not be subject to disproportionate economic hardship under the proposed RFS2 program, and that the exemption should not, on the basis of the study, be extended for small refineries (including those small refiners who own refineries meeting the small refinery definition) beyond December 31, 2010. DOE noted in the study that, if circumstances were to change and/or the RIN market were to become non-competitive or illiquid, individual small refineries have the ability to petition EPA for an extension of their small refinery exemption (pursuant to Section 211(o)(9)(B)).

A number of commenters take issue with the DOE study, and we are also aware that there have been expressions of concern from Congress regarding the DOE Study. Specifically, in Senate Report 111-45, the Senate Appropriations Committee "directed [DOE] to reopen and reassess the Small Refineries Exemption Study by June 30, 2010," noting a number of factors that the Committee intended that DOE consider in the revised study. The Final Conference Report 111-278 to the Energy & Water Development Appropriations Act (H.R. 3183), referenced the language in the Senate Report, noting that the conferees "support the study requested by the Senate on RFS and expect the Department to undertake the requested economic review." At the present time, however, the DOE study has not been revised. If DOE prepares a revised study and the revised study finds that there is a disproportionate economic impact, we will revisit the exemption extension at that point in accordance with section 211(o)(9)(A)(ii).

With respect to the comments regarding extending the small refiner temporary exemption past December 31, 2010 and EPA's legal authority, we note that (as described in the Final Panel Report) EPA early-on identified limitations on its authority to issue additional flexibility and exemptions to small refineries. In section 211(o)(9) Congress specifically addressed the issue of an extension of time for compliance for small refineries, temporarily exempting them from renewable fuel obligations through December 31, 2010. As discussed above, the statute also includes two specific provisions describing the basis and manner in which further extensions of this exemption can be provided. In the RFS1 rulemaking, EPA considered whether it should provide additional relief to the limited number of small refiners who were not covered by the small refinery provision, by providing them a temporary exemption consistent with that provided by Congress for small refineries. EPA exercised its discretion under section 211(o)(3) and provided such relief. Thus, in RFS1, EPA did not modify the relief provided by Congress for small refineries, but did exercise its discretion to provide the same relief specified by statute to a few additional parties.

In RFS2 we are faced with a different issue—the extent to which EPA should provide additional relief to small refineries beyond the relief specified by statute, and whether it should provide such further relief to small refiners as well. There is considerable overlap between entities that are small refineries and those that are small refiners. Providing additional relief just to small refiners would, therefore, also extend additional relief to at least a number of small refineries. Congress spoke directly to the relief that EPA may provide for small refineries,

including those small refineries operated by small refiners, and limited that relief to a blanket exemption through December 31, 2010, with additional extensions if the criteria specified by Congress are met. EPA believes that an additional or different extension, relying on a more general provision in section 211(o)(3) would be inconsistent with Congressional intent. Further, we do not believe that the statute allows us the discretion to give relief to small refiners only—as this would result in a subset of small refineries (those that also qualify as small refiners) receiving relief that is greater than the relief already given to all small refineries under EISA.

EPA also notes that the criteria specified by statute for providing a further compliance extension to small refineries is a demonstration of "disproportionate economic hardship." The statute provides that such hardship can be identified through the DOE study, or in individual petitions submitted to the Agency. However, the DOE study has concluded that no disproportionate economic hardship exists, at least under current conditions and for the foreseeable future under RFS2. Comments received by EPA on this matter also do not have the data and information necessary for EPA to conclude that disproportionate economic hardship exists. Therefore, absent further information that may be provided through the petition process, there does not currently appear to be a basis under the statute for granting a blanket extension of the exemption to small refineries at this time. If DOE revises its study and comes to a different conclusion, EPA can revisit this issue at that time.

5.1.2 Additional Small Refiner-specific Flexibilities

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter (2105.1) believes that EPA should consider a phase-in for small refiners. By phasing in compliance requirements over a brief time period, EPA could lessen the burden of regulation and promote compliance. (2015.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that provisions should be provided to allow a phase-in for small refiners.

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
The commenter (2135) is concerned that EPA's proposed rule ignored or denied much of the relief recommended in the Small Business Advocacy Review Panel (Panel). The commenter believes that EPA's tentative responses to concerns expressed by the SERs orally and in written comments were unsatisfactory. The commenter adds that it is clear that the Panel favored broad-based relief for small business refiners. [[Docket number 2135.1, pp. 14-15]]

The commenter states that EPA does have legal authority to permit a delay or phase-in of the RFS2 program under the CAA. The SBR Coalition submits that EPA's legal concerns relative to both the suggested delay and the phase-in are unsustainable in view of EPA's past exercises of discretion under the RFS1 program and also in view of the extensive discretion afforded to EPA under Section 211(o) of the CAA. [[Docket number 2135.1, pp. 15-16]] [[See docket number 2135.1, pp 15-19 for extensive discussion of this issue.]]

The commenter adds that SBRs do not have the staff or systems to manage and account for four different categories of RINs and rural SBRs will suffer economic hardship and disadvantage because of the unavailability of biofuels. The commenter believes that RINs should be interchangeable for SBRs. [[Docket number 2135.1, p. 21]

The commenter submits that EPA needs to recognize (i) the extent of potential harm of the current RFS2 proposal to members of the SBR Coalition and similarly situated entities, (ii) the need for corresponding relief, (iii) the inadequacy of the small refinery study conducted by DOE on which many of EPA's recommendations are based and (iv) the legality of the alternatives proposed by the SBR Coalition in connection with Congressional authority under the relevant legislation and last year's Small Business Advocacy Review Panel process. By fully and actively involving ourselves in a dialogue with EPA over the foregoing issues—issues which are of critical importance to our industry—the commenter remains hopeful that judicial review of the RFS2 rulemaking by our industry segment will not be necessary.[[Docket number 2135.1, p. 22]

The commenter makes the following specific comments/recommendations:

- When SBRs become obligated parties under RFS2, they should be provided critical flexibilities, including a phase-in of the standards, a higher rollover cap (50% is recommended) and the ability to use RINs interchangeably.
- EPA should include a review of the RIN system in its annual review procedures and invite SBR participation in the development of the review process.

Document No.: EPA-HQ-OAR-2005-0161-1397
Organization: United Refining Company
Comment:
The commenter (1397) would like to see an exemption written in the rule excluding "Small Business Refiners" from being required to blend renewable fuels beyond the maximum levels of E10 and B5, better known as the "blendwall". (1397, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2396
Organization: CVR Energy
Comment:
The commenter (2396.1) stated that EPA should also provide the SBRs with critically needed flexibility by establishing a phase-in of the standards. (2396.1, p.1)

The commenter would also like EPA to perform an annual review of the RIN system and make adjustments as necessary to mitigate adverse impacts to the refining industry with particular focus on disproportionate SBR impact. EPA should also provide a general hardship exemption

for any SBRs meeting specified hardship criteria, which should be developed cooperatively with SBR participation. (2396.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) noted that EPA seeks comment on whether to provide a program review as recommended by the Small Business Advocacy Review Panel. The commenter believes that EPA should not interfere with markets. The commenter believes that the vast majority, if not all, renewable fuel in the United States will be targeted for inclusion in the RFS program, EPA's projections as to the availability of such fuel is sufficient information to assess whether RINs will be available. There is no valid reason to include review of RIN trading system. (2329.1, p. 104)

Our Response:

With respect to a phase-in for small refiners, we stated in the NPRM that we had serious concerns about our legal authority to provide such a phase-in. CAA section 211(o)(3)(B) states that the renewable fuel obligation shall "consist of a single applicable percentage that applies to all categories of persons specified" as obligated parties. A phase-in approach would essentially result in different applicable percentages being applied to different obligated parties. Further, such a phase-in approach would provide more relief to small refineries operated by small refiners than that provided under the statutory small refinery provisions.

After considering the comments on this issue, we continue to believe that allowing a phase-in of regulatory requirements for small refiners would be inconsistent with the statute, for the same reasons we discussed in 5.1.1 for why we cannot grant an automatic extension of the temporary exemption. Any individual entities that are experiencing hardship that could justify a phase-in of the standards have the ability to petition EPA for individualized relief. Thus, we did not include a phase-in of standards for small refiners in the final rule.

With respect to RIN-related flexibilities for small refiners (flexibilities in the RIN rollover cap percentage and allowing small refiners only to use RINs interchangeably), we do not believe it is appropriate to finalize such provisions. In the RFS1 rule, up to 20% of a previous year's RINs may be "rolled over" and used for compliance in the following year. In the preamble to the proposed rule, we discussed the concept of allowing for flexibilities in the rollover cap, such as a higher RIN rollover cap for small refiners for some period of time or for at least some of the four standards. As the rollover cap is the means through which we are implementing the limited credit lifetime provisions in section 211(o) of the CAA, and therefore cannot simply be eliminated, we requested comment on the concept of increasing the RIN rollover cap percentage for small refiners and an appropriate level of that percentage. In response to the Panel's recommendation, we also sought comment on allowing small refiners to use the four types of RINs interchangeably. As highlighted in the NPRM, we continue to believe that allowing the concept of interchangeable RINs for small refiners only, would fail to require implementation of the four different standards mandated by Congress (e.g., conventional biofuel could not be used instead of cellulosic biofuel or biomass-based diesel), and is not consistent

with section 211(o) of the Clean Air Act. Essentially, it would circumvent the explicit direction of Congress in EISA to require that the four RFS2 standards be met separately and fully. An additional and independent reason for not providing the relief requested is that, given the findings from the DOE study that small refineries (and thus, most small refiners) do not currently face disproportionate economic hardship, and are not expected to do so as RFS2 is implemented, and without the data and information necessary to conclude that disproportionate economic hardship exists, we do not believe that a basis exists to justify providing small refiners with a larger rollover cap than other regulated entities. Thus, small refiners will be held to the same RIN rollover cap as other obligated parties.

Based on comments received on the proposed rule regarding an annual review, we believe that such information could be helpful to industry, especially small businesses, to aid the proper functioning of the RIN market (particularly in the first years of the program). However, during the development of the final rule, it became evident that there could be instances where we would want to report out RIN system information on a more frequent basis than just once a year. Thus we will periodically report out elements of RIN system progress; but such information will be reported via other means (e.g., the RFS website (www.epa.gov/otaq/renewablefuels/index.htm), EMTS homepage, etc.).

5.1.3 Other Small Refinery and Small Refiner Issues

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2498
Organization: North Atlantic Refining Ltd.
Comment:
The commenter (2498.1) noted that the proposed RFS2 small refiner provisions currently do not require a "prior ownership" certification. The commenter urges EPA to finalize these provisions as proposed. If, however, EPA elects to include a prior ownership requirement in the final rule, EPA should not set a retroactive ownership date, to avoid disrupting parties' investment-backed expectations and plans. (2498.1, p.3) (See Docket Number 2498.1, pp.2-3 for a detailed discussion of this issue).

The commenter also noted that the proposed RFS2 regulations provide that any small refiner that subsequently fails to meet all of the qualifying criteria will be disqualified from exemption "as of the effective date of this subpart." The commenter believes that such retroactive application of the RFS program is unnecessarily punitive and could inhibit ordinary growth and expansion. The commenter strongly urges EPA to apply the RFS program's requirements only prospectively in the event that an exempt small refiner subsequently fails to qualify. (2498.1, p.3) (See Docket Number 2498.1, pp.3-4 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:

The commenter believes that EPA should not change the year used to establish a refinery's qualification for the small refinery exemption in this manner. Changing the qualification year will change which refineries are eligible for the small refinery exemption. Refineries have already built their compliance strategies based on having received EPA recognition that they qualify for the small refinery exemption under EPAct and the RFS1 regulations, using the refinery's 2004 production to determine qualification. Changing the rules at this point in the program is unfair and is not authorized under EISA 07. [[Docket number 2233.2, p. 12]]

The commenter supports the extension of the small refinery exemption and believes that these small refineries should be grandfathered or should be granted a permanent exemption. [[Docket number 2233.2, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter noted that there are issues with the availability of "exotic" renewable fuels, those made using methods that are not yet commercially viable. This additional GHG reduction requirement adds significant cost and uncertainty to a rule that is already costly and filled with uncertainty for small entities.

The commenter noted that given that the production, price, and availability of RINs are very uncertain, further narrowing the types of renewable fuels acceptable for compliance will further decrease the availability of RINs. RFS2 was designed with a focus on the importance of energy independence and security rather than greenhouse gas emissions reductions. Areas within the United States that currently grow soybeans and produce soybean-based diesel will be drastically affected by the elimination of this fuel from certification for blending. The commenter believes that EPA should consider waivers to assist these regions in compliance. (2105.1, p.6)

The commenter also believes that the approval and selection of renewable fuel technologies will create limitations on innovation. These limitations would put restraints on potentially beneficial and cost-effective improvements. (2105.1, p.6)

Our Response:

Due to the fact that the RFS1 rule only placed renewable fuel obligations on producers and importers of gasoline, there may be new small refiners (or small refineries) that were not covered by the RFS1 exemption for small refineries and small refiners—such as refiners that only produce diesel fuel. Consequently, we have finalized such provisions for RFS2 to also cover diesel and nonroad fuels. With regard to the comment that we are changing the qualification date from 2004 to 2007, we would like to clarify that this is not the case. Any small refinery or small refiner that is currently exempt under RFS1 will not need to reapply under RFS2 for the temporary exemption. The verification letter for small refineries (§80.1441) or RFS program small refiner status (§80.1442) is for those refiners that are now newly covered by the RFS program due to EISA's expansion to "transportation fuels" (which include diesel and nonroad fuels).

Regarding the comment that EPA should not set a "retroactive ownership date", we note first that the small refiner provisions for this rule are consistent with the small refiner provisions in our other fuels programs (the small refinery provision under the RFS program was set out by Congress in EPAct, thus there are elements of it that are not the same as our previous fuels programs). We believe that a prior ownership requirement is necessary to ensure that we are providing relief to those refiners that are truly at an inherent disadvantage due to their size, as recognized by the Small Business Administration's small entity size standards. Our intent in all of our fuels programs has been, and continues to be, limiting the small refiner relief provisions to a small subset of refiners that are generally inherently challenged, as discussed above. It would be hard to understand how an entity with the ability to purchase a new refinery is inherently challenged. At the same time, it is also our intent to avoid stifling normal business growth. Therefore, a refiner will be disqualified as a small refiner if it exceeds the small refiner criteria through its involvement in transactions such as purchasing or being acquired by another entity, merging with a non-small refiner, or when it ceases to produce its transportation fuel from crude. With respect to the commenter's concern regarding disqualification, we are finalizing that refiners who qualify as small refiners and subsequently fail to meet all of the qualifying criteria are disqualified as small refiners as of January 1 of the next calendar year. However, a refiner that is disqualified from its small refiner status due to providing false information in its small refiner verification letter will be disqualified as a small refiner as of the effective date of the rule.

With regard to the comments from Advocacy, we note that EISA put in place a number of additional requirements for the RFS program, which we are implementing with the RFS2 final rule. This includes both the new cellulosic, advanced, and biomass-based diesel standards, as well as the lifecycle GHG performance thresholds for these fuels.

5.2 Upward Delegation of RIN-Separating Responsibilities

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports the proposal to allow small blenders to delegate their obligations. Experience with RFS1 shows that it is difficult for parties to transfer a small amount of RINs. This proposal would also make it easier to track RINs, than would be requiring numerous small entities to report RIN transactions. (2329.1, pp.91-92)

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter supports the proposal to make all RIN-separating activities the responsibility of the Producer (Section III.H. 4) which would simplify the RIN management process. If this were adopted, it would not be necessary to consider the proposals in IV.A or IV.C.1. If the proposal in III.H.4 is not adopted, then the commenter would support the option to have small blenders

(125,000 gal handled) delegate their RIN separating responsibilities to the Producer or fuel provider. (0994.1, p.15)

Document No.: EPA-HQ-OAR-2005-0161-1002
Organization: Fuel Marketing Corporation
Comment:
The commenter (1002) noted in Section 3.9 that they believe the threshold of 125,000 gallons should be set at a minimum of 1,000,000 gallons blended or traded for upward delegation. The commenter believes that the financial burden of anything below this point, especially in regards to annual reporting and technical requirements to manage transactions either themselves or through a third party, will have a tremendous impact on them. (1002/1002.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) agrees with EPA's proposed language to allow blenders handling less than 125,000 gallons of renewable fuels per year to transfer those attached RINs upstream. The commenter believes that this upward delegation exception should be limited to the small blender and not allowed for any other parties regulated under the RFS program for fear of market manipulation and erroneous supply agreements intended to coerce the buyer/blender to forfeit RINs. The small blender must have the first right of refusal. (2155.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports allowing parties directly upstream from small biofuels blenders to separate and trade RINs. Additionally, small biofuels blenders should be required to specifically identify the upstream party which will be responsible for registering and reporting their RIN activity. The commenter also supports EPA's proposed 125,000 total gallons per year limit for defining these small biofuels blenders.

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
To the extent EPA does not generally allow separation of RINs by renewable fuel producers, the commenter supports allowing upstream delegation of RINs by small blenders. In the Proposed Rule, EPA indicated it believes it may be appropriate, under the current requirements limiting separation of RINs to obligated parties, to permit blenders who only blend a small amount of renewable fuel to allow the party directly upstream to separate RINs on their behalf. The commenter agrees with this proposal as the cost of reporting and compliance is a tremendous financial hardship for many small blenders. [[Docket number 2249.2, p. 30]]

The commenter suggests that a specific allotment be given for small blenders who blend biodiesel and recommends that EPA increase this value to 250,000 gallons of biodiesel. Additionally, the commenter requests EPA to establish a specific carve out for biodiesel in the small blender provisions and believes that this is necessary as the majority of the renewable fuel

that will be blended by small blenders will be ethanol, as ethanol is easier to blend than biodiesel. [[Docket number 2249.2, pp. 30-31]]

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
The commenter (2134.1) supports the proposal in the NPRM that would permit the upward delegation of RIN separating responsibilities by small blenders who blend and sell less than 125,000 gallons of renewable fuel per year. (2314.1, p.3)

The commenter proposes that two approaches to upward delegation transactions be adopted in the final rulemaking; the first approach would allow the blender to enter into an annual authorization that applies to all volumes of renewable fuel transferred between the parties for a given year, as proposed in the NPRM; the alternative approach would allow small blenders to enter into arrangements with multiple suppliers on a transaction by transaction basis. The adoption of both these approaches is essential to ensure that small blenders, who have less leverage with suppliers than the large blenders with regard to contractual terms, are guaranteed a consistent supply of renewable fuel blendstock at a price that allows the best possible margins for the blender. (2134.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2328
Organization: Petroleum Marketers Association of America (PMAA)
Comment:
The commenter (2328.1) supports the proposal that would permit the upward delegation of RIN separating responsibilities by small blenders who blend and sell less than 125,000 gallons of renewable fuel per year. The commenter believes that the upward delegation of RIN-separating responsibilities should be at the discretion of the blender and that such separation be mandatory on the supplier when requested. (2328.1, p.3)

The commenter is concerned with the proposal requiring small blenders to enter into a contract with renewable fuel suppliers authorizing for the period of one year the upward delegation of all RINs transferred between the parties. This proposal would lock blenders into a supply contract with a single renewable fuel supplier and remove a blenders ability to “shop around” for competitive pricing. The commenter proposes that two approaches to upward delegation transactions be adopted in the final rulemaking: one approach would allow the blender to enter into an annual authorization that applies to all volumes of renewable fuel transferred between the parties for a given year as proposed in the NPRM; the second approach would allow small blenders to enter into arrangements with multiple suppliers on a transaction by transaction basis. (2328.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393.1) believes that EPA should not allow small entities to delegate their RIN related responsibilities to parties directly upstream. [[Docket number 2393.1, pp. 11-12]]

Document No.: EPA-HQ-OAR-2005-0161-2172
Organization: Minnesota Soybean Processors (MnSP)
Comment:
MnSP commented that it strongly supports the proposal to permit small blenders of renewable fuel to allow the party directly upstream to separate RINs on their behalf, but notes that if EPA agrees to allow renewable fuel producers the ability to separate and sell RINs apart from renewable fuel gallons, this proposal will not be needed. MnSP believes that EPA's enactment of rules allowing renewable fuel blenders to delegate their RIN separation to an upstream party will greatly enhance the availability of renewable fuels across the U.S. Additionally giving small blenders the ability to significantly reduce their compliance costs of blending renewable fuels greatly levels the economic playing field between large volume renewable fuel blenders and small volume renewable fuel blenders.

MnSP recommends that if EPA allows small blenders to delegate the separation of RINs on their behalf as proposed in this rule, that a specific biodiesel volume carve out be created. The commenter noted that many petroleum jobbers that MnSP sold to sell approximately 5 million gallons of petroleum diesel fuel annually. The diesel fuel is obtained from obligated parties through signing of a supply contract(s) with an obligated party(ies). When these jobbers blend the 5 million gallons of petroleum diesel with biodiesel to produce a 5 percent biodiesel blend level, 250,000 gallons of B100 (neat) biodiesel is needed. Thus MnSP commented that it believes that the current 125,000 EPA suggested renewable fuel volume threshold to delegate RIN separation upstream is inadequate in volume for it to have a significant impact for most petroleum jobbers to blend biodiesel. In addition, because ethanol is easier for petroleum jobbers to blend with gasoline versus biodiesel blended into diesel, it is probable that petroleum jobbers will favor blending ethanol into gasoline. When faced with the ease of blending ethanol versus biodiesel, the small blender will choose to blend ethanol at the expense of blending biodiesel into diesel fuel, thus placing biodiesel blending at a disadvantage. As a result MnSP strongly suggests that EPA create a specific biodiesel carve out volume of 250,000 gallons for small biodiesel blenders so that upstream parties can separate RINs on behalf of small biodiesel blenders.

MnSP also strongly requests that EPA create a special registration for those small renewable blenders of renewable fuel who delegate their RIN separation upstream which specifically exempts them from all existing RFS1 RIN compliance requirements other than registration. This registration would require the small blender to report the number of renewable fuel gallons purchased by the registrant to EPA on a quarterly basis. Should the small blender registrant exceed his small blender exemption of 250,000 gallons of biodiesel, any penalties incurred would flow to the small blender registrant and not to the biodiesel producer. MnSP would be supportive of a simple small blender gallons purchased reporting method to EPA (something similar to IRS' form 1099 reporting) annually reporting small blender registrant total purchased gallons to EPA and the registered party(ies) in order to validate the small blender registration.

Our Response:

As discussed in the preamble to the final rule, in some cases a party who receives RINs with a volume of renewable fuel is required to either separate or retire those RINs (and, absent

the RFS program, some parties would be subject to few if any EPA regulations governing fuels), but the affected party may purchase and/or use such small volumes of renewable fuel that it renders the reporting and recordkeeping requirements of the RFS program a large burden. This situation will become more prevalent with the RFS2 rule, as EISA added diesel fuel to the RFS program. With the RFS1 rule, small blenders (generally farmers and other parties that use nonroad diesel fuel) blending small amounts of biodiesel were not covered under the rule as EPAct mandated renewable fuel blending for highway gasoline only. EISA mandates certain amounts of renewable fuels to be blended into all transportation fuels—which includes highway and nonroad diesel fuel. Thus, parties that were not regulated under the RFS1 rule who only blend a small amount of renewable fuel (and, as mentioned above, are generally not subject to EPA fuels regulations) will now be regulated by the RFS program.

Consequently, we believe it is appropriate, and thus we are finalizing as proposed, to permit blenders who only blend a small amount of renewable fuel to allow the party directly upstream to separate RINs on their behalf. Such a provision is consistent with the fact that the RFS program already allows marketers of renewable fuels to assign more RINs to some of their sold product and no RINs to the rest of their sold product. Further, this provision was designed to allow the sale of some renewable fuel with no RINs so that small renewable fuel purchasers could elect to purchase fuel without also assuming burdens associated with RFS2 compliance. We believe that this provision will also help to eliminate undue burden on small parties who would otherwise not be regulated by this program. This provision is solely for the case of blenders who blend and trade less than 125,000 total gallons of renewable fuel per year (i.e., a company that blends 100,000 gallons and trades another 100,000 gallons would not be able to use this provision) and is available to any blender who must separate RINs from a volume of renewable fuel under §80.1429(b)(2).

With regard to comments suggesting that the 125,000 gallon limit should be higher, we are retaining this threshold as we believe that it strikes the correct balance between providing relief to small blenders, while still ensuring that non-obligated parties cannot unduly influence the RIN market.

We are also finalizing, as stated in the preamble, that for upstream delegation, both parties must sign a quarterly written statement (which must be included with the reporting party's reports) authorizing the upward delegation. Copies of these statements must be retained as records by both parties and reported to EPA quarterly. Thus, EPA will know which party will be responsible for the recordkeeping and reporting duties of another party. The supplier would then be allowed to retain ownership of RINs assigned to a volume of renewable fuel when that volume is transferred, under the condition that the RINs be separated or retired concurrently with the transfer of the volume. This statement would apply to all volumes of renewable fuel transferred between the two parties. Thus, the two parties would enter into a contract stating that the supplier has RIN-separation responsibilities for all transferred volumes between the two of them, and no additional permissions from the small blender would be needed for any volumes transferred. A blender may enter into such an agreement with as many parties as they wish.

With regard to comments requesting that EPA increase the small blender volume for biodiesel blending and/or allow a carve-out for biodiesel, we are not finalizing such provisions in

the rule. We do not believe it is necessary to provide additional allowances for biodiesel blenders only, and we believe it could unnecessarily complicate the upward delegation provision to have different volume requirements for various types of renewable fuels. Further, the 125,000 gallon limit is intended to identify parties whose operations are truly small, and for whom compliance with RFS2 recordkeeping and reporting requirements could likely be excessively burdensome. We believe that the 125,000 gallon limit is appropriate regardless of the fuel that is being blended.

Regarding comments on upward delegation agreements, we are in fact allowing blenders to enter into upward delegation contracts with multiple suppliers. We proposed that contracts would be valid for one year (and thus parties would need to re-submit their agreements with EPA annually), however we are not finalizing that requirement. Once two parties enter into a contract, they will not have to resubmit unless the blender's registration status changes such that the blender would need to re-register with EPA. We are also not finalizing the requested provision that upward delegation be at the discretion of the blender such that separation be mandatory on the supplier when requested. Some suppliers may not want to perform RIN-related responsibilities for their customers, and EPA does not wish to require them to do so.

With respect to comments that a special registration should be provided for small blenders, we note that we are requiring that small blenders would still have to register with EPA even if they are delegating their RIN responsibilities upward. While these small blenders will not have to perform some of the compliance provisions such as reporting, they will still be required to register.

5.3 Small Producer Exemption

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) believes the 10,000 gallon small producer exemption needs to be increased to a minimum of 50,000 gallons per year. The increase is based on the increase in renewable fuel requirement in RFS2 vs. RFS1, essentially increasing the de minims threshold. [[Docket number 2425.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the annual volume threshold should be 10,000 gallons of renewable fuel for refiners and importers who choose not to generate RINs. (2124.1, p.34)

Document No.: EPA-HQ-OAR-2005-0161-2393, EPA-HQ-OAR-2005-0161-2233
Organization: American Petroleum Institute (API), Marathon Petroleum Company
Comment:

The commenter (2393.1) supports less burdensome registration and recordkeeping requirements for small producers, but while they may not be subject to all the requirements of larger entities, the commenter supports requiring these entities to, at minimum, generate RINs for all qualifying renewables. [[Docket number 2393.1, p. 12]]

Our Response:

As discussed in section III.C of the preamble, we are maintaining the provision from the RFS1 rule that parties who produce or import less than 10,000 gallons of renewable fuel in a year are not required to generate RINs for that volume (even if they have the information available to demonstrate that the fuel is made from renewable biomass), and are permanently exempted from registering with the EPA if they do not take ownership of RINs generated by other parties. These producers and importers are also exempt from registration, reporting, recordkeeping, and attest engagement requirements. We note that while these parties are exempt from generating RINs, there may be small producers who choose to participate in the RIN program.

We believe this will have only an insignificant impact on the overall volume of RINs in the marketplace, and is necessary to avoid placing the registration, recordkeeping, reporting, and other program related burdens on such small producers that might otherwise be forced to cease production. In addition to the permanent exemption for those producers and importers who produce or import less than 10,000 gallons of renewable fuel per year, we are also finalizing a temporary exemption for renewable fuel producers who produce less than 125,000 gallons of renewable fuel each year from new production facilities. These producers are not required to generate and assign RINs to batches of renewable fuel for a period of up to three years, beginning with the calendar year in which the production facility produces its first gallon of renewable fuel. Such producers are also exempt from registration, reporting, recordkeeping, and attest engagement requirements as long as they do not own RINs or voluntarily generate and assign RINs. This provision is intended to allow pilot and demonstration plants of new renewable fuel technologies to focus on developing the technology and obtaining financing during these early stages of their development without having to comply with the RFS2 regulations.

5.4 20% Rollover Cap

5.4.1 Level of the Rollover Cap

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2537
Organization: Musket Corporation
Comment:
EPA does identify, but does not recommend however, a change that could increase the flow of RINs from the RIN separator to obligated parties; that of reducing the 20% rollover cap to 10%. This change would significantly reduce the likelihood that an obligated party would withhold RINs in excess of their current year obligation. [[Docket number 2537, pp. 2-3]]

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) believes the cap is effective as it exists today and would not be in favor of moving it in either direction from 20%. (1033.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) noted that to address the threat of a RIN snow-ball effect and the use of paper credits instead of physical gallons by obligated parties, during RFS1 EPA proposed to set a cap on the number of RINs that could rollover from one year to another for use by obligated parties. While the commenter appreciated EPA's effort to find a solution to address this RIN rollover risk, the commenter did not support the 20 percent rollover cap at that time. Instead, the commenter advised that the Agency comply with the 2005 Acts clear language calling for a 12-month credit lifespan by applying a retrospective system to ensure that minimum volumes of renewable fuel are used on an annual basis. (2101.1, p.16)

The commenter recommends that EPA revisit this issue and consider enforcing the original intent of the law to not allow RIN rollover. If EPA is unwilling to take this step, the commenter recommends the Agency reduce the cap from 20 percent to 10 percent to more adequately address rollover concerns. The Act provides for the use of physical gallons of renewable fuel to satisfy annual obligations. In light of this requirement, a reduced cap of 10 percent is more defensible and would more consistently ensure the purpose of the law is achieved. (2101.1, p.16)

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) recommends that for biodiesel as a minimum the 20% requirement be increased to 50% so prior year RINs can be counted toward obligation through June of the following year. (2118.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that the current 20% cap on the use of last year's RINs for RFS compliance should be increased to 40%. Increasing the rollover cap to
40% allows these end-of-year renewable fuel volumes to be more readily incorporated into RFS2 compliance strategies. The higher cap would also provide more flexibility given higher RFS2 volume requirements. (2124.1, p.20-21)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:

The commenter (2130) believes that rollover RINs should not be capped. Putting a cap on the use of following year rollover RINs distorts the RFS by removing legitimate renewable fuel use that should count toward meeting the mandatory FRS obligation. [[Docket number 2130.1, p. 11]]

Document No.: EPA-HQ-OAR-2005-0161-2145
Organization: Flint Hills Resources
Comment:
The commenter (2145.1) supports increasing the rollover cap to 40%. To allow an obligated party to truly benefit from this provision as intended, the cap must be raised. (2145.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) noted that should EPA revise the definition of obligated party, the RIN carryover cap could remain in place or even increased some to account for the time lag in moving RINs through the system. However, the current RIN carryover cap exacerbates the problem when put in combination with the existing obligation structure. (2154.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter believes that unneeded limitations on RIN carryover from one year to the next can only result in some renewable biofuel production not being credited toward the mandated volumes and some RINs would expire unused. Since meeting the RFS2 increasing mandated renewable biofuel requirements will be difficult, EPA must avoid situations where it arbitrarily destroys valuable RINs. [[Docket number 2233.2, p. 13]]

The commenter adds that EPA should also recognize that at the beginning of each new year, obligated parties and blenders use biofuels that have the previous year's code. It is very possible for a blender or obligated party to have 10 to 20% of the total biofuels blended in a single year, produced in the previous year. While the commenter would argue that EPA should completely eliminate the RIN carryover cap, at a minimum, EPA should raise the cap to a level that allows a reasonable number of RINs actually generated in the previous year to be carried into the next year. If a 20% real RIN carryover is deemed advisable, then this 20% should be added to the 10-20% previous year biofuel production that is blended in the current year. Thus the RIN carryover cap should at a minimum be in the 40% range. [[Docket number 2233.2, p. 13]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
EPA retains the current provision that would allow an obligated party to use RINs generated in the prior year subject to a 20 percent cap. The commenter (2249.2) believes EPA should eliminate any potential for rollover and at a minimum, lower the cap, not increase it. [[Docket number 2249.2, p. 31 and docket number 2249.1, p. 5]]

In addition, the commenter states that the 20 percent was based on an analysis of historical supply of ethanol, and one year in which supply was reduced by 20 percent due to a drought. Biodiesel capacity, however, exceeds the statutory mandates for Biomass-based Diesel, and alternative feedstocks are available to make up any potential loss of crops. As such, the rollover provision would only work to undermine the ability of biodiesel producers to sell actual volumes of biodiesel each year as intended by Congress. There is no support for needing a 20 percent carryover to address any potential shortfall for the biomass-based diesel requirement. Moreover, EPA should promote the use of other fuels that may be available to make up for potential losses. The commenter suggests that if some rollover is retained, a 10 percent cap should be more than sufficient, while limiting the potential reduction of actual volumes sold each year. [[Docket number 2249.2, p. 32]]

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
Regarding continuation of the 20 percent rollover cap for use in the RFS2 program, the commenter (2383) believes the ability to rollover some RINs provides flexibility and the 20 percent cap helps insure annual generation of RINs. The commenter thus supports continuation of the 20 percent rollover cap. [[Docket number 2383.1, p. 61]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) notes that mandated renewable biofuels volumes in the RFS2 program are expected to quickly reach and exceed production in nearly every category. Under these circumstances, unneeded limitations on RIN carryover from one year to the next could result in some renewable biofuel production not being credited toward the mandated volumes and some RINs could then expire unused. Since meeting the RFS2 increased renewable biofuel mandate requirements will be difficult, EPA must avoid situations where it arbitrarily destroys valuable RINs because of an unnecessary carryover limitation. [[Docket number 2393.1, p. 13]]

The commenter suggests that a larger RIN carryover cap could become beneficial to stakeholders as the marketing year for U.S. corn straddles two calendar years and production of some important renewable fuels (such as Brazilian sugar-cane based ethanol) is seasonal. Increased flexibility could mitigate negative economic impacts during temporary periods of unfavorable renewable fuel economics. [[Docket number 2393.1, p. 13]]

The commenter urges EPA to recognize that at the beginning of each year, obligated parties and blenders must necessarily use biofuels that have the previous year's code to ensure continuity of supply. The commenter believes that EPA should completely eliminate the RIN carryover cap. If EPA decides to retain the cap, at a minimum EPA should raise the cap to a level that allows a reasonable number of RINs actually generated in the previous year to be carried into the next year without reducing the carryover allowance. In addition, to accommodate the fact that beginning year inventories of biofuels blended into fuels sold in the current year could represent up to 10% or 20% of the previous year biofuel production, the RIN carryover cap should be raised from 20% to a minimum of 40%. [[Docket number 2393.1, p. 13]]

Document No.: EPA-HQ-OAR-2005-0161-2396
Organization: CVR Energy
Comment:
The commenter (2396.1) requests that EPA provide a 50% rollover cap and the ability to interchangeably utilize RINs. (2396.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) believes that eliminating the 20% RIN rollover cap would greatly compromise compliance measures put into place and free flowing activity in the RIN marketplace. The commenter recommends the 20% rollover cap be maintained at its current level or raised to a 30% rollover cap. Eliminating the rollover cap requires obligated parties to obtain their entire obligation in the current year which entails a potential obligation deficit. (2400.2, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) disagrees with the 20% RIN roll-over limit. There needs to be greater rollover flexibility based on the higher renewable fuel volume requirements. This is critical to provide more flexibility in the system. [[Docket number 2425.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The rollover cap should not be decreased under any circumstances. The rollover cap provides essential flexibility to meeting the mandates and allowing Obligated Parties to meet their RVOs. (2471.1, p.12)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) opposes EPA's proposal to limit the carryover of RINs to 20%. If EPA must impose a cap on the amount of RINs that can be carried over, the commenter recommends 40%. If EPA must establish a RIN rollover cap, the cap should be large enough to provide obligated parties with sufficient flexibility in the event the production of ethanol or other renewable fuels is significantly constrained in any given year. Increasing the roll over cap to 40% would also help address a practical problem that has arisen due to the fact that RINs are assigned at the time that renewable fuel is produced. (2505.2,p .8)

Our Response:

As described in Section III.D of the preamble, we continue to believe that a rollover cap is necessary to implement EISA's restriction on the life of credits. We proposed that the 20% cap established under RFS1 be maintained for RFS2, but took comment on values higher or lower than

20%. The comments above highlight many of the same advantages and disadvantages of the 20% rollover cap that we discussed in the NPRM, as well as in the RFS1 FRM. Commenters suggested values ranging from 0% to 50%, with some suggesting that the cap be maintained at 20% and others suggesting that the cap be eliminated entirely. A discussion of the advantages and disadvantages of a higher or lower rollover cap can be found in Section III.D of the preamble.

In light of the comments received, we believe that the 20% level continues to provide the appropriate balance between, on the one hand, allowing legitimate RIN carryovers and protecting against potential supply shortfalls that could limit the availability of RINs, and on the other hand ensuring an annual demand for renewable fuels as envisioned by EISA. Therefore, we are continuing the 20% rollover cap for obligated parties for the RFS2 program.

5.4.2 Other Aspects of the Rollover Cap

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
Commenter [[2071]] states they also propose that the current 20% rollover cap on excess RINs would be modified to apply on a quarterly basis rather than an annual basis. They believe that measuring compliance on an annual basis creates too much opportunity for gamesmanship among the players in the renewable fuels industry. [[#2071.1 p.7]]

Our Response:

The rollover cap was put in place to effectuate the requirement in the CAA 211(o) that credits have a limited life. In essence, it prevents excess credits from being rolled over year after year and building up over time. This is an annual limitation under the statute, so applying it quarterly would go beyond the requirements of CAA 211(o). Furthermore, applying the restriction on a quarterly basis would require substantial changes and impose complicated restrictions to the RIN program, for no clear purpose. We are not aware of any "gamesmanship" going on as suggested by the commenter.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) agrees with EPA that the rollover cap should be separately applied to each of the four Obligated Party RVOs each year.

Our Response:

We agree that the rollover cap should be separately applied to each of the four RVOs. If the 20% rollover cap were applied only to the total renewable fuel RVO, an obligated party could build up credits over time for one of the other three RVOs that could far exceed 20%.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 6
Assessment of Renewable Fuel Production Capacity and Use

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
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6 ASSESSMENT OF RENEWABLE FUEL PRODUCTION CAPACITY AND USE

6 ASSESSMENT OF RENEWABLE FUEL PRODUCTION CAPACITY AND USE

What We Proposed:

The comments in this section correspond to Section V of the preamble to the proposed rule and address renewable fuel production capacity and use. A summary of the comments received and our response to those comments are located below. Our updated assessment of renewable fuel production and use can be found in Section IV of the preamble to the final rule. Note that comments received on the Reference Case, and our responses to those comments, are located in Chapter 7 of this Summary and Analysis of Comments Document.

6.1 Control Case

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter believes that if EPA implements its proposal to allow animal fats and waste greases to be blended with vegetable oils to create a feedstock that will yield a vegetable oil Biodiesel that meets a 50% GHG emissions reduction (relative), then animal fats and waste greases will also be in high demand. If these regulations play out, the price of animal fats and waste greases may rise close to the price of soy oil. This will have significant impact in the feed market that uses animal fats and waste greases as animal feed. (0994.1, p.15)

The commenter noted that the technology of an RD plant and the operating/management personnel in an RD plant are much more sophisticated than a Biodiesel plant. Facility cost for an RD plant is much more expensive than a Biodiesel facility. The commenter is aware of only one RD plant being built in the U.S. Because the economic cost of an RD plant is so high, the economic plant size is also quite large (50 - 75 million gal). This requires a large volume of animal fats and greases. Most processors/suppliers of animal fats and greases already have customers for these products. Pulling large volumes of these products away from existing customers is not particularly attractive, considering the precarious nature of the biofuels industry. On this basis we do not believe that there will be a large number of RD facilities built in the U.S. (0994.1, pp.15-16)

The commenter also does not believe that co-processing of animal fats in petroleum refinery hydrotreaters will be a significant factor in the Biofuels mix. (0994.1, p.16)

Our Response:

The commenter's statement with respect to blending of animal fats and waste greases are no longer relevant given the lifecycle results for soy biodiesel in the final rule and the lack of a need for averaging with waste oils.

In the final rulemaking, we are not projecting any co-processing of rendered fats or greases with petroleum for a variety of reasons, including the recent change in tax law that reduces the incentive to co-process relative to stand-alone processing, as well as the different operating parameters and pre-treatment demands of animal fats vs. petroleum that could make co-processing cumbersome from an engineering point of view.

Our control case scenario conservatively projects only 150 MMgal/yr of RD production, which is consistent with the commenter's statements about available feedstocks and capital costs. Our analysis suggests that per-gallon production costs will be very similar for RD vs. biodiesel produced from the same feedstock, despite the higher capital costs of the RD facility. The question remains whether the fuel products produced by the RD plant will be of sufficiently high value to favor construction of more RD plants in the long term that may displace biodiesel production from the same feedstock, or garner new sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) believes that biobutanol and other renewable fuels have greater potential than what the EPA's analysis suggests. (2143.2, p.8)

Our Response:

We recognize that there are other fuels with the potential to enter the market. For the final rule we have modified our primary control case to model the impacts of increased renewable fuel use using greater volumes of non-ethanol renewable fuels. For some of our analyses where time permitted, we also assessed the impacts using a lower and a higher assumption with respect to the ethanol makeup of the future renewable fuel volume. We believe that for the purposes of assessing the impact of increased renewable fuels we chose a set of renewable fuels which are within the range of possible future predictions. As new technologies, feedstocks, and fuels emerge, our understanding of them will continue to evolve which may warrant new evaluations and projections of those fuels, feedstocks, and technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
Commenter [[2302]] suggests reassessment of claims regarding possible impacts of Jatropha cultivation on food production or prices, and suggests using a conversion factor of at least 100 gallons ethanol per ton for bagasse. [[#2302 p.6]]

Our Response:

We have revised our assessment and no longer suggest that Jatropha will impact food production or prices as we have not modeled its production at this time. We still include background discussion on the potential of the crop in the RIA, Chapter 1.

We based our final rule ethanol conversion factors on work completed by the National Renewable Energy Laboratory (NREL), modeling 92.3 gallons per ton for all agricultural residues, switchgrass, and agricultural byproducts of processing such as bagasse and sweet sorghum pulp in 2022. Although this is less than suggested by the commenter, we believe the yield used is consistent across similar feedstocks and takes into account expert opinion on biofuel feedstock processing. The conversion factor for bagasse used in the NPRM was around 70 gallons per ton based on previous assumptions and has since been revised. Table 1.5-46 of the draft RIA, "tons used column" was rounded to the nearest million tons, and explains the discrepancy noted by the commenter as states having different gallons per ton. In the table from the draft RIA, Texas is noted as producing 1 million tons (more accurately 0.6 million tons was projected to be used). If the more accurate number is used, yields for each state are actually much closer than suggested. Yield assumptions, among other parameters were updated in our agricultural modeling since the proposal and are further explained in the RIA, Chapter 1 and 5.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2336
Organization: SG Biofuels
Comment:
The commenter (2336) states that jatropha curcas is largely undomesticated. Unlike soy, canola and corn, it has not been bred to maximize yields, minimize inputs and expand possible growing ranges. With modern science, the commenter believes they have a huge opportunity to improve this crop. Without addressing this key difference, EPA is comparing apples to oranges. Jatropha as it exists today is nothing like what it will be even a few years from now. EPA has an opportunity to encourage and speed the development of this crop, enabling significant reductions in GHG on a much shorter timeline, as well as accelerating the identification of cold-tolerant strains capable of thriving in southern regions of the United States. Even imports from Latin American-based production could result in GHG reductions over petroleum based energy. [[Docket number 2336.1, p. 1]] [[See docket number 2336.1, p. 1-5 for extensive discussion of this issue.]]

The commenter disputes two statements (DRIA, 1.1.3.4.3 Jatropha Conclusions)

- The section opens with the statement, "It is unlikely that Jatropha curcas will be able to help the United States meet its energy needs in the future without disrupting current food crops, water resources, and other U.S. interests." On the contrary, the undomesticated Jatropha curcas has huge potential to improve yields, reduce inputs, grow in more varied climates and further improve many traits, unlocking a significant renewable energy solution for the US.

- The other statement the commenter disagrees with is ”Even under optimal conditions, Jatropha yields are unlikely to be radically different from that of other conventional oil plants thus, its possible impact on US energy supply is limited.” Even if yields are equivalent, there would be a significant impact on US energy supply, but as the commenter has shown the yields are much higher than other oil crops (50% to 245% higher). In addition, Jatropha is an undomesticated plant that has had very little effort applied towards breeding for improved yields and reduced inputs. Significant increases in the yields, cold tolerance, and other agronomically useful traits can be expected over the next several decades since we are starting from a largely unimproved base unlike soy and canola where all the easy gains have been already obtained. [[Docket number 2336.1, p. 5]]

The commenter encourages EPA to include Jatropha oil in its analysis in order to encourage both U.S. and Latin American interests to further develop the potential of this undomesticated crop for energy use. Like any crop, Jatropha needs to be planted on the right land, in the right climate and with the right management. As these aspects are perfected and teams of scientists like ours conduct breeding and crop improvement programs, Jatropha will be even more successful. [[Docket number 2336.1, p. 5]]

Our Response:

Since the proposal, we have reassessed our statements on Jatropha and no longer suggest that Jatropha will impact food production or prices as we have not modeled its production at this time. We agree that since Jatropha is a relatively new crop in the U.S. there is a large potential for future improvements in many areas (e.g. yields, cold tolerance, etc.) and thus contribution towards fuel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) noted that in Section V.B.4, EPA states that the definition of Biodiesel is sufficiently broad to include both Renewable Diesel and true Biodiesel (fatty acid methyl ester). The commenter believes that this is a significant error. True Biodiesel is a fatty acid methyl ester and Renewable Diesel (RD) is a synthetic hydrocarbon. While both fuels work in diesel engines, they have different physical properties and are each defined in different ASTM specifications. RD is included in the Diesel Fuel Oil ASTM specification. Biodiesel has its own ASTM spec. RD as a petroleum product, can drop directly into the petroleum infrastructure such as utilizing pipelines for distribution. Biodiesel cannot drop into this infrastructure. Biodiesel has yet to be approved for distribution by pipeline because it is considered a contaminate that could get into pipeline- transferred jet fuel. The press has not yet caught on to the correct use of the terms Biofuels and Biodiesel, but it is important for EPA to support the distinction between the two products. If not, people will be saying that RFS2 has now created four categories of Biodiesel, when they mean four classes of biofuel. [[See Docket Number 0944.1, p.16]]

Our Response:

When we refer to the definition of biodiesel being broad, we are referring to the definition under the Act established by Congress, which we are implementing through the RFS standards. We believe our discussions of biodiesel and renewable diesel are generally clear about the difference between methyl esters and the hydrocarbons made by RD processing, including mention of the differences in storage and shipment requirements. However, in cases where statutory language is broad enough to include both it is our intent to make compliance as inclusive as possible.

6.2 Renewable Fuel Production

6.2.1 Biomass Feedstock Availability

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter points out that EPA does not elaborate on a projected production path for cellulosic diesel and suggests that a detailed analysis of the expected production and distribution costs and benefits of cellulosic diesel be presented. [[See Docket Number 2143.2, p.8]]

Our Response:

We have included an analysis of the potential for cellulosic diesel for the final rule. Refer to Section 1.5.3 of the RIA for more information on current industry plans for cellulosic diesel, Section 4.1 for production costs, and Section 4.2 for distribution costs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2021
Organization: Fulcrum Energy
Comment:
The commenter (2021.1) noted that EPA requested comments on how to estimate urban waste feedstock availability. This issue is discussed in detail in Attachment 1, a white paper entitled, "Advancing Waste-Derived Biofuels As A Significant And Sustainable Low Carbon Fuel Pathway: A Policy Brief." [[See Docket Number 2021.1, p.44. Refer to pp. 47-55 for whitepaper on how to estimate urban waste feedstock availability]]

Our Response:

We appreciate the comments provided on estimating urban waste feedstock availability. While our feedstock availability assessment for urban waste uses slightly different methodology,

assumptions, and data sources than that provided by the commenter, both estimates suggest that urban wastes have a large potential towards providing fuel to meet the renewable fuels standard. In general, we assume more conservative assumptions on the total amount of urban waste generated, portion of that waste available after considering factors such as land filling, composition of feedstock, moisture, and potential contamination, and conversion yields. Therefore we estimate less available urban waste feedstock than suggested by the commenter. Even so, we believe our estimates are reasonable given the assumptions made.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter (2302.1) strongly suggests that EPA implement mechanisms for allowing each state to submit their assessment of their potential biomass resources, as most states are currently compiling or have compiled such assessments, and seek expert input from other relevant agencies. In all cases, real data should always take precedence over that predicted from models. [[See Docket Number 2302.1, p.4]]

Our Response:

The models employed in our assessments utilize data from states and other sources. We welcome any new assessments of potential biomass resources that are available on a state-by-state basis to be included in our future analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2316
Organization: University of Minnesota
Comment:
The commenter (2316.1) is concerned about the amount of corn stover and other crop residues potentially available for use as feedstocks for advanced and cellulosic biofuels. The current analysis as reported in this Proposed Rulemaking suggests that 444.4 million tons of corn stover will be available in 2022, that 122 million tons could be harvested sustainably in the top 12 corn producing states, and that 82 million tons could be harvested to produce 7.8 billion gallons of ethanol. These estimates are too high because of an error in correction for grain moisture and the use of outdated stover-to-grain ratios. Rather, it is more likely that 250.2 million tons of corn stover will be available in 2022, which would leave an insufficient amount sustainably harvestable to produce the goal of 7.8 billion gallons. Residues from other crops should also be adjusted accordingly. I am including a detailed description of these corrections and adjustments in Appendix B. [[See Docket Number 2316.1, p.2]]

Our Response:

We have updated our assessment for the final rule and project 4.9 ethanol-equivalent billion gallons will be derived from corn stover based on the FASOM model. This volume is less than that projected for the proposal (7.8 ethanol-equivalent billion gallons), resulting in fewer residues required to be collected for processing into fuel. We account for grain moisture as well as stover-to-grain ratios based on literature available to us at the time and have better clarified whether we are referring to dry or wet tons of residues available in our updated analyses. We are continually updating our analyses to take into account new data and assumptions for future analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2493
Organization: American Forest & Paper Association
Comment:
The commenter (2493.1) states that utilities and independent power generators are likely to increase their use of wood biomass in response to state and national mandates/incentives regarding renewable energy and carbon emissions, and that this would present significant challenges in terms of woody biomass supply and forest sustainability. [[See Docket Number 2493.1, p. 6]]

Our Response:

We acknowledge that there could be competing needs for renewable biomass feedstocks as other requirements are put in place at the National, State, or local level for renewable electricity. However, we believe our projections of cellulosic biomass for producing renewable fuels are supportable even with such future competition.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2350
Organization: BioEnergy Producers Association
Comment:
The commenter (2350) believes that as non-food derived resources, carbon-based wastes represent the nation's most promising and virtually untapped renewable energy resource—some 500 million tons of which are readily available for conversion to energy. The commenter states that upcoming technologies could produce enough ethanol from these resources to eliminate the nation's need to import petroleum. [[See Docket Number 2350, p. 1]]

Our Response:

We agree that non-food derived resources will play a large role in helping our nation meet EISA. As suggested by the commenter and described in our analyses, potential feedstocks used for biofuel production may include agricultural residues, forestry biomass, certain

renewable portions of municipal solid waste and construction and demolition waste, and energy crops.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0964
Organization: Citizen
Comment:
The commenter (0964) believes that the value placed in corn-based ethanol as a fuel additive is misguided. The commenter cites two federal studies and a Wall Street Journal editorial ("Ethanol's Grocery Bill", June 2, 2009). The commenter states that growing native grasses for ethanol would be a lot easier and cheaper than cultivating a domesticated crop such as corn. (P. 1)

Our Response:

There are many potential benefits to the use of perennial grasses, such as reduced fertilizer inputs, higher total biomass yields per unit of land area than comparable annual species, and the ability for a perennial species roots to remain in the soil after harvesting above-ground biomass. Our analyses suggest that perennial grasses will play a major role as feedstocks necessary to help meet EISA's cellulosic biofuel requirement of 16 billion gallons by 2022.

While the potential is there, there are still challenges that must be addressed before perennial species can be grown and harvested at a commercial scale (e.g., establishing contracts between farmers and biofuel producers, developing optimal harvest techniques and equipment). These challenges are currently being investigated by researchers at universities, industry groups, as well as government laboratories around the world. As such, it is important to recognize that many of our conventional crops that have already had many years of experience being grown and harvested will have some cost advantages over relatively newer feedstocks and are also likely to play a role in meeting the total renewable fuels requirement of 36 billion gallons by 2022.

6.2.2 Setting the Cellulosic Biofuel Standard

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393.1) believes that the Agency analysis of the potential volumes of cellulosic fuels that it expects to be available in 2010 is far too optimistic and based on inadequate documentation. Internal commenter analysis suggests that less than 10 MMG will be produced in 2010, but EPA is projecting almost 145 MMG of ethanol-equivalent fuels. The RFS2 mandates 100 MMG of ethanol-equivalent fuels. Other independent assessments of the projected growth of cellulosic ethanol through 2022 indicate that domestic production is likely to be billions of

gallons short of the EISA mandates. The commenter believes that the waiver decision for the following year should be based on demonstrated rated (existing continuous operation for at least three months) annual capacity as of the required November 30 notice. This is a concrete standard that is not subject to subjective projections. [[See Docket Number 2393.1 and refer to pp. 34-40 for a more extensive discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should adjust the cellulosic biofuel requirement under Section 202(e) of EISA to reflect a more credible estimate of fuel availability than was presented in the now outdated NPRM. The commenter believes that the volumes of cellulosic biofuel projected to be available in the NPRM are overly optimistic and inconsistent with the current state of the technology and commercial scale-up by the cellulosic biofuels industry. The commenter believes that the issuance of a cellulosic biofuel waiver under EISA section 211(0)(7)(d) is essential for the first year of the RFS2, at the very least. The waivered amount should be no greater than the actual production as of November 30 of the previous year when, by statute, EPA must determine applicable percentages for the following year. [[See Docket Number 2110.1, p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130.1) states that EPA's assessment of forward year cellulosic ethanol production capability must be realistic, and based on actual demonstrated commercial production capability. When assessing new technologies, EPA must adopt a higher standard that capability must be demonstrated both in terms of the actual fuel being produced and the capacity of the plant to operate reliably at some demonstrated operating capacity. Obligated parties must not be put in the position of being forced to carry deficits forward due to the unreliability of new technology or overly optimistic acceptance of new technology claims. [[See Docket Number 2130.1, pp. 4 & 10]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233.1) believes the Agency's analysis of the potential volumes of cellulosic fuels that it expects to be available in 2010 is far too optimistic. Internal commenter analysis suggests that less than 10 MMG will be produced in 2010, but EPA is projecting almost 145 MMG of ethanol-equivalent fuel. The RFS2 mandates 100 MMG of ethanol-equivalent fuels. The commenter goes on to explain that EPA's NRPM assessment contains several errors in projected cellulosic capacity, including relying on Cello Energy for 78% of the volume. The commenter acknowledges that it is difficult to identify a credible path for rapid cellulosic production capacity growth that might meet the aggressive targets mandated in EISA. However, EPA cannot base its estimate of the next year's cellulosic biofuels production on advertising, propaganda, or mere company statements of production intents. EPA must base its estimate on current year actual production. The commenter concludes by recommending that EPA

immediately invoke the cellulosic waiver protocols for 2010 and 2011. The commenter's analysis indicates that the EISA mandates are not going to be achieved at any time in the near- or mid-term (3-7 years). As such, EPA will need to routinely waive the existing EISA cellulosic mandates. EPA should do so in a manner that will not penalize gasoline blending companies because of the failure of the cellulosic ethanol industry to meet EISA goals. [[See Docket Number 2233.2, pp. 40-42]]

Document No.: EPA-HQ-OAR-2005-0161-2400
Organization: Murphy Oil USA, Inc.
Comment:
The commenter (2400.2) reiterates that "EISA requires in section 202(e) that the Administrator set the cellulosic biofuel standard each November for the next year based on the lesser of the volume specified in the Act or the projected volume of cellulosic biofuel production for that year." The commenter believes that EPA should avoid a situation that forces obligated parties to pay for the lack of investment by biofuel companies. The commenter recommends that the EPA calculate the standards as they set forth in section III.I.1. This will ensure that the obligations for cellulosic blending are based off attainable levels. [[See Docket Number 2400.2, p.7]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical & Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that it is critical when EPA is making its annual assessment of cellulosic biofuel capability that they rely on demonstrated production capability. As evidenced in this proposal, reliance on "planned" capability for such new and unproven technologies is fraught with great risk. EPA's reliance on plans by one potential cellulosic biofuel supplier to supply 70% of the 2010 cellulosic biofuel volume with as yet undemonstrated technology is not an appropriate evaluation of capability. As evidenced by recent publicity, Cello Energy is yet to demonstrate the production of any cellulosic biofuel and has had a judgment in the amount of $10.4 million entered against them by an Alabama jury that found their technology claims to be fraudulent. When assessing new technologies, EPA must adopt a higher standard that capability must be demonstrated both in terms of the actual fuel being produced and the capacity of the plant to operate reliably at some demonstrated operating capacity. Obligated parties must not be put in the position of being forced to carry deficits forward due to the unreliability of new technology, or EPA's overly optimistic acceptance of new technology capability claims. [[See Docket Number 2124.1, p. 19]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell and Motiva Enterprises
Comment:
According to the commenter (2505.1), although EPA has proposed not to waive the cellulosic renewable fuel requirement for 2010, EPA has not adequately evaluated whether there will in fact be 100 million gallons of production of cellulosic ethanol in 2010. The commenter is doubtful that there is in fact 100 million gallons of existing production capacity. Recent news articles about Cello are counter to the EPA's assessment in the NPRM. EPA should do a thorough analysis of the availability of cellulosic ethanol and adjust the RFS2 standards accordingly.

Document No.: EPA-HQ-OAR-2005-0161-2389
Organization: BlueFire, Coskata, INEOS Bio and Fulcrum Bioenergy
Comment:
The commenters (2389.1) believe that the long-term goal of 16 billion gallons per year of cellulosic biofuels is achievable but they do not believe that the industry will be capable of producing the volumes targeted for 2010. In no way should this be viewed as a failure of the RFS. The ambitious EISA targets are driving significant investments and speeding technology advancements in cellulosic ethanol production. As these technologies demonstrate their commercial viability, rapid deployment and scale up to meet the near and long-term targets will occur. Congress showed great foresight in allowing EPA discretion to waive the annual targets to ensure compliance is met by obligated parties. Congress specifically instructed the Administrator to reduce volume to what is "available." EISA Sec. 202 directs that the "*Administrator shall reduce the applicable volume of cellulosic biofuel required under paragraph (2)(B) to the projected volume available during that calendar year*". This requirement addresses the prospect that the petroleum industry would be held to account for purchasing fuel that could not be produced in sufficient quantities. It is essential that the Administrator follow Congressional direction and reduce the cellulosic volume to a level in which there can be reasonable confidence of availability. This will relieve the petroleum industry of any obligation to purchase fuel that the cellulosic biofuel industry is not able to produce. Secondly, it will serve the larger Congressional objective of ensuring that any cellulosic biofuel that is produced will have a market. A critical third benefit of the Administrator taking this approach is to promote confidence in the ability of the RFS to function properly, which will provide political support for the regulation. [[See Docket Number 2389.1, pp. 1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment:
The commenter (2526.1) believes that the annual cellulosic biofuel standards should be set prudently. The market conditions resulting from EPA's implementation of a Sec. 202 waiver (and the corresponding credit provisions) will have a profound effect on the industry's ability to meet Congressional targets for production in the middle and later stages of the RFS2 program. EPA's approach could enable and accelerate the deployment of cellulosic biofuel production technology. Alternatively, if not properly implemented, it could destabilize the market for cellulosic biofuels and increase investment risk, delaying indefinitely the potential for these technologies to make significant contributions to the nation's fuel supply.

According to the commenter, the cellulosic biofuel industry is not likely to be capable of satisfying the ambitious targets Congress set for cellulosic production in the early years of the program. Congress anticipated this and established authorities in Sec. 202(e)(2)(D) to enable smooth implementation of the RFS while the industry develops to a degree that is capable of meeting the scale of production envisioned by EISA. To ensure that the RFS creates optimal market conditions for rapid deployment of cellulosic biofuels, the applicable volume for cellulosic biofuels should be set annually to reflect the volume of cellulosic biofuels that EPA has a high degree of confidence will be available the following year, while allowing an extra "stretch-goal" to induce new capacity growth. [[See Docket Number 2526.1, pp. 1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont
Comment:
The commenter (2146.1) acknowledges that EISA requires EPA to set the cellulosic biofuel standard each November for the following year, based on either the volume specified by the Act or the projected production volume for that year, whichever is lower. While many companies, including DDCE, are making progress toward bringing pilot- and commercial-scale production facilities on line, the commenter believes it is likely that the volumes of cellulosic ethanol available for blending into the US gasoline supply will fall short during the next 2-3 years. Therefore, we support the process proposed by EPA for conducting a yearly review and rulemaking process to determine cellulosic ethanol volumes, thereby both ensuring an outlet for the early cellulosic volumes produced and eliminating the requirement for the fuel industry to purchase volumes larger than those anticipated to be available for their purchase. [[See Docket Number 2146.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2248.1
Organization: Iogen
Comment:
The commenter (2248.1) recommends that EPA maximize the benefits of the RFS by reducing the applicable volume for cellulosic ethanol (CE) based on the agency's best assessment of available CE, and limit the use of EPA-issued cellulosic biofuel credits. The result will be a more favorable and predictable environment for businesses looking to commercialize CE. [[See Docket Number 2248.1, p. 2]]

The requirement for EPA to reset annually the applicable volume for cellulosic ethanol based on the volume of CE that will be "available" addresses the prospect that the petroleum industry would otherwise be held accountable for purchasing a fuel that could not yet be produced in sufficient quantities. By directing the Administrator to reduce the applicable volume to the amount "available", Congress established the volumes in EISA for cellulosic ethanol as targets, rather than mandates. It is essential that the Administrator follow Congressional direction and reduce the applicable volume to a level agency assessments suggest will be available. Setting reasonably accurate volumes will bolster private sector confidence that political support for this policy is stable, and will lead to an increased appetite to commit resources to developing the industry. Precise estimates of availability for the following year will not be achievable. The Administrator should produce a reasonable estimate based on production facilities in operation and projected start-up dates for facilities expected to become operational in the following year. [[See Docket Number 2248.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2329
Organization: Renewable Fuels Association
Comment:
According to the commenter, Congress specifically limited EPA's discretion to reduce the RFS volume mandates. Any reduction in volumes must comply with the waiver provisions in Section 211(o)(7). 42 U.S.C. § 7545(o)(7). The circumstances warranting a waiver under Section 211(o)(7), *i.e.*, lack of domestic supply, are simply not present.

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
The commenter (2047.1) objects to the EPA's determination that the industry can produce 100 million gallons of cellulosic biofuels in 2010. The commenter claims EPA is operating on erroneous information regarding the production of plants to meet the 100 million gallon cellulosic biofuel standard in 2010. According to the commenter, several of the plants EPA depended on for producing fuel will not be online when EPA expected, e.g., Cello Energy, Range Fuels, etc. [[See Docket Number 2047.1, pp. 9-10]]

Document No.: EPA-HQ-OAR-2005-0161-2137.1
Organization: The Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) believes EPA is well prepared to finalize the RFS2 in a defensible posture in a manner that promotes Congress' intent by addressing a number of issues including waiving the cellulosic biofuel requirements at this time to allow advanced biofuels to satisfy the cellulosic mandates. [[See Docket Number 2137.1, p. 13]]

Our Response:

We agree with some of the concerns raised by refiners and biofuel producers with respect our preliminary assessment that that nation could meet the 100 million gallon cellulosic biofuel standard set by EISA in 2010. As explained in Section IV.B.3.b of the preamble, in the NPRM, we conducted an assessment of the cellulosic biofuel industry to arrive at the conclusion that it was possible to uphold the 100 million gallon standard based on current and anticipated production. At the time of our April 2009 NPRM assessment, we were aware of a handful of small pilot and demonstration plants that could contribute to meeting the 2010 standard, but the largest volume contributions were expected to come from Cello Energy and Range Fuels. We also included production from a number of companies with plans to bring small pilot or demo plants online in 2010.

Since our April 2009 industry assessment, there have been a number of changes and delays in production plans due to technological, contractual, financial and other reasons. Cello Energy and Range Fuels have delayed or reduced their production plans for 2010. And Range Fuels will begin operations at its commercial plant in Soperton, GA by producing methanol (not ethanol). In addition, some of the small plants expected to come online in 2010 have pushed back production to the 2011-2012 timeframe. However, we have also become aware of other potential suppliers of cellulosic biofuel in 2010. Based on our revised industry assessment and a supply estimate provided to us by EIA on October 29, 2009 (required under section 211(o)(3)(A) per EISA), we believe that a small amount of cellulosic biofuel could be produced and/or imported to the United States to contribute to the 2010 cellulosic biofuel standard. As this time, we believe the six most likely suppliers of cellulosic biofuel in 2010 are Cello Energy, DuPont Danisco Cellulosic Ethanol, Dynamotive, Enerkem, Fiberight and KL Energy (discussed in more detail in Section IV.B.3.b of the preamble and Section 1.5.3 of the RIA). As such, we are using our Cellulosic Biofuel Waiver Authority under section 211(o)(7)(D)(i) to finalize a reduced 6.5

million gallon ethanol-equivalent standard based on EIA's supply estimate, which we agree represents a reasonable volume of cellulosic biofuel that could potentially be produced and made commercially available in 2010. While we acknowledge there they is still uncertainty surrounding the industry's ability to supply this volume of cellulosic biofuel, we believe a 6.5 million ethanol-equivalent standard is defensible based on our recent supply assessment, EIA's assessment, and also in-line with the intent of EISA.

As raised by several comments, EPA could have taken a more conservative approach and limited the cellulosic standard to only those facilities that were online and/or operating continuously for some period of time (e.g., three months) at the time of our assessment. However, we believe this strategy could hinder the growth of this up-and-coming industry. For example, consider a plant that came online in December after we set the standard for the following year in November. This producer could be excluded from having a market for its cellulosic biofuel for up to 13 months. Such action could hamper future investments in cellulosic biofuel. Furthermore, since we are setting a standard that we are reasonably confident can be met based on recent supply assessments (including meetings with a number of companies), we do not anticipate that obligated parties will be faced with the burden of carrying deficits forward or purchasing credits for a fuel that cannot be produced in sufficient quantities.

6.2.3 Imported Sugarcane Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) urges EPA, when looking at yields, to carefully consider Total Recoverable Sugars (TRS) yield (kilograms of sugars per ton of crop) increases as well as traditional yield measures (metric tons of crops per acre). In addition, the FAPRI model appears to ignore this essential aspect of sugarcane. [[Docket Number 2137.1, pp. 6-7]]

Our Response:

In our assessment we look at both crop yields (tons/acre) as well as ethanol conversion yield projections (gallons/ton). We believe that by considering improvements in ethanol yield, we essentially consider improvements in TRS yields since greater sugars per ton generally means greater yields at the facility.

6.2.4 Biodiesel and Renewable Diesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2151
Organization: Darling International Inc.

Comment:
The commenter (2151.1) believes that there are sufficient amounts of waste animal fat and greases to fulfill the renewable fuel volume requirements and still support other uses. The commenter believes that a significantly higher portion than the 30% of rendered animal fats and recycled cooking oils suggested by EPA in the NPRM can be diverted without impacting the supply to these other customers. The commenter believes at least 52% of the rendered animal fats and recycled cooking oil supply is available for use in the biofuels sector. [[See Docket Number 2151.1, p.2. Refer to Attachment A (2151.2) for a more detailed discussion of the basis that there are sufficient waste animal fats and waste greases to meet both the non-feed and biofuels requirements.]]

Document No.: EPA-HQ-OAR-2005-0161-2084
Organization: Syntroleum
Comment:
The commenter (2084.1) states: the reason we expect limited impacts on domestic industry if animal fats are used for renewable diesel is that the U.S. currently exports roughly as much animal fat as would be needed to produce the renewable diesel. Approximately 2.8 billion pounds of animal fat would be needed to produce the renewable diesel, but the U.S. exported 2.4 billion pounds. The remaining amount needed is relatively small given that the U.S. produces approximately 11 billion pounds of animal fat annually. [[See Docket Number 2084.1, p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) expects limited potential impacts on domestic industry based on the use of animal fats for renewable diesel, both for the anticipated production volumes of biomass-based diesel and other advanced biofuel. The commenter believes that expanding the use of animal fats for biodiesel production, as a replacement for virgin oils, would likely have a severe negative impact on domestic industry. An additional 5 billion pounds of animal fats would be needed to produce the biodiesel volumes that EPA suggests may derive from virgin plant oils. (See Docket Number 2149.1, pp.4-5)

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) noted that they expect limited impacts on domestic industry if animal fats are used for renewable diesel as the U.S. currently exports roughly as much animal fat as would be needed to produce the renewable diesel. However, the commenter does believe that expanding the use of animal fats for biodiesel production, as a replacement for virgin oils, would likely have a severe negative impact on domestic industry. [[See Docket Number 2364.1, p.5]]

Our Response:

Our primary control case in the final rulemaking projects a total use of approximately 3 billion lbs of rendered fat and grease feedstocks for biofuel by 2022. One factor in this decision is our revised expectation that corn oil extraction at dry mill ethanol plants will provide a

significant amount of inexpensive feedstock for biofuel production by 2022; also we're not sure it is reasonable to expect diversion of larger amounts of rendered fats (including exports) without other undesirable consequences in other markets. However, if it does become feasible, our program allows for it.

Use of this quantity of fats and greases for biofuels is consistent with a statement we received from the National Renderer's Association during our drafting of the proposal, stating that it seemed possible for as much as 30% of supply of rendered materials (or about 3 billion lbs) to be diverted to biofuels without severe impacts on other domestic uses. After the proposal, we received comments and some analysis from Darling International also suggesting use of this quantity of material would be feasible.

We continue to project a significant amount of soy oil will be used for biodiesel production, as there is a close relationship between many soy processors and biodiesel producers (some companies do both operations). Despite any reduction of soy oil use in food products, its price has not declined in any sustained manner, likely due to its increasing use elsewhere in the world as a food product. Thus, the biodiesel industry has continued to seek out cheaper feedstocks to remain viable and competitive.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106.1) suggests that EPA strongly consider setting more aggressive targets for biomass based diesel beginning in 2013 to provide the necessary pricing signals to the market to incent advancement of new technologies. The commenter's analysis based upon a compilation of NREL, USDA, US Bureau of Labor & Statistics, and National Renderer's Association data concludes there is enough energy dense fats and oils neutral and non-neutral materials to support over 2 billion gallons of biomass based diesel already in the marketplace in the U.S. If foreign sources are included, the total is much higher. Technology exists today to convert these feedstocks into high quality methyl esters. The commenter also suggests that the only barrier to utilization of these feedstocks is the price differential to crude oil and that the 30% suggested restriction is overly conservative. Therefore, we suggest the EPA target significantly greater than 1 billion gallons of biomass-based diesel in 2013 and beyond. [[See Docket Number 2106.1, p. 5]]

Our Response:

For our analyses for this final rulemaking, we have increased our projected quantity of biodiesel made from rendered fats and greases; we also project significant additional volume of biodiesel will be made oil extracted as a co-product of dry mill ethanol production. To the extent that other sources of fats, oils, and non-neutral feedstocks become available at good prices, we expect they will be used to generate RINs in the Advanced Biofuel category. We will continue to

assess the market for biomass-based diesel and take that information into consideration in subsequent rulemaking actions to set standards for 2013 and beyond as required by the Act.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should support the removal of barriers to the development of renewable diesel established in EISA which call into question EPA's optimistic outlook. [[Refer to Docket Number 2110.1, p.5 for a more detailed discussion of this issue.]]

Our Response:

As acknowledged by the commenter, the prohibition on inclusion of co-processed renewable diesel is part of the statutory language, and not something EPA can simply overlook. Consistent with this limitation and other factors, we have reduced the projected volume of renewable diesel to 150 MMgal/yr in this final rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:
The commenter (2010) says that in order to stay competitive in the petroleum diesel fuel marketplace, biodiesel plants have invested in pretreatment processes to allow for multi-feedstock conversion to biodiesel. Looking to the future, biodiesel plants must be allowed to utilize a robust source of multiple feedstock options if the biomass-based diesel volume mandates are to be achieved. Moreover, spreading feedstock sources toward multiple options will not only be economically advantageous to the fuel market, but will relieve pressure on high-protein food industries by making available millions of more pounds of additional soybean meal. [[Docket number 2010.1, p. 10]] [[See docket number 2010.1, pp. 10-12 for discussion of feedstock utilization for biodiesel and renewable diesel.]]

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Comment:
The commenter (2011) says that in order to stay competitive in the petroleum diesel fuel marketplace, biodiesel plants have invested in pretreatment processes to allow for multi-feedstock conversion to biodiesel. Looking to the future, biodiesel plants must be allowed to utilize a robust source of multiple feedstock options if the biomass-based diesel volume mandates are to be achieved. Moreover, spreading feedstock sources toward multiple options will not only be economically advantageous to the fuel market, but will relieve pressure on high-protein food industries by making available millions of more pounds of additional soybean meal.

[[Docket number 2011.1, p. 10]] [[See docket number 2011.1, pp. 10-12 for discussion of feedstock utilization for biodiesel and renewable diesel.]]

Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC
Comment:
The commenter (2013) says that in order to stay competitive in the petroleum diesel fuel marketplace, biodiesel plants have invested in pretreatment processes to allow for multi-feedstock conversion to biodiesel. Looking to the future, biodiesel plants must be allowed to utilize a robust source of multiple feedstock options if the biomass-based diesel volume mandates are to be achieved. Moreover, spreading feedstock sources toward multiple options will not only be economically advantageous to the fuel market, but will relieve pressure on high-protein food industries by making available millions of more pounds of additional soybean meal. [[Docket number 2013.1, p. 10]] [[See docket number 2013.1, pp. 10-12 for discussion of feedstock utilization for biodiesel and renewable diesel.]]

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that when their facilities were built, they invested in additional equipment that allows them to process not only "virgin" plant oils, but also animal fats, recycled plant oils, and used cooking oils from the food industry. This allows the commenter to utilize many feedstocks and helps recycle many pounds of products that would normally be discarded, buried, or inefficiently used for other purposes. When grains are process for eventual use in the food industry, vegetable oil is a by-product. If more corn and soybeans for food are grown, there will be more oil available which becomes available for biodiesel fuels and it creates value in the form of jobs, fuel to replace foreign oil, and more value to the grower and the distribution chain involved. [[Docket number 2510.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2210
Organization: e-biofuels, LLC
Comment:
The commenter (2210) states that the biodiesel industry is developing alternative sources of feedstocks which will be more sustainable and have less of a negative environmental impact. These feedstocks will become more readily available as the industry progresses. The commenter adds that, as the biodiesel industry moves forward, the keys to growth lie in the development of sustainable and practical products that can be efficiently converted into a fuel that can be used for various energy applications. There are a lot of initiatives out there to find what will be the next breakthrough in biodiesel development, yet it is important to remember that we are dealing with a fuel that is very simple and it needs to stay that way. [[See Docket Number 2210, p. 1 and refer to pp. 1-2 for further discussion of the biodiesel industry.]]

Our Response:

We recognize that biodiesel facilities have been increasing their ability to process a variety of feedstocks and therefore have assumed in the final rule that biodiesel plants will utilize

a mix of virgin plant oils, animal fats and recycled oils, as well as potentially new sources such as algal oil in the future. Our primary control case projects a mix for 2022 of approximately 40% virgin vegetable oil (primarily soy), 40% low-grade corn oil extracted from dry mill ethanol production, 15% animal fats and greases, and 5% algal oil or similar advanced feedstocks. (See RIA Chapter 1.1 for more details.) We expect biodiesel use to grow under the program outlined in this rulemaking, and a diversification of feedstocks will be an important factor for reducing swings in production cost and mitigating negative environmental impacts.

6.3 Renewable Fuel Distribution

6.3.1 Renewable Fuel Distribution and Storage Considerations Through the Petroleum Terminal Level

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2147
Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) recommends that EPA further evaluate the logistics required to coordinate the production and use of the renewable fuel requirements as specified by EISA. (Page 10)

Document No.: EPA-HQ-OAR-2005-0161-2103
Organization: Association of American Railroads
Comment:
The commenter (2103.1) noted that the preamble states that "it should be feasible for the distribution infrastructure upstream of the terminal to accommodate the additional freight associated with these RFS2 standards especially given the lead time available." The commenter agrees with this assessment, as long as rail capacity needs are properly addressed. The capacity issue is so important that a further discussion of it is warranted. (2103.1, p.3) [[See Docket Number 2103.1, pp.3-5 for a detailed discussion of this issue]]

The commenter also noted that the NPRM correctly noted that if unit trains are to be an option, smaller-capacity ethanol producers may need to store product until enough ethanol is ready to fill a unit train, or more than one producer may need to share a train. This is already happening at some locations. (2103.1, p.4)

The commenter does not agree with the statement in the preamble that a "number of additional rail terminals are likely to be configured for receipt of unit trains of ethanol for further distribution by tank truck or other means to petroleum terminals. The placement of ethanol unit train receipt facilities at rail terminals would be particularly useful in situations where petroleum terminals might find it difficult or impossible to install their own ethanol rail receipt capability. We anticipate that ethanol storage will typically be installed at rail terminal ethanol receipt hubs over the long run. We do not anticipate that the rail industry will experience substantial difficulty in installing such ethanol-specific facilities once a clear long term demand for ethanol

in the target markets has been established to justify the investment." The commenter believes that railroads should not be viewed as responsible for providing, or likely to provide, ethanol receipt and storage capability, just as they generally do not provide receipt and storage capability for the commodities. (2103.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2329
Organization: Renewable Fuels Association
Comment:
The commenter made some statements regarding analysis in the DRIA of the production and distribution of ethanol. With regards to the Overview of Ethanol Distribution section, the commenter noted that EPA stated that ethanol cannot be shipped by pipeline because it can cause stress corrosion cracking. This has not been established as applying to pipelines, and work is ongoing and various mitigation strategies are being investigated. (2329.1, p. 100)

With regards to the Shipment of Ethanol to Petroleum Terminals section, the commenter noted that EPA assumes 50 percent of new unit train facilities will be located at petroleum terminals and 50 percent at rail terminals. But, it is highly unlikely that 50 percent of petroleum terminals would install unit train rail receipt capability. (2329.1, p. 100)

With regards to the Rail Transportation System Accommodation section, the commenter noted that EPA referred to space at rail terminals which would be highly unlikely to accommodate truck traffic. EPA stated that "rail terminals" would hold minimal inventories believing petroleum terminals would hold the buffer inventory. Thus far it has been the hub distribution terminals that hold the buffer inventory. (2329.1, p. 100)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter expresses concerns about the renewable fuel distribution. [[Docket number 2233.2, pp. 54-55]]

The commenter states that driver shortages have impacted the overall trucking industry, and legislation currently under consideration to retire existing tank truck designs has the potential to reduce their availability. [[Docket number 2233.2, pp. 56]]

The commenter expresses concerns related to the necessary system accommodations for rail, marine, and road transportation systems but concludes that despite the concerns, there are no obvious constraints to the distribution of biofuels, biofuel feedstocks, and biofuel byproducts. The commenter believes that EPA should monitor the market conditions for these transportation modes to ensure unexpected problems do not develop into problems that impact the ability to meet RFS volume requirements and believes that a full infrastructure study should be done to identify potential problems. [[Docket number 2233.2, pp. 55-57]]

The commenter expresses concerns related to the current rail receipt capability at terminals, including: the limited receipt capability at existing terminals; the extent to which the installation of ethanol receipt facilities at rail terminals can help to meet the need to bring ethanol by rail to

petroleum terminals; and the lack of available land at existing terminals on which to build new rail receipt capability. The commenter believes alternative transport methods need to be found and implemented to bring ethanol to petroleum terminals. Additionally, EPA makes assumptions regarding "cooperation" among terminals with and without rail receipt capability and increased truck traffic. [[Docket number 2233.2, pp. 57-58]]

Regarding biodiesel distribution, the commenter notes that EPA fails to mention the precluding nature of biodiesel transport via pipeline, which serves to increase the likelihood that truck will be the dominant transport method for biodiesel. Jet fuel, commonly transported via pipeline, cannot currently be transported via any pipeline transporting biodiesel. For pipelines that transport jet fuel, the commenter believes that the risks of contamination to the jet fuel may be too high and carry too great a cost to justify any benefit. [[Docket number 2233.2, pp. 54-55]]

Document No.: EPA-HQ-OAR-2005-0161-2420
Organization: Magellan Midstream Partners
Comment:
The commenter (2420.1) disagrees with EPA's conclusions with regards to pipelines and had hoped that that EPA would recognize the need to transform the traditional transportation system for ethanol to make it more efficient. The commenter noted that pipelines are the safest, most reliable and efficient way to transport large volume of liquid energy from where it's produced to where it's consumed. In addition, pipelines offer reduced GHG emissions when compared to traditional modes used to transport ethanol. (2420.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2345
Organization: Independent Fuel Terminal Operators Association (IFTOA)
Comment:
Regarding the capacity of terminals to receive rail shipments, the commenter (2345) the commenter strongly disagrees that terminals could modify existing petroleum tanks to accommodate increased volumes of renewable fuels and does not believe that the addition of new ethanol storage tanks at existing rail terminals will help to address the storage problem. The commenter concludes that the increased renewable fuels will put additional strain on the distribution system and substantially increase the costs of the fuel [[Docket number 2345.1, pp. 5-6]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) notes the unwarranted assumption that renewable fuels have the same physical and chemical characteristics as fossil fuels and gasoline/ethanol blends of up to 10% ethanol. In fact ethanol is significantly more corrosive than gasoline and E10 which is of direct importance to the suitability of storage and dispensing devices currently in place at retail fuel outlets. The commenter adds that it is know that there are compatibility issues with biodiesel in the fuel dispensing system. The commenter notes that Underwriters Laboratories has not yet certified a complete E85 refueling dispenser. [[Docket number 2384.1, pp. 7-8]]

The commenter (2384) believes that until the necessary infrastructure material compatibility issues can be resolved, there will be an inadequate domestic supply of safe and legally compliant fuel to achieve the renewable fuel volume obligations. Until then, EPA should consider exercising its authority to waive the renewable fuel volume requirements in whole or in part if it receives a petition to do so or may do so on its own initiative. [[Docket number 2384.1, p. 10]]

In addition the commenter urges EPA to conduct a through review of the retail fuel outlet infrastructure and the impact it will have on the industry's ability to achieve the renewable fuel volume requirements [[Docket number 2384.1, p.1 10]]

Document No.: EPA-HQ-OAR-2005-0161-2362
Organization: Canopy Prospecting, Inc. And Trinidad Dehydration Company, Limited
Comment:
The commenter (2362.1) states that EPA's draft rule fails to mention the improved continuity and security of supply that Caribbean Basin Economic Recovery Act (CBI) ethanol dehydration plants offer in case of disruption of shipments from Brazil or from the U.S. Midwest to coastal U.S. destinations. In the event that U.S. or Brazilian produced ethanol delivery is delayed to coastal locations, CBI dehydrated ethanol will fill the gap until supply is restored. [[Docket number 2362.1, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter states that EPA appears to be unaware that EISA effectively prevents comingling of refinery-produced renewable diesel with petroleum-based diesel. Section V.C.3 of the proposed rulemaking makes no mention of EISA Section 205 which requires retail labeling of the qualifying biomass-based diesel content of any blend over 5% by volume. Tracking from refinery to retail is not possible at present. Because of this impediment, the development of renewable diesel is severely hampered and EPA's optimistic outlook is unjustified. Renewable gasoline is similarly disadvantaged. [[Docket number 2393.1, p. 33]]

The commenter provides additional detailed comments related to fuel distribution, including biodiesel distribution, necessary system accommodations for rail, marine, and road transportation systems, terminal rail receipt issues, and the need for additional E85 facilities. [[Docket number 2393.1, pp. 57-61]] [[See docket number 2393.1, pp 57-61 and docket number 2393.5, Attachment 4 for a detailed discussion of this issue.]]

Our Response:

We conducted an analysis of the fuel distribution infrastructure changes (and associated capital costs) that will be needed to support the transport of the volumes of biofuels needed to meet the RFS2 standards (see Sections 1.6 and 4.2 of the RIA). The accommodation by the rail transportation system of the increased freight load anticipated from the transport of biofuels is discussed in Sections 1.6.3 and 1.6.4 of the RIA.

In the NPRM, we projected that biofuel unit train receipt facilities would be located at petroleum terminals and existing rail terminals. Based on industry input regarding the logistical hurdles in citing unit train receipt facilities at petroleum/existing rail terminals, we now project that such facilities will be constructed on dedicated property with rail access that is as close to petroleum terminals as practicable.[1] Thus, we believe that it is most appropriate to assume that all biofuel storage tanks needed at such facilities would be new construction. We recognize that there may be some opportunity for idled terminal storage facilities to be reactivated to provide biofuels storage. However, we have no information regarding the extent to which such facilities might exist and whether their location would suit the needs of a unit train receipt facility. We acknowledge that some unit train receipt facilities might be linked to petroleum terminals by pipeline, thereby limiting the amount of biofuel storage capacity needed at such facilities. However, due to uncertainties regarding the extent to which this would be possible, we opted to assume that all unit train receipt facilities would ship biofuels to petroleum terminals via tank truck.

In the NPRM we projected that trans-loading of biofuels from rail cars to tank trucks at rail terminals would be an interim measure until biofuel storage tanks were constructed at rail terminals.[2] Based on industry input, we now expect trans-loading will be a long-term means of transferring manifest rail car shipments of biofuels received at existing rail terminals to tank trucks for delivery to petroleum terminals. Therefore, we are projecting that rail terminals will handle biofuel manifest rail car shipments by trans-loading as they do today. The use of trans-loading eliminates the need for biofuel storage tanks at rail terminals to facilitate the transfer of biofuels from manifest rail cars to tank trucks.

We continue to believe that a substantial fraction of the biofuel storage capacity that we project will be needed at petroleum terminals to support the RFS2 volumes can be accommodated through the retrofitting of existing storage capacity currently used to store the volumes of petroleum fuels that biofuels will displace. As biofuel use ramps up over time thorough the projected increase in the use of E85 and cellulosic distillate fuel/renewable diesel fuel, less petroleum-based fuel will be needed as a fraction of the total volume of motor fuel used. Thus, it seems reasonable to assume that some of the existing storage tanks will be available to be switched over to biofuel storage service. We understand that the storage capacity for petroleum-based fuels at terminals must be sufficiently large to permit the receipt of the minimum batch sizes shipped by petroleum pipelines. However, we do not believe that the projected transfer of the petroleum-based fuel storage capacity to biofuel service will be of sufficient magnitude to impede the continued receipt of pipeline batches of petroleum-based fuels. We estimated that it costs $5 per barrel of storage capacity to prepare a gasoline storage tank to make it suitable for storing ethanol. We project that cellulosic distillate fuel/renewable diesel will be compatible with existing petroleum fuel distribution infrastructure. Therefore, we assumed that the costs associated with preparing a diesel storage tank for cellulosic distillate fuel/renewable diesel fuel service will be negligible.

[1] Existing unit train receipt facilities have primarily followed this model. See the US Development Group's interactive map of their ethanol unit train receipt facilities at http://www.us-dev.com/terminals.htm

[2] Trans-loading refers to the direct transfer of the contents of a rail car to a tank truck without the intervening delivery into a storage tank.

We believe that the biofuel storage capacity that we project will be constructed at unit train receipt facilities may provide some buffer to lessen the amount of additional biofuel storage needed at terminals. In planning the construction of unit train facilities, discussions will take place between the unit train receipt facility's owner and the petroleum terminals that the facility will serve. During these discussions a determination will be made regarding the delivery schedule for shipment of biofuels by tank truck to petroleum terminals. To the extent that petroleum terminals have difficulty in accommodating large volumes of biofuel storage capacity, it may be possible for unit train receipt facilities to deliver biofuels to petroleum terminals on more of a just-in-time basis than via large periodic deliveries. This would tend to displace the need for some of the biofuel storage volume that we projected would be needed at petroleum terminals to unit train receipt facilities.

To understand the impact of RFS2 volume requirements on transportation infrastructure, we commissioned an analysis by Oak Ridge National Laboratories (ORNL) to examine biofuel transportation, activity, and potential distribution constraints for North American waterways, roadways, and freight rail system. The analysis found that biofuels transport is expected to constitute a small portion of the total freight tonnage for all commodities transported through 2022. The results suggest that it should be feasible for transportation infrastructure to accommodate the additional biofuels freight associated with the RFS2.

We acknowledge that CBI ethanol dehydration plants represent an important segment of the nation's ethanol supply system. A large percentage of our forecasted ethanol imports are projected to come through the CBI.

Based on our analysis of the number of tank truck drivers needed support shipment of biofuels to meet the RFS2 standard, we believe that the availability of tank truck drivers should not represent a serious issue. See Section 1.6.6 of the RIA. We do not believe that the changes to the specifications for tank trucks under consideration cited by the commenter will result in a shortage of available tank trucks for the shipment of biofuels.

We understand that various strategies are being investigated to mitigate the corrosion issues associated with shipping ethanol by pipeline. We noted in the RIA that a short pipeline in Florida apparently has resolved these issues and is shipping ethanol in batch mode in an existing pipeline which also ships gasoline. Other larger pipelines also hope to develop similar mitigation strategies which will allow the shipment of ethanol. However, the results of these investigative efforts are not yet in and concerns related to corrosion still prevent the vast majority of pipelines from shipping ethanol. We understand that jet fuel contamination concerns currently limit the ability to ship biodiesel by pipeline. Biodiesel blends are currently being shipped on some pipelines that do not handle jet fuel. We assumed that all biofuel transport would take place by rail car, barge, and tank truck due to uncertainties regarding the extent to which pipelines can play a greater role in biofuel transport in the future and the potential timetable when such a change may take place. We acknowledge that the efficiency and reliability of biofuel distribution would likely be significantly improved to the extent that pipelines can play an increasing role in biofuel transport.

Our analysis recognizes that there are special considerations associated with the distribution of ethanol and biodiesel due to difference in their chemical/physical nature compared to petroleum-based fuels. We acknowledged that ethanol storage tanks would need to be constructed of materials that are ethanol tolerant. We also projected the need for significant new retail storage and dispensing infrastructure at retail facilities to handle E85. We did not assume that any existing retail dispensing/storage equipment would be retrofitted to allow it to be used for E85 service. We acknowledged that biodiesel storage/blending/and transport vessels would need to be insulated and/or heated to prevent biodiesel gelling during cold conditions. Existing retail storage and dispensing equipment is suitable to handle biodiesel blends up to 5 volume percent provided that fuel meets accepted industry consensus fuel quality specifications. To the extent that there may be biodiesel fuel quality issues from certain manufacturers which may results fuel infrastructure compatibility issues, we believe that such issues can be addressed through industry consensus specifications such as those developed by ASTM and enforced at the State level. We believe that cellulosic distillate fuel and renewable diesel fuel will be confirmed to be sufficiently similar to petroleum-based diesel fuel so as to not result in any unique materials compatibility concerns in the fuel distribution system.

We understand that Underwriters Laboratories has yet to certify a complete E85 dispenser. All dispenser parts other than the hose which connects the dispenser to the nozzle have passed the necessary testing. We believe that there is no technical barrier in finding a hose that would meet the testing requirements. Therefore, we believe that UL certifications for complete E85 dispensers will be achieved by fuel dispenser manufacturers in sufficient time to facilitate the installation of the E85 retail facilities that we project will be needed to support the RFS2 volumes.

While the pump labeling provisions required by EISA section 205 may constrain the use of renewable diesel fuel and/or biodiesel due to the difficulty of tracking in a fungible system the concentration of biomass-based diesel in the final product, we believe that it should still be possible for the biomass-based diesel volumes required by the EISA to be sold.

We believe that it may be possible for the necessary fuel distribution infrastructure to be put in place in time to support the use of the RFS2 volumes. To the extent that problems might arise in making the needed fuel distribution upgrades which jeopardize meeting the RFS2 volumes, EPA may consider the need to waive a portion of the renewable fuel volume requirements.

6.3.2 E85 Refueling Facility Accommodations

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) believes that EPA has greatly overestimated the likely success of E85. The commenter supports the incorporation of ethanol into existing gasoline grades that can be

used in today's vehicle fleet. EPA should recognize that at this time, E85 is only compatible with approximately three percent of motor vehicles, and generally requires dedicated storage tanks and dispensers constructed from materials that are compatible with E85. The commenter is concerned that widespread introduction of E85 alongside conventional gasoline grades will further increase supply chain complexity, which in turn may increase vulnerability to supply disruption, especially during times of regional or national crisis. [[Docket number 2505.2, p.16]].

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) does not believe E85 is a commercially viable fuel and does not believe sufficient volumes of E85 can be introduced without significant misfueling occurring.

The commenter discusses the need for additional E85 facilities and EPA's proposed estimates for retail facilities. The commenter also points out issues with the effectiveness of automatic tank gauges in E85 tanks due to the ability to E85 to absorb high quantities of water without inducing phase separation.[[Docket number 2233.2, pp. 59-60]]

Finally, the commenter believes that EPA should clarify the legal status of Retail Blender pumps. [[Docket number 2233.2, p. 64]] .[[See docket number 2233.2, pp. 64-65 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2152
Organization: Minnesota Coalition for Ethanol
Comment:
The commenter [2152] stated that one way to address the ethanol "blend wall" would be to expand the number of ethanol blender pumps available to consumers to support the sale of blends between E15 and E85 for use in FFVs.

Our Response:

We recognize that E85 requires dedicated retail storage and dispensers. We believe that it may be possible for retailers to provide sufficient access to E85 refueling facilities. See sections 1.6 and 4.2 of the RIA for a discussion of the accommodation of such facilities at retail and the associated costs. See section 6.4 of this document for a discussion of E85 pricing and flex-fuel vehicle considerations.

We understand that there are issues with maintaining the functionality of automatic tank gauges used with E85 underground storage tanks. We believe that such issues can be resolved so as not to impede the projected expansion in E85 refueling infrastructure to support the use of the RFS2 volumes.

We believe that the main potential concern regarding how the more widespread use of E85 might complicate the fuel distribution system is associated with the potential need for special high vapor pressure petroleum-based blendstocks at terminals to manufacture E85 that meets ASTM minimum volatility specifications. We believe that industry is fully capable of

addressing this issue through the ongoing ASTM processes. This could include new specifications for E85 (or introduce another specification for flex-fuel vehicle fuel) to allow such fuel to be manufactured with commonly-available gasoline blendstocks (by lowering the minimum ethanol content specification). Therefore, we believe that the more widespread use of E85 which we project will take place to help meet the RFS2 volumes will not substantially increase the vulnerability to supply disruption.

To support the use of the volume of ethanol that we project would be used to meet the RFS2 standards, we modeled a scenario that is based on the addition of E85 refueling infrastructure to supply E85 to FFVs. Only FFVs are currently approved to use the >E10 ethanol fuel blends dispensed from blender pumps. Any use of blender pumps in lieu of our assumptions regarding FFV refueling from E85 dispensers would result in the need for additional FFV refueling facilities, additional FFVs, and increased FFV refueling frequency with >E10 blends.

6.3.3 Misfueling of Non-Flex fuel Vehicles with E85

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233.2
Organization: Marathon
Comment:
The commenter states that EPA should drop the provisions covering E10+ labeling requirements when finalizing this rule. Since EPA is not proposing to approve an E10+ fuel at this time , it would be more appropriate and make more sense for EPA to establish the E10+ labeling requirements after they have approved an E10+ fuel.

The commenter states that there are considerable misfueling concerns about rolling out large volumes of E85 in the same market as E10. E85 will have to be priced lower than E10, if a large volume of E85 is needed for mandate compliance. This lower price will probably encourage consumers to use E85 in vehicles that will be damaged by these fuels.

The commenter states that EPA must undertake a robust public information campaign to educate the population about the potential effects of misfueling. Marathon supports an approach that addresses misfueling using both methods – advisory and preventative, as needed. Unintentional misfuelings will most likely rise as different fuels intended for a specific subset of the vehicle population enter the marketplace. These misfuelings may be adequately addressed using advisory methods, such as public education programs, color-coding nozzles, or tactile stimuli on the nozzle handle. However, a significant number of misfuelings that occur are intentional and therefore may not be necessarily mitigated by advisory methods.

The commenter states that misfueling non-FFV vehicles with E85 may present significant misfueling concerns, but testing of the legacy fleet with E85 must be completed to determine how serious the potential problems may be so that a determination can be made as to whether advisory or preventive measures are required at retail. The commenter states that the likelihood of needing preventive measures for E85 misfueling would seem more probable than for mid-

level blends. If a preventative measure such as nozzle size differences is chosen, not only will pump nozzles need to be changed, but existing FFVs will also need to be retrofitted (as would the portion of the legacy fleet eligible to use mid-level blends if a nozzle size difference is needed as a preventive measure to prevent mid-level blend misfueling). Whether the preventive measure chosen is nozzle size differences, a card issued to the customer to enable the use of a unique fuel blend, or some interaction between the pump and customer, each option involves significant infrastructure and educational hurdles that must be addressed, with the help of the Federal Government, before any mid-level ethanol blend can be approved or the use of E85 expanded significantly.

Whether the options chosen are advisory or preventative misfueling measures, or both, if implemented as directed by the Federal Government, such measures must provide retailers and suppliers with liability protection should misfueling take place. Fuel retailers and suppliers cannot and should not be responsible for customers misfueling their vehicles in the presence of adequate, government directed measures to advise/prevent against its occurrence.

Document No.: EPA-HQ-OAR-2005-0161-2132.1
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter notes that they are pleased EPA has proposed to require a new warning label for marketers who sell, dispense or offers for sale ethanol blends containing more than 10% v/v ethanol.

The commenter recommends adding information about the energy content of the fuel to the fuel dispenser label, for all fuels (including biodiesel-diesel fuel blends) containing an energy value that is 96% or less than that of the federal emission test fuel. The label should use BTU/gal (or KJ/liter, where liters are used) to compare with the federal test fuel and inform consumers about the estimated impact of the fuel on their volumetric fuel economy. Specifically, the pump label should advise consumers that using such a fuel will provide lower fuel economy than indicated on the Monroney (fuel economy) label that came with their new vehicle and is indicated in their owner's manual.

Document No.: EPA-HQ-OAR-2005-0161-2143.2
Organization: New York State Department of Environmental Conservation
Comment:
The Department supports the proposed labeling requirements for gasoline-ethanol blends containing more than 10 volume percent ethanol (Proposed 40 CFR 80.1469).
We support this labeling provision, but the exact wording will have to depend on the outcome of the E15 section 211(f) waiver review. While effective pump labels may do little to prevent intentional misfueling with blends greater than E10, they should provide significant environmental and consumer protection benefits by helping minimize accidental misfueling.

Our Response:

We proposed labeling requirements for fuel dispensers that handle greater than 10 volume percent ethanol blends which included the following text: For use only in flexible-fuel

vehicles, May damage non-flexible-fuel vehicles, Federal law prohibits use in non-flexible-fuel vehicles. This proposal was primarily meant to help address concerns about the potential misfueling of non-flex-fuel vehicles with E85, in light of the anticipated increase in E85 sales volumes in response to the RFS2 program. All ethanol blends above 10 volume percent were included due to the increasing industry focus on ethanol blender pumps that are designed to dispense a variety of ethanol blends (e.g., E30, and E40) for use in flex-fuel vehicles.

EPA is currently evaluating a petition to allow the use of up to 15 volume percent ethanol in non-flex fuel vehicles. One potential result of this evaluation might be for EPA to grant a partial waiver that is applicable only for a subset of the current vehicle population. Under such an approach, a label for E15 fuel dispensers would be needed that identifies what vehicles are approved to use the fuel.

Based on the public comments and the fact that EPA has not completed its evaluation of the E15 waiver petition, we believe that it is appropriate to defer finalizing labeling requirements for >E10 blends at this time. This will afford us the opportunity to complete our analysis of what measures might be appropriate to prevent misfueling with >E10 blends before this may become a concern in the context of the RFS2 program.

6.3.4 Potential Need for High Vapor Pressure Gasoline Blendstocks at Terminals to Manufacture E85

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) states that EPA is incorrect in its assumption that certified gasoline currently on hand at terminals can be used to make up the non-ethanol portion of E85;

The commenter (2233) raises several E85 concerns including the commenter's decision to stop all E85 sales; and the forthcoming ASTM revision of E85's specification. [[Docket number 2233.2, pp. 23-24]] [[See docket number 2233.2, pp. 23-27.]]

The commenter expresses concerns related to E85 terminal blending. The commenter believes that because of seasonal maximum vapor pressure specifications in ASTM D 4814, as well as EPA's summertime RVP and RFG regulations, certified gasoline on hand at terminals cannot be used to blend E85 that consistently meets seasonal minimum vapor pressure specifications in ASTM D 5798. Therefore, EPA's assumption that certified gasoline currently on hand at terminals can be used to make up the non-ethanol portion of E-85 is incorrect. The commenter adds that while ASTM activities may facilitate the outcome, there is no reason to assume the current ASTM activities will completely change this outcome. [[Docket number 2233.2, p. 58]]

Regarding butane/pentane blending, the commenter states that most companies currently have little or no butane/pentane blending capability. Of those member companies that have this

capability, the butane/pentane blending capability exists at a small percentage of their terminals. The commenter adds that the primary objection to adding this capability at terminal sites is the lack of space for new storage infrastructure. Terminals are currently maximizing all available storage space. [[Docket number 2233.2, pp. 58-59]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter urges that EPA reanalyze the impact of manufacturing, distributing, and marketing E85 under the assumption that a third component will be needed to meet ASTM vapor pressure minima for E85. [[Docket number 2393.1, pp. 22-24]] [[See docket number 2393.1, pp 21-24 for further discussion of issues associated with E85 blending.]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) stated that they expect ASTM to resolve current issues related to difficulties in meeting E85 minimum volatility specifications by amending the ASTM specifications for E85.

Our Response:

It appears that ASTM may be successful in adjusting the specifications for E85 (or introducing an new specification for flex-fuel vehicle fuel) so that gasoline blendstocks commonly found at petroleum terminals can be used to blend E85 (and/or such a flex-fuel vehicle fuel) which complies with ASTM minimum volatility specifications.[3] If these ASTM efforts are not successful, butane or some other special gasoline blendstock would be needed to manufacture E85 that complies with ASTM minimum volatility specifications. We understand that few petroleum terminals currently have butane blending capability. We conducted a sensitivity analysis to assess the costs of supplying butane to petroleum terminals to assist in the manufacture of E85 which complies with minimum volatility specifications. The analysis found that such equipment can generally be installed for approximately $1.5 million per system. In instances in which blenders lack nearby space for new storage infrastructure, tankage for butane blending can be located more than 1,500 feet from the point of injection. See Sections 1.6.8 and 4.2.1.1.10 of the RIA for a discussion of the potential need for special blendstocks at petroleum terminals for E85 blending and the associated costs.

6.4 Ethanol Consumption and the Blendwall

6.4.1 EPA Should Promote FFV/E85 Growth

[3] One option under consideration by ASTM is to develop a new specification for "flex-fuel vehicle fuel". The term "E85" would not be used in such a specification. The minimum ethanol content specification of such a "flex-fuel vehicle fuel" would be set sufficiently low to allow minimum ASTM volatility specifications without the need for high volatility gasoline blendstocks. A similar approach has been taken regarding the specifications for flex fuel vehicle fuel in Canada.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0897
Organization: Citizen
Comment:
One commenter (0897) asks EPA to do more to help the conversion to ethanol by encouraging GSA auto use of E85, starting a matching fund program for converting pumps to E85, and encouraging states to require new stations to offer E85. In addition, the commenter notes that EPA flex fuel car mileage estimates are wrong—the estimates use flat-rate estimates based on BTU content compared to gasoline, rather than gathering actual E85 data. [[See Docket Number 0897, pp.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2329
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should continue to promote expansion of E85 use. Even health groups support the expansion in use of E85. As noted in testimony by Blake Early of the American Lung Association, E85 is seen an important benefit of the RFS because: flexible fuel vehicles must certify to the same emissions standards as gasoline; E85 is lower in evaporative emissions than gasoline; and, from a volume perspective, every gallon of E85 consumes eight times more ethanol than E10. [[See Docket Number 2329.1, p. 106]]

Our Response:

Aside from being subject to government fleet alternative-fuel vehicle requirements, EPA does not have the authority to implement FFV mandates and/or E85 infrastructure requirements. The purpose of today's rulemaking is not to promote or discourage E85 specifically but rather put in place the RFS2 program set by Congress in the Energy Independence and Security Act of 2007 (EISA). While we acknowledge that there are several challenges associated with getting beyond the E10 blend wall, at the present time, E85 and FFVs are the only legal means for consuming more than 14-15 Bgal of ethanol and thus the focus of our biofuel consumption assessment. However, for the final rule, we have also considered the impact of more non-ethanol advanced biofuels.

With respect to the citizen's comment that the FFV E85 usage calculations presented in Section 1.7.1.2.4 of the DRIA were based on average VMT and MPG estimates made for FFVs in the fleet in 2007. The intent was to compute the theoretical FFV E85 consumption potential if all FFVs in the fleet were to fuel on E85 100% of the time and compare it back to actual reported E85 consumption as a basis for discussing today's low E85 refueling rates. We agree it might be helpful to apply actual FFV fuel economy data instead of fuel economy estimates based average fleet characteristics. However, we are not aware of any recent FFV fuel economy estimates that look at all 1998-current MY FFVs and compute a current fleet-average fuel economy. As such, we chose to rely on published or otherwise accepted industry data. For the FRM, we relied on FFV fleet characteristics consistent with information used in the proposed Light-Duty Vehicle GHG Rule. For more information, refer to Section 1.7.4 of the RIA.

6.4.2 Getting Beyond the Blend Wall with Non-Ethanol Renewables

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143.1) notes that in EPA's impact analyses for the NPRM, ethanol remains the dominant renewable fuel. Purely hydrocarbon-based gasoline would be replaced by a combination of E10 and E85. The requisite quantity of ethanol flexible fuel vehicles (FFVs) would be produced and sold and motorists would select the required volumes of E85 to meet the RFS2 standards. Cost-effective production methods for cellulosic ethanol would be invented and the needed production facilities brought on line (to the virtual exclusion of any other cellulosic product). Feedstock crop production would increase to meet fuel production demands. The commenter believes there are many alternative scenarios that are as likely, or more likely to occur, than the one depicted in the DRIA. We believe that EPA has overestimated the use of E85 in FFVs and underestimated the use of intermediate blends in FFVs. [[See Docket Number 2143.2, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-2241
Organization: Outdoor Power Equipment Institute (OPEI); Alliance for a Safe Alternative Fuels Environment (AllSAFE)
Comment:
The commenter (2241.1) believes that EPA should explore the possibility of avoiding the blend wall through the use of non-ethanol cellulosic biofuels, and we encourage EPA to incentivize second and third-generation renewable fuels that are compatible with the existing fuels infrastructure and will benefit, rather than harm, air quality and products. (2241.1, p.20)

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) encourages EPA to support another option for avoiding the ethanol blend wall that EPA explored in the preamble, namely the production of cellulosic biofuels other than ethanol. EPA specifically cited the potential of F-T fuels to deliver volumes that would avoid the ethanol blend wall and associated infrastructure issues. The commenter believes that F-T fuels can provide a critical solution to simultaneously meeting the mandates and protecting existing vehicles, equipment, and, most importantly, air quality. Thus, the commenter strongly encourages EPA to adopt a regulatory framework that will promote fuels that help engines, vehicles, and equipment run cleaner, more efficiently, and with reduced emissions across the board for all air pollutants. [[Docket number 2310.1, p. 2]] [[See docket number 2310.1, pp. 1-2 for further discussion of this issue.]]

Our Response:

We agree with the New York State Department of Conservation, OPEI, AllSAFE,, and the Low Carbon Synthetic Fuels Association that there are varying ways the RFS2 requirements could be met in the future, e.g., with increased ethanol, diesel fuel replacements, etc. For the NPRM, we based our impact analyses on a volume scenario which assumed the bulk of the RFS2 standards (i.e., cellulosic biofuel standard) would be met with increased ethanol use. This was intended to be a simplifying assumption for analysis purposes, although consistent with the direction of many industry investments at the time.

For the final rule, as explained in Section IV.A of the Preamble and Sections 1.2.2 and 1.2.3 of the RIA, we have analyzed the impact of many of our analyses on three potential renewable fuel growth scenarios, two of which assume considerably higher use of non-ethanol renewable fuels than the NPRM. While we are not suggesting that these are the only potential future outcomes, we believe it is beneficial to measure the impacts of varying levels of ethanol use ranging from 17.5 to 33.2 billion gallons in 2022. Our primary control case used throughout our analyses assumed 22.2 billion gallons of ethanol (corn, imported sugarcane, and cellulosic) in 2022.

6.4.3 Potential for Optimizing Vehicles for Increased Ethanol Use

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) recommends that EPA look at possible incentives for optimizing the energy benefits from timing adjustments in flex fuel cars by determining if there are studies being done in Brazil evaluating the fuel economy of ethanol in new cars that have timing adjusted for ethanol vs. gasoline. This could be used to consider various incentives that could be offered to auto companies to get vehicles optimized for ethanol fuel efficiency in the event ethanol is much less expensive and readily available, as is now true in Brazil. These incentives could include mixed alcohol and bio-butanol. (2048.1, p.6)

Our Response:

The assumption throughout the RFS2 rulemaking is that ethanol's fuel economy is directly proportional to its energy density and its concentration in the fuel. Accordingly, an FFV refueling on E85 would get 22% worse fuel economy than the same FFV refueling on E10, or 24% worse fuel economy than when refueling on conventional gasoline (E0).[4] As acknowledged in Section 4.4.1.5 of the RIA, some studies have suggested that ethanol's decrease in fuel economy may be less than its relative decrease in volumetric energy content of the fuel. However, we believe the results could be premature and maybe even a function of how the

[4] Based on the assumption that E85 contains 74 vol% denatured fuel ethanol on average, E10 contains 10 vol% ethanol and ethanol and non-oxygenated gasoline have LHVs of 77,012 BTU/gal and 115,000 BTU/gal, respectively.

testing was conducted than the true effect of ethanol on fuel economy. We intend to investigate this further as additional data becomes available.

With respect to vehicles, we acknowledge that the majority of vehicles on the road were not optimized to burn ethanol with respect to engine design, controls and fuel delivery methods. Automakers could alter vehicle design to allow vehicles to more efficiently burn ethanol, namely optimize FFVs to handle E85. However, it is unlikely that automakers will optimize many new FFV product lines to handle E85 until they see an increase in E85 refueling rates and even less likely that in-use vehicles would be optimized in any way. As explained in Section 1.7.4 of the RIA, we estimate that FFVs with reasonable access to E85 in 2008 were only refueling on it 4% of the time on average.

6.4.4 FFV Production and E85 Utilization Assumptions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
With regards to FFV mandates, the commenter (2132.1) believes that the numbers of existing and planned FFVs are sufficient to achieve near-term ethanol consumption targets, and as the fuel infrastructure expands and becomes more established with consumer-friendly prices, market demand will drive additional FFV growth as it has elsewhere. (2132.1, p.26) [[See Docket Number 2132.1, pp.24-25 for a detailed discussion on FFV mandates]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that it is unreasonable for EPA to require obligated parties to blend more than can be sold as approved fuel blends for use in suitable vehicles and distributed through approved infrastructure. Obligated parties cannot be held responsible for activities outside of their control, and EPA should create reasonable mandates each year to ensure sufficient RIN availability to allow industry to comply with the RFS regardless of where EPA places the obligation. [[Docket number 2393.1, p. 5]]

The commenter (2393) states that there are essentially two solutions that have been proposed to move beyond the blend wall: increased use of E85 and mid-level blends. The commenter's issues with E85 are the rapidity with which the number of FFVs in operation is increasing (and will increase in the future) and in the likelihood that FFV operators will use E85 fuel. Even if the domestic automakers meet public commitments to make 50% of their new vehicles as FFVs by 2012, API does not believe that there will be a sufficient number of FFVs in operation to consume the volumes of renewable fuels required to meet the RFS2 mandate. The commenter incorporates by reference the Sierra Research Report included as Attachment 4 to their comments. [[See Docket Number 2523.1, p.17-18]]

The commenter acknowledges that many states have adopted California vehicle emission standards. It is our understanding that FFVs have difficulty meeting these standards, particularly at the lower test temperatures required. Thus, FFV penetration into California and the other states may be hindered. The commenter also points out that if gasoline demand falls (as it is currently doing), there will be even less gasoline volume to absorb ethanol, and the blend-wall will likely come sooner.

Even if the domestic automakers meet public commitments to make 50% of their new vehicles as FFVs by 2012, the commenter doubts that there will be a sufficient number of FFVs in operation through 2020 to address the problem. The commenter points out that EPA assumes in the NPRM that 25% of the new vehicle production of the non-domestic automakers will consist of FFVs by 2017, an assumption which seems highly improbable given that only a few FFV models are offered by less than a handful of the import automakers today and the above-noted fact that FFVs are not yet certified to cold temperature California LEV standards. In addition, the phase-out of the CAFE credit for FFVs in the post 2015 timeframe that is currently scheduled is likely to serve as a powerful disincentive for further market penetration of this technology.

The commenter concludes by saying, even if one were to accept EIA projections of the growth in the stock of FFVs through 2022 as a likely reality (per AEO 2009) and unrealistically assume that FFV owners/operators refuel on E85 100% of the time, it will not be enough to meet the EISA-mandated volumes of ethanol (i.e., 34.1 Bgal of ethanol, as analyzed in the NPRM). [[Docket number 2293.1, pp. 26-28]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP Products North America (BP)
Comment:
The commenter (2384) believes it is unreasonable for EPA to require obligated parties to blend more than the market place can absorb through the sale of approved fuel blends for use in suitable vehicles and distributed through approved infrastructure. [[Docket number 2384.1, p. 3]]

Although FFVs can legally consume blends up to 85%, the commenter (2384.1) believes there are not yet enough vehicles on the road to reasonably achieve RFS2 compliance. The commenter is reasonably confident that RINs will provide the economic currency which enables parties to rationally offer E85 for sale to consumers near energy parity. However, many FFV owners may still not choose to refuel with E85 on a regular basis. EPA will need to make reasonable assumptions (based on real consumer behavior) to assess the market's ability to consume biofuels when considering to exercise waiver authority. [[Docket number 2384, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2147
Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) recommends that EPA undertake a marketing research study to identify why consumers with flex-fuel products and access to E85 do not purchase E85. They believe that the results of such study will indicate that consumers are not willing to (i) pay a premium for fuel with lower fuel efficiency (on a dollar per mile basis); and/or (ii) refuel more frequently. It is apparent that several ethanol proponents may have already come to the same conclusion and

are investing capital into blender pumps with the intention of identifying what blend level (E40, E50, etc.) is preferred by the consumer.

If EPA does not undertake such a market research study, the commenter recommends that the agency leverage the ethanol blend retail industry information in order to identify and select an alternative blend level to replace E85 that will increase the overall demand for such blend and thereby generate the capital investment required to support such blend in the market. (Page 9)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) believes that EPA's analysis of E85's potential needs updating and the use of realistic assumptions regarding FFV production as well as E85 use. EPA's assumption for total annual vehicle sales predicates the current economic downturn – less than 16 million vehicles per year, and much of the decline has been in traditional FFV offerings. EPA's assessment much be updated to reflect a slower penetration of FFVs into the nation's vehicle inventory. [[Docket number 2130.1, p. 12]]

At some point in the future with ethanol production efficiency improvements and reduced feedstock costs from higher agricultural yields (or much higher crude oil market valuation) it is conceivable that E85 might become competitive with gasoline. However, reliance on such developments to promulgate a workable RFS program is problematic.

The commenter points out EPA's recently expressed intent to grant California's request for a waiver to regulate vehicle GHG emissions and to adopt similar federal requirements also raises significant questions regarding E85's viability as a solution. To date, few FFVs can meet the California emission standards and 13 additional states representing ~40% of gasoline demand have indicated that they will adopt the California vehicle standards. If FFVs cannot meet those standards, the potential penetration of FFVs and E85 will be further constrained. [[Docket number 2130.1, pp. 13-14]]

Document No.: EPA-HQ-OAR-2005-0161-2465
Organization: Ford Motor Company
Comment:
The commenter (2465.1) supports a renewable fuel standard as an enabler for the biofuel industry to expand production and distribution to meet our common energy security, climate change and economic goals. The goals of the RFS2 program will require a coordinated effort that involves greatly increasing the availability of vehicles capable of operating on ethanol blends greater than E10 and up to E85.

The commenter presents their comprehensive transportation energy use model ("Ford Model" and explains some of the model runs they've conducting. Their modeling relies on EIA's AEO 2008 to establish light-duty gasoline fuel demand and uses Ford's assumptions with respect to future LDV sales, improvements in fuel economy over time, etc.

Analysis of the Ford Model suggests that FFVs would need to make up 21% of new vehicles entering the fleet after 2011 to provide sufficient ethanol-consuming capacity to meet the RFS2. However, this would require an E85 use rate of 100% in FFVs which, according to the commenter, could be unrealistic. If one assumes that FFVs owners use E85 at a lower rate, more FFVs would be needed. The commenter modeled an E85 use rate of 50% in FFVs, and determined the percentage of FFVs produced after 2011 would need to increase to 46%. And if the E85 use rate was 25%, the percentage of FFVs required would jump to 95%.

In all scenarios, as the E85 use in FFVs differs, the number of FFVs in the fleet and the required FFVs sales would need to differ in an inversely proportional manner. Although one cannot expect quantum leaps in FFV production from one model year to the next, one could envision ramping up the production of FFVs gradually over time. [[See Docket Number 2465.1, pp. 6-7]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233.1) agrees that for E85 to be competitive with E10, the price should reflect the relative BTU content of the fuel and compensate the consumer for the required time for additional fill ups. To ensure that consumers are aware of the presence of ethanol, we agree there will have to be significant efforts towards consumer awareness. The commenter believes that the government should be responsible for educating the consumer on the options and benefits of ethanol. Where a retailed decides to sell E85, it is that retailer's responsibilities to advertise his specific product in his market. Additionally, automakers should reach out to all FFV owners in order to ensure that those consumers are aware of the types of fuel their vehicle can use.

EPA discusses the potential implications of an FFV mandate to increasing ethanol usage in the NPRM. The commenter points out that increasing FFVs in the fleet does not change the relative economics or consumer acceptance of ethanol and gasoline. Putting more FFVs into the fleet will not change the relative prices of transportation fuels. Ethanol price will primarily depend upon the economics of the feedstock and conversion. [[Docket number 2233.2, pp. 27-28]]

The commenter believes that EPA's estimates of the future growth in E85 fuel consumption are based on assumptions that may not be realistic given historical trends and recent rulemakings. Even is the domestic automakers meet public commitments to make 50% FFVs by 2012, it is doubtful that there will be a sufficient number of FFVs in operation through 2020 to address the problem. The commenter points out that EPA assumes in the NPRM that 25% of the new vehicle production of the non-domestic automakers will consist of FFVs by 2017, an assumption which seems highly improbable given that only a few FFV models are offered by less than a handful of the import automakers today. In addition, the phase-out of the CAFE credit for FFVs in the post 2015 timeframe that is currently under consideration by EPA and NHTSA is likely to serve as a powerful disincentive for further market penetration of this technology.

The commenter concludes by saying, even if one were to accept EIA projections of the growth in the stock of FFVs through 2022 as a likely reality (per AEO 2009) and conservatively assume that FFV owners/operators refuel on E85 100% of the time, there would not be enough FFVs in

the fleet to consume all the E85 that would be required to meet the EISA-mandated volumes of ethanol. [[Docket number 2233.2, pp. 30-31]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: Sierra Research
Comment:
The Sierra Research Report No. SR2009-09-01 entitled "Technical Review of 2009 EPA Draft Regulatory Impact Analysis For Non-GHG Pollutants due to Changes to the Renewable Fuel Standard" was prepared for API on September 29, 2009 and incorporated by reference into their comments (2393.7). A summary of the points raised with respect to fuel volumes, FFVs, and E85 is presented below.

Critical Aspect 1 – The main findings of the review of the DRIA with respect to the first critical area—assumed renewable fuel types, volumes, and vehicle technology changes—are:

- The volumes and types of renewable fuels, primarily ethanol in the form of E85, assumed in the DRIA are not consistent with those of the U.S. Department of Energy's (DOE), Energy Information Administration's (EIA) Annual Energy Outlook (AEO).
- Relative to other current estimates, the DRIA analysis overestimates transportation energy demand, and therefore the feasibility of compliance with the volumetric renewable fuel requirements of the RFS2.
- The DRIA analysis evaluates in detail only one "control case" for RFS2 compliance based on E10 and E85 rather than fully analyzing other potential control cases.
- The DRIA analysis is based on a number of assumptions and input data from a variety of different sources that are inconsistent and there has been no apparent attempt made to reconcile these inconsistencies.
- The DRIA assumes that the bulk of the renewable fuel required for compliance with the RFS2 will be consumed in the form of E85 by FFVs, but that assumption rests on what appear to be unreasonably optimistic assumptions regarding the number of FFVs that will be produced and the amount of E85 that will be consumed.

Our Response:

As explained in Section 1.7.2 of the RIA, we have updated our light-duty vehicle projections to account for the dip in sales in response to the downturn in the economy. In addition, we have modified our FFV sales assumptions to account for the fact that it is unlikely that non-domestic automakers would ramp up FFV production in the future, absent an FFV mandate or other political measures. As explained above, for the final rule, we have established three control cases with varying levels of ethanol to measure the potential impacts of the RFS2 program. Accordingly, we have established three potential FFV production scenarios with somewhat proportional sales projections. For our low-ethanol case (17.5 Bgal of ethanol by 2022), we modeled FFV sales according to AEO 2009. For our primary mid-ethanol control case (22.2 Bgal of ethanol by 2022), we assumed GM, Ford and Chrysler would follow through with their voluntary commitment to produce 50% FFVs by 2012 (this is similar to the "Committed" FFV production scenario modeled for the NPRM). And finally, for our high-ethanol scenario (33.2 Bgal of ethanol by 2022), we modeled the impacts of a hypothetical 80% FFV mandate based on the Open Fuel Standard (OFS) legislature introduced in Congress. While

we are not suggesting that Congress implement a national FFV mandate, given the downturn in the economy (resulting in reduced VMT, gasoline demand and vehicle sales), an FFV mandate could be the only viable means for consuming 33.2 billion gallons of ethanol by 2022. If challenges in certifying FFVs in California continue in the future, then FFV sales, E85 retail stations and/or FFV E85 refueling rates would all have to be higher in the rest of the United States to compensate. In addition, if the phase-out of CAFE credits has a significant impact on total FFV sales, then E85 availability and FFV E85 refueling rates would need to be even higher.

In addition, we believe that E85 has the ability to be a viable fuel in the future provided crude oil prices track around $116/bbl as predicted by EIA in AEO 2009. In order for E85 to be competitive with $4/gal gasoline (E10) at retail[5], we project that it should be priced about 25% lower, or around $3/gal considering its reduced energy density, additional time spent refueling, etc. In order for ethanol to be valuable to refiners as an E85 blendstock, the corresponding rack price would need to be less than or equal to around $2/gal. The current rack price for ethanol is abound $2.20/gallon. However, we agree with Exxon that ethanol production efficiency improvements and reduced feedstock costs could lower the price of ethanol in the future. We project that the average ethanol delivered price (volume-weighted average production cost of corn, cellulosic and imported ethanol plus distribution) will come down to around $1.67/gallon in 2022 under our mid-ethanol primary control case. Therefore, while gasoline refiners and markets will always have a greater profit margin selling ethanol in low-level blends to consumers based on volume, they should be able to maintain a profit selling it as E85 in the future. Refer to Sections 4.4 and 1.7.5 of the RIA for more information.

In response to some of Sierra Research's more detailed comments, many of their suggested alternative data sources (e.g., FFV sales) have been reflected in our updated ethanol consumption analysis. However, a number of their comments relate to various assumptions made with respect to our projections of renewable fuel used for impact analyses. While we have made some changes in our assumption between the NPRM and FRM in this area, many different assumptions and estimates could have been made. However, we believe that the two reference cases and three control cases used for the final rule provide a reasonable foundation for assessing the potential impacts of the RFS2 program. Regardless, the RFS2 standards are dictated by statute and the results of the analyses will not change the magnitude or timing of the standards. We will continue to consider comments raised by Sierra Research in our ongoing assessments of the impacts of renewable fuel use.

In response to statement that EPA should not hold obligated parties responsible for blending more renewable fuels into transportation fuel than can produced, distributed, and consumed, we note that these comments relate to potential future waivers of the RFS2 standards. As discussed in section 13.4.4, EISA provides general waiver authority for the RFS2 standards similar to that provided for the RFS1 standards under EPAct 2005, as well as waiver authority specific to the biomass-based diesel standard and the cellulosic biofuel standard. This waiver authority will be exercised in the future as necessary and appropriate, and the nature of any waiver action taken will be determined based on the specific situation at the time.

[5] Refer to Section 4.4 of the RIA for more information on projected gasoline prices.

6.4.5 Retail Price Relationship of E10/E85

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) points out that the NPRM indicates that the E10/E85 price relationship could be modified by the refining industry. It states that, "[o]ne potential action that refiners might take to ensure a sufficient RIN supply would be to subsidize the price of the ethanol used to manufacture E85. Such a subsidy might be financed by an increase in their selling price of gasoline. In addition refiners with marketing arms could adjust the retail price relationship of E10 in E85 in way that encourages E85 throughput while still maintaining the same average net profit. The NPRM requests comment on viable and cooperative ways refiners and gasoline retailers could promote E85 throughput to meet the proposed E85 requirements."

EPA appears to assume that a single refiner can set the price of its gasoline to ensure that there is equivalence between E10 and E85, and that the sale of the two fuels would allow that refiner to "maintain the same average net profit." This assumption reflects a deep misunderstanding of the U.S. gasoline market. A refiner has no control over the price of crude oil, the price of the gasoline or the price of ethanol. Prices are ultimately based on the international supply and demand of crude oil, gasoline and blendstocks, and the supply and demand for the product that is being sold in a given geographical market. This is further exemplified by a refiner, obligated by production, which has no associated retail marketing. EPA has a deep misunderstanding of the impacts and linkages of ethanol import tariffs, ethanol production subsidies and volume mandates as these interact with obligated blending, discretionary blending, and new "D" codes for proposed RINs. [[Docket number 2523.1, p.24]]

Further, it is simply not legal for a group of refiners or retailers to work in "cooperative ways to promote E85 throughput to meet the proposed E85 requirements" in the way the EPA apparently anticipates. Federal antitrust laws forbid agreements among competitors to set 26 prices (whether "reasonable" or not), adjust outputs, or allocate markets; the penalties for such conduct are quite severe, involving corporate and personal criminal liability (up to 10 years in jail), large civil fines and the possibility of large triple-damage lawsuits by those harmed by the conduct. Hence, the EPA's suggested approach, which appears to require the reduction or elimination of competition is simply unrealistic and unworkable. The NPRM indicates that some states waive or discount excise taxes on E85 and that this "helps contribute to a retail price relationship that favors E85 over conventional gasoline." Waiving or discounting state or federal tax for E85 may, depending on market conditions, contribute to a closer price relationship between E85 and gasoline. Tax relief of this type should be weighed with caution though because it limits the funds that are available to maintain highways and bridges and picks winners and losers based upon application. Waiving the tax on E85 is also equivalent to offering another subsidy to ethanol. [[Docket number 2523.1, p.25-26]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)

Comment:
According to the commenter (2130.1), EPA's suggestion that somehow retail marketers could subsidize E85 sales by attractive pricing while seeking to recover the cost with E10 sales by raising the cost of E10 demonstrates a fundamental lack of understanding of petroleum product markets. Such markets are competitive, and an individual marketer cannot hope to succeed by acting at variance with the market direction. Customers with FFVs would take advantage of his lower E85 price by preferentially filling up their FFVs at his station, generating a financial loss on the E85 volume he sells. However, customers who need E10 could go elsewhere to avoid the higher cost of E10 he offers, since other marketers would be offering E10 that did not also carry the burden of an E85 subsidy recovery. Of course, anti-trust laws prevent a group of individual marketers from acting in "cooperative ways to promote E85 throughput to meet the proposed E85 requirements" as EPA seems to anticipate. EPA should not look to petroleum marketers to somehow create an incentive for customers to buy a non-cost-effective product like E85. Market factors preclude the viability of such a strategy. [[Docket number 2130.1, p. 13]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comments:
As stated in the NPRM, current federal and most state tax codes do not distinguish between ethanol sold as E10 and E85. The commenter acknowledges that waiving or discounting the federal tax for E85 will contribute to a close price relationship. However, it also limits the funds that are available to maintain highways and bridges. This type of tax relief should be weighted with caution. Waiving the tax on E85 is also equivalent to offering another subsidy to ethanol.

The NPRM indicates that the E10/E85 price relationship could be modified by the refining industry. EPA appears to assume that a single refiner can set the price of his gasoline and thus ensure that this is equivalence between E10 and E85 and further that the sale of the two fuels would allow that refiner to "maintain the same average net profit." According to the commenter, this assumption reflects a deep misunderstanding of the U.S. gasoline market. A refiner has no control over the price of crude oil and no control over the price of gasoline (or distillate). Prices are based on international supply and demand. Refiners and retailers cannot and do not set the price of their product. They must unilaterally use market information to determine asking price. Consequently, it is not possible for a refiner or retailer to "adjust the retail price relationship of E10 to E85 in such a way that encourages E85 throughput while maintaining the same average net profit." The market is too complex for such an approach to work. Further, The Sherman Act specifically prohibits this type of activity and indicates that this type of violation could result in treble damages and personal liability. [[Docket number 2233.2, pp. 28-30]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
Regarding EPA's proposal on market pricing of E85 versus gasoline where the refiners reduce the price of E85 and increase the price of gasoline and whether refiners and retailer might work together to adjust the relative price of E85 and gasoline, the commenter believes these proposal are unsustainable and may violate antitrust laws. [[Docket number 2358.1, p. 14]]

Our Response:

In our NPRM, we were mainly pointing out the fact that, due to the lower value of ethanol when sold on an energy basis compared to gasoline then on a volume basis, the price of E85 and of ethanol in the marketplace will have to adjust to compensate if the increased volumes of ethanol are to be sold as E85. The means by which this happens will have to be sorted out in the marketplace. If it isn't, then it would push the market further and faster towards other solutions to meet the RFS2 standards, such as increased use of non-ethanol renewables, e.g., butanol, renewable hydrocarbons, etc.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 7
Impacts of the Program on Greenhouse Gas (GHG) Emissions

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

7 IMPACTS OF THE PROGRAM ON GREENHOUSE GAS (GHG) EMISSIONS

7 IMPACTS OF THE PROGRAM ON GREENHOUSE GAS (GHG) EMISSIONS

What We Proposed:

The comments in this section correspond to Section V of the preamble to the proposed rule and address impacts of the program on GHG emissions. A summary of the comments received and our response to those comments are located below. These topics are also largely considered in Section V of the preamble to the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1000
Organization: Environmental Consultant
Comment:
The commenter (1000) objects to the inclusion of greenhouse gas emissions regulation as a part of the EPA proposal. The commenter states that the EISA of 2007 has no restrictions on greenhouse gas. The commenter also noted that a large body of scientific evidence has shown that anthropogenic emissions of GHG are not related to climate. The commenter recommends that all reference to GHG be removed from the subject regulations. (P.1)

Our Response:

EISA includes specific greenhouse gas reduction thresholds for each type of renewable fuel mandated by the Act requiring a percentage improvement compared to a baseline of the gasoline and diesel used in 2005. The definition of lifecycle greenhouse gas emissions is specifically provided in the statute. While these thresholds do not constitute a specific control on greenhouse gases for transportation fuels (such as a low carbon fuel standard), they do require that the volume mandates be met through the use of renewable fuels that meet certain lifecycle GHG reduction thresholds when compared to the baseline lifecycle emissions of petroleum fuel they replace. This final rule implements those requirements and therefore the references to GHG are appropriate and required.

This final rule does not, however, discuss the role of GHG emissions in climate change. EPA's position on this topic is provided in a separate and unrelated action—see http:www.epa.gov/climatechange/endangerment.html

Document No.: EPA-HQ-OAR-2005-0161-2308
Organization: Environmental Defense Fund
Comment:
The commenter (2308.1) believes additional measures are necessary to produce biofuels in a way that creates benefits for the climate and other natural resources, in particular with regard to reducing emissions from tropical deforestation, which EPA has identified as a significant source of indirect land use change emissions. (Page 2)

Our Response:

This final rule implements the greenhouse gas thresholds and renewable biomass restrictions in EISA and provides an analysis of the air and water quality impacts of expanded biofuels use. As noted by the commenter, additional measures (i.e., international frameworks) are beyond the scope of this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) comments that when the full lifecycle impacts of this ethanol are taken into account, including the effects of indirect land use change, substitution of this grandfathered ethanol for gasoline could result in a substantial increase in greenhouse gas emissions. The commenter strongly urges EPA to assess the above described impacts and establish anti-backsliding provisions to forestall increases in emissions or alternatively consider waiving the volumetric requirements of the RFS in a given year to prevent significant increases in emissions. (2466.1.pdf, p7)

Our Response:

As provided in EISA, renewable fuel from existing facilities is exempt from the lifecycle GHG emission reduction threshold of 20%. Today's final rule will implement this provision by exempting up to a baseline volume for such facilities, which will be established at the time of registration. The exemption from the 20% GHG threshold applies only to renewable fuel that is produced from facilities which commenced construction on or before December 19, 2007, or in the case of ethanol plants that use natural gas biomass, or a combination thereof for process heat, on or before December 31, 2009. EPA's implementation of these provisions is described in detail in Section II.B.3 of the preamble. EISA created a new CAA section 211(v) concerning mitigation of adverse air quality impacts of the implementation of this program. In addition, EISA authorizes EPA to issue waivers of the volumetric renewable fuel requirements of the Act under various circumstances, including where EPA makes a finding that implementation of the requirements would severely harm the economy or environment of a State, a region, or the United States. However EPA is not taking action under either of these provisions in this rulemaking, and is not in a position to address comments concerning action under those authorities, assuming that is what the commenter is suggesting. EPA is currently conducting the study called for under CAA section 211(v)(1), and commenter has not presented any analysis to support their general request that EPA consider waiving volume requirements at some time. However, we note that our analysis of the GHG impacts of the final rule (which analyzes the difference between business as usual and the RFS2 volumes) includes some of the GHG impacts of grandfathered ethanol.

As provided in EISA, renewable fuel from existing facilities is exempt from the lifecycle GHG emission reduction threshold of 20% up to a baseline volume for that facility that will be

established at the time of registration. The exemption from the 20% GHG threshold applies only to renewable fuel that is produced from facilities which commenced construction on or before December 19, 2007, or in the case of ethanol plants that use natural gas or biodiesel for process heat, on or before December 31, 2009. EPA's implementation of these provisions is described in detail in Section II.B.3 of the preamble. The waiver and antibacksliding provisions in EISA provide specific circumstances for the use of these provisions, which do not include addressing the GHG emissions resulting from grandfathered volumes.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that the four fuel designations cannot be maintained and verified by EPA. EPA has illustrated repeatedly that insufficient data and analytical confidence exist to develop rules four renewable fuels standards. This is not a criticism of EPA. The analytical infrastructure does not exist to do what the EISA requested regarding the complex criteria for the emission impact of the three non-corn biofuel categories. (2112.1, p.4)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

7.1 Definition of Lifecycle GHG Emissions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0951
Organization: Citizen
Comment:
One commenter (0951) states that the proposed changes to the RFS program must be based on science. This commenter believes that the "Searchinger, et al" and "Tilman" studies are not scientific examinations of the indirect land use issue and has been criticized by many legitimate scientists. The commenter also states that there is currently no scientifically based or empirical evidence that biofuels production causes any negative indirect land use changes at all. (Pp. 1-3)

Our Response:

The lifecycle methodology developed by EPA, and explained in detail in this final rule, is based on the best available scientific techniques. It also relies on a body of scientific literature on this topic as well as an independent scientific peer review of EPA's methodology. The peer review, the public comments we have received, and the analysis conducted for the proposal and final rule indicate that it is important to take into account indirect emissions. Through this evaluation, EPA also has determined that biofuels production leads to both negative and positive indirect land use changes. We also recognize the uncertainties inherent in this estimation and therefore have taken an approach that quantifies the uncertainty and presents the weight of currently available evidence in making our threshold determination.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2165
Organization: Beckley Ag Products
Comment:
The commenter (2165.1) is concerned that while the law specifies that GHG emissions included direct emissions and significant indirect emissions such as significant emissions from land use changes, as determined by the Administrator, they believe it is premature to adopt GHG criteria for indirect land use changes (ILUC). Specifically the commenter is concerned that there are no widely accepted methodologies or models for calculating ILUC resulting from increases in production of biofuels.

Given the complexity and uncertainty of this issue, the commenter urges EPA to not include any calculations of ILUC in determining GHG emissions for biofuels at this time. (2165.1, p. 2)

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate.

7.2 Methodology

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter (0981) recommends that the biofuel LCA performed by EPA follow ISO and EPA guidelines and Federal law to the highest degree possible. The commenter believes that such practices will help to ensure the accuracy of the parameter values used and the resulting effectiveness and transparency of regulatory LCA applied to biofuels. (Pp. 12-14)

Our Response:

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA has followed EPA and federal regulatory procedures. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models with outside experts and across the federal government. After EISA's enactment in December 2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments.

Lastly, EPA conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC**,** Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B.,University of Georgia Engineering Outreach Service, et al.

Comment:
The commenters noted that EPA's methodology is not ready to be used for purposes of regulating biofuels. EPA's method of lifecycle analysis is not widely accepted and should not be used to regulate biodiesel.

The commenters understand that EPA's lifecycle analysis is being peer reviewed and encourages EPA to include experts from the biodiesel industry in the peer review process. Throughout the peer review process, the commenters strongly encourage EPA to provide reviewers with additional independent studies and analyses that will help place the EPA lifecycle analysis in context and provide a holistic view of the debate over indirect effects.

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent, and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

With regard to the comment on the peer review process—the lifecycle review was conducted following the Office of Management and Budget's (OMB) peer review guidance and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, independent, third-party contractors autonomously developed their own list of expert reviewers. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science. Contractors provided the expert reviewers with the material for review and charge questions developed by EPA. These questions, which were reviewed and edited by OMB, guided the review process. The peer reviewers worked independently and were not asked to reach a consensus decision.

More information on the peer review, including each of the peer review comments, is available at: http:www.epa.gov/otaq/renewablefuels/index.htm. The results of the peer review were included in the docket for public review and consideration during the public comment period for the proposal.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that EPA's method of lifecycle analysis is not widely accepted and is not consistent with standards for such analysis. Until a reasonable level of scientific consensus is achieved, the commenter believes that the methodology should not be used to regulate biofuels production. (2079.1, p.7)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) believes that the science behind indirect land use assumptions is weak and open to criticism. Clearly there is room for questioning the assumptions being made in including indirect land use in the regulations and this is perhaps the area where U.S. EPA is likely to obtain the greatest criticism (as evidenced by the recent hearing on indirect land use in Congress). (2048.1, p.3)

With regards to the GREET model, the commenter is not in favor of any of the recommendations in the GREET model associated with indirect land use change, staff recommendations to include indirect land use change in carbon calculations and adoption of a rule that includes Indirect Land Use Change (ILUC). The commenter agrees with comments from stakeholders including the

letter by 111 Ph.D. Scientists stating that the science used in determining these market mediated, indirect impacts is quite limited and highly uncertain. In addition, the selective enforcement of indirect land use impacts for biofuels over other fuels included in the LCFS violates the most basic principles of regulatory fairness. (2048.1, p.11)

Our Response:

EPA has clearly acknowledged that our lifecycle methodology required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, through individual meetings, conferences and events. EPA also initiated an independent scientific peer review of specific areas of our work.

EPA has recognized that there are uncertainties associated with these estimates—particularly with regard to indirect land use change—and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. The Agency has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) supports EPA's overall approach to GHG life-cycle analysis (LCA) as it applies to biofuels but believes the agency must be flexible enough to adapt to the changing science of LCA. The commenter believes that EPA needs enough flexibility to respond to the evolving science of LCA and the unpredictable nature of advanced fuel technology development without causing investments made in good faith to be undermined. (2110.1, p.4)

The commenter noted that despite the potential for negative life-cycle GHG impacts of using conventional biofuels, it is important that EPA avoid developing overly permissive life-cycle criteria or other mechanisms that enable them to meet category requirements that are otherwise unattainable. There are of the aes allowed under the law that would retain the use of good science. (2110.1, p.4)

Our Response:

EPA agrees with commenter that impacts from indirect land use change must be included in our lifecycle analysis. Further, we have taken steps in the final rule to account for uncertainties.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

EPA is basing its GHG threshold compliance determinations for this rule on an approach that considers the uncertainty in our assessments as well as other information available to the Agency. For fuel pathways with a significant land use impact, the evidence considered includes the best estimate as well as the range of possible lifecycle greenhouse gas emission results based on formal uncertainty and sensitivity analyses conducted by the Agency.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that ignoring the fundamental principles of mathematics renders EPA estimates meaningless. The best data and methodologies do not meet quality necessary to serve the "force of law." Professionals in the life cycle assessment (LCA) field can not agree on the proper methodology. Therefore, no legally defensible LCA methodology exists. In addition EPA took coefficients developed from radically different models and created new models that create hypothetical results that are far beyond the boundaries of the underlying original data. (2112.1, p.1)

Our Response:

There is no legal requirement that there be a consensus of expert opinion before EPA may take action as required by the statute. Instead, EPA often is required to and does act in situations where the science is controversial and uncertain. In this case, EPA has conducted extensive outreach to obtain expert advice on the issues relevant to LCA, and used that advice to update the LCA. In general there was broad support for many of the methodological elements of EPA's analysis, and in several areas EPA received constructive criticism and advice and updated our analysis consistent with that advice. EPA's LCA analysis reflects the best available science, and is an adequate basis for the regulatory determination for which it is used – determining compliance with the GHG thresholds.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) supports periodic reevaluations and updates to the LCA (perhaps every three years, initially) to adjust the analysis as technology and modeling evolves. The commenter urges EPA to continue efforts with CARB to harmonize LCA methodologies to the extent possible, and be able to explain differences where authorizing documentation precludes harmonization. (2124.1, p.24)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
Regarding the LCA for RFS2, he commenter (2130) commends EPA for its scientific approach and diligence in examining the full gamut of potential impacts from the production and use of various biofuels. The commenter supports periodic reevaluations and updates to the LCA (perhaps every three years) to adjust the analysis as technology and modeling evolve and urges EPA to continue efforts with CARB to harmonize LCA methodologies. [[Docket number 2130.1, pp. 3-4 and pp. 18-20]]

Our Response:

EPA is committed to reassess the lifecycle estimates presented in this final rule. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

Throughout the development of the lifecycle methodology EPA has worked closely with the State of California. While each agency's statutory requirements necessitate some differences (as noted by the commenter) in general, CARB and EPA have developed the same methodological approach to assessing the lifecycle impacts of biofuels. EPA will continue to coordinate with CARB as we implement the RFS2 program and reassess the lifecycle estimates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2234
Organization: Energy & Resources Group University of California
Comment:
The commenter states that the use of the FASOM model for domestic agricultural market and GHG analysis adds a great deal of complication to this modeling effort, but the payoffs appear to be meager. The inconsistencies between FASOM and FAPRI are troubling, and the GHG accounting in FASOM remains poorly documented and in some cases, incorrect. We would therefore prefer to see a single, consistent approach (i.e., FASOM plus emission factors) applied to all regions. [[2234.1 p.2]]

Our Response:

While FASOM is an excellent model, it focuses on agricultural production within the U.S. For international impacts on agriculture, FAPRI was used. Common parameters between the models were aligned to help assure consistent results.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) states that the lifecycle GHG methodology for biodiesel is flawed and should not be used to regulate the biofuels industry. The commenter is concerned with the uncertainty and speculation associated with the analysis of biofuels, including the methodology relating to significant indirect emissions. [[Docket number 2435.1, p. 3]]

The commenter notes that EPA's lifecycle analysis is being peer reviewed and encourages EPA to include experts from the biodiesel industry in the process. Based on the number of lifecycle analysis being completed by different levels of government and by a multitude of countries, the commenter's industry has developed an intimate working knowledge of many lifecycle models and methodologies and believes they could contribute to the development of an appropriate system that can be used in the future. [[Docket number 2435.1, p. 5]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA.

Regarding the comment on EPA's approach to LCA, EPA has clearly described its analytical techniques, the models used and the sources of data. We believe these represent the best tools and information available and there appropriate use for biofuel modeling was confirmed by peer review and other comments. These models (as well as other models evaluated for their projections of land use impact) confirm that indirect land use impacts are significant and cannot be ignored.

To ensure the Agency made its decisions for this final rule on the best science available, EPA conducted a formal, independent peer review of key components of the analysis. The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science.

The commenter's industry can contribute to the development of an appropriate system that can be used in the future in a number of ways in addition to providing comment for this rulemaking including through ongoing EPA stakeholder outreach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2612
Organization: Citizen (*sample of 478 comment letters received from mass comment campaign sponsored by American Soybean Association*)
The commenter (2612) identified 8 "vital flaws and concerns with the RFS2 proposed rule":
1) Indirect Land Use - Flawed and immature assumptions and methodology utilized to measure the indirect land use impacts of U.S. soy biodiesel production.
2) Feedstock Certification – Unnecessary and onerous feedstock certification requirements.
3) Nitrogen – The EPA methodology contains a major error pertaining to the direct emission calculations for nitrogen in soybean production.
4) Co-Products - The EPA did not account for glycerine as a co-product.
5) Biodiesel Energy Balance - EPA inaccurately assesses the energy balance of biodiesel.
6) Biodiesel Pathway - The proposed pathway of using a 52-48 feedstock ratio of biodiesel feedstocks is not workable in practice.

7) GHG Calculations Must Account for Improved Agriculture Yields and Efficiency
8) Petroleum Baseline - EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to only direct emissions for petroleum.

More broadly, the commenter (2612) notes that, "[With] corrected values for nitrogen emissions, co-products, and the energy balance from biodiesel production would result in soy biodiesel GHG emissions that are over 60% better than petroleum, easily exceeding the 50% GHG threshold called for under the RFS2 biomass-based diesel schedule. An appropriate indirect land use analysis would further enhance soy biodiesel's value relative to petroleum diesel." (2612 p.2) Specific comments are listed under the appropriate heading.

Our Response:

(1): EPA continues to believe that compliance with the EISA mandate — determining "the aggregate GHG emissions related to the full fuel lifecycle, including both direct emissions and significant indirect emissions such as land use changes" — makes it necessary to assess those direct and significant indirect impacts that occur not just within the United States, but also those that occur in other countries.

(2) Feedstock certification comments are addressed in Section 3.3 of this Summary and Analysis of Comments. In brief, EPA has determined that an aggregate compliance approach is appropriate for renewable biomass that is defined as planted crops and crop residue from the United States. See the Preamble Section II.B.4.c for further details on feedstock compliance for all feedstocks.

(3): The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O

emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

(4): Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We agree with the comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Therefore, we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

(5): The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

(6): For the final rule analysis soybean biodiesel meets the 50% lifecycle GHG reduction threshold for biomass-based diesel. Therefore, the averaging of different feedstocks is not required and is not part of the final rule.

(7): Our analysis does account for improving yields and efficiencies over time. For example we have soybean yields increasing in our models out to 2022 which is the year we base the analysis on. So our results do account for improving yields. Furthermore, we have performed a high yield sensitivity analysis as part of this rulemaking to test the impact that assumption has on the overall results.

(8): The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of “baseline lifecycle greenhouse gas emissions” in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term ‘baseline lifecycle greenhouse gas emissions’ means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

With all the changes made to the modeling since the proposal, soybean biodiesel qualifies under the biomass based diesel standard with a 57% reduction in GHG emissions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2620
Organization: Citizen (*sample of 7,440 comment letters received from mass comment campaign sponsored by National Biodiesel Board (NBB)*)
Comment:
The commenter (2620) notes that, "The lifecycle greenhouse gas methodology for biodiesel is flawed." (2620 p. 2)

Our Response:

For the FRM, biodiesel results from soy were significantly updated in response to new data and industry comment. Results also included an analysis of uncertainty which was considered in determining compliance with the GHG threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2622
Organization: Citizen (*sample of 18 comment letters received from mass comment campaign sponsored by National Biodiesel Board (NBB)*)
Comment:
The commenter (2622) notes that it is necessary for EPA to "Review iLUC models that could take soybean oil-based biodiesel out of the demand mix." (2622 p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample of 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2625) notes that, "EPA's method of lifecycle analysis, which utilizes various models and incorporates indirect emissions from land use changes, is not widely accepted. As such, and until a reasonable level of scientific consensus is achieved, the methodology should not be used to regulate biodiesel." (2625 p. 2)

Further, the commenter (2625) notes that inaccurate data and assumptions were used in developing the lifecycle analysis including, "Global market drivers for feedstocks, like soybeans are not included." (2625 p. 2)

Our Response:

EPA is making the GHG threshold determination in this final rule based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. As described in more detail in the Preamble, EPA has used the best available models for this purpose, and has incorporated many modifications to its

proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. EPA has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making threshold determinations. For the final rule analysis EPA has determined that soybean biodiesel qualifies under the biomass based diesel threshold. EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA Regarding the specific comment of market drivers, EPA clearly recognizes there are a number of market drivers affecting agricultural decisions and has acknowledged this in the preamble and RIA. We also indicate that we are using historical data for the purpose of establishing a land use trend which assumes the market drivers affecting land use in the past will continue through 2022.

While recognizing the ground breaking nature of using lifecycle analysis in regulation, EPA also notes that it has used the best tools currently available (as supported by peer review and public comment) and the most up to date information. The FRM analyses including the use of uncertainty analysis, allows EPA to make a reasoned assessment of lifecycle GHG impacts of biofuels compared to the petroleum fuels they are replacing, consistent with the mandates of EISA.

The models EPA has used take into account the global demands and interactions for feedstocks. Data used are the best currently available and reflect the inputs and coordination with industry, USDA and other experts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2390
Organization: Governors' Biofuels Coalition
Comment:
The commenter is disappointed by EPA's failure to adequately recognize the impacts of the impressive technology advances that have already been implemented, and will continue to occur, at both the direct and indirect level. The vast majority of U.S. ethanol production now comes from plants built after 2005, and their improvements in energy and water efficiencies are well demonstrated. Both corn and soybean yields will continue to increase because of technological innovations. There is no question that biofuels will get cleaner in the years to come, and

conventional and unconventional oil will get dirtier, but EPA's static modeling does not capture these trend lines in any way. (2390.1, p.2)

Our Response:

EPA recognizes that advancements in technological progress will take place over time. In this respect, EPA disagrees that the modeling analysis conducted for this rulemaking is static. Rather, it takes into account various expectations for increases in technology throughout the renewable fuel manufacturing process, both in the field and in the plants. Accordingly, EPA's analysis of the agriculture sector includes crop yield projections that increase over time which are consistent with USDA's projections. EPA also takes into account current and future projected energy and technology improvements at biofuel production facilities. The lifecycle GHG results for the different biofuels are based on 2022 values which accounts for the agricultural and process technology improvements

7.2.1 Scenario Description

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) noted that EPA's analysis evaluates the incremental impact of renewable fuel facilities built in 2022. The commenter believes that this procedure underestimates GHG emissions from biofuel facilities before 2022 and introduces uncertainty through use of projected factors instead of validated data. It would be better to base the analysis on a near-term date using actual data and to then update as needed if data indicates improvement. (2124.1, p.47)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) notes that to quantify the incremental lifecycle GHG emissions associated with the increase in biofuels mandated by EISA, EPA develops a "Control Case" projection of lifecycle GHG emissions for the biofuel volumes assumed to be produced in 2022 in accordance with EISA. This projection is compared with a 2022 "Reference Case" projection of lifecycle emissions for biofuel volumes assumed to be produced in the absence of EISA. The commenter believes that basing LCA GHG benefits on a single future calendar year (2022) magnifies uncertainty; it would be far better for EPA to base its analysis on a near-term date using actual data and to update as needed if data indicates improvement. [[Docket number 2393.1, p. 49]]

Our Response:

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans. Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) believe that the basic structure of EPA's GHG lifecycle assessment as well as the assessment of ILUC is reasonable and workable. The final rule should clarify that periodic review and assessment of the lifecycle GHG emissions analysis and resulting fuel-specific GHG emissions estimates is mandatory and should occur every three years. EPA must insert a new section in the final rules regulatory text setting forth the review requirements. (2129.1, pp.6-7)

Our Response:

EPA has indicated in the preamble its intention to continue to develop improvements to lifecycle assessment of biofuels and to periodically update its analyses, consistent with EISA. It is inappropriate and unnecessary to include regulatory text directed at EPA future actions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) believes that EPA's regulations should create incentives to encourage reductions in "direct" greenhouse gas emissions beyond the minimum requirements of EISA. The commenter also believes that a voluntary, verifiable program involving appropriate compliance assurance measures for corn ethanol manufacturers whose facilities and processes

outperform industry average levels, or the minimum GHG reduction requirements set by the RFS2 requirements, is the appropriate mechanism to assure the availability of credits. [[Docket number 2383.1, p. 18]] [[See docket number 2383.1, pp. 18-19 for further discussion of this issue.]]

Our Response:

EPA has distinguished performance across various pathways for corn ethanol production, focusing on differences in processing technology and treatment of co-products. We have also adopted a petition process whereby additional technical innovations can be evaluated and recognized in our LCA assessments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) finds that the basic structure for EPA's assessment of the overall LCA as well as the assessment of ILUC is reasonable and workable. The commenter supports the general methodology that EPA has used for modeling the indirect land-use impacts. It is ecologically and legally necessary for EPA to include ILUC in this assessment and the commenter applauds EPA for doing so. (2508, pp.2-3) (See Docket Number 2508, p.3 for more discussion on this issue)

Our Response:

EPA agrees with commenter that it is legally necessary for EPA to include international land use emissions in its assessments.

7.2.2 Scope of the Analysis

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC**,** Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B.,University of Georgia Engineering Outreach Service, et al.

Comment:
The commenters noted that EPA's GHG emissions methodology contains a major error regarding direct emission calculations for nitrogen. The 2006 Guidelines for National

Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. The commenters noted that this error reduces the GHG score for soy biodiesel by more than 20 percent. (1043.1, p.3)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) states that an analysis of international indirect land use change should not be used to regulate the U.S. biofuels industry. The commenter believes that the methodology for assessing indirect emissions from international indirect land use change is not ready to be used for purposes of regulating biofuels. In addition, the method used by EPA to estimate indirect land use is new and untested. There are currently no generally accepted economic or scientific methods for estimating indirect land use change. The commenter further states that utilizing various models and incorporating indirect emissions from land use changes, is not widely accepted for inclusion in a lifecycle analysis, and is not consistent with standards for such

analysis. As such, and until a reasonable level of economic or scientific consensus is achieved, the commenter believes that the methodology should not be used to regulate biodiesel. [[Docket number 2249.2, p.51]]

The commenter also states that if implemented as proposed by EPA, biodiesel produced from domestically produced vegetable oils are disqualified from the Biomass-based Diesel program, based on wholly unrelated land use decisions in South America, which will make it difficult to meet the volume goals established by statute, despite the abundance of biodiesel available. To realize the potential benefits of the RFS2, the commenter believes that it is imperative that the regulation be guided by sound economics and science; together with, a transparent analysis. [[Docket number 2249.2, p.51]] [[See docket number 2249.2, pp. 51-53 and docket number 2232.1, Attachments 4, 5, and 6 for additional discussion of this issue.]]

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. EPA also initiated an independent peer review of specific areas of our work.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

EPA has made the GHG threshold determinations based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since the proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. Based on the Agency's analyses, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline.

7.2.2.1 Legal Interpretation of Lifecycle Greenhouse Gas Emissions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2463.2
Organization: National Farmers Union
Comment:
The commenter (2463) states that the statute, as passed by Congress, does not mandate that EPA consider international land use change as part of its lifecycle analysis. Instead, the statute requires consideration of direct emissions and significant indirect emissions as determined by the Secretary. Given the lack of a Congressional mandate to include the impact of international land use impacts, the question turns on whether indirect land use change impacts can be proven to be a result of ethanol production stemming from the RFS2. NFU believes that EPA has failed to meet this threshold.

Including international land use impacts is within the discretion of the administration. As such, EPA should be required to prove with a high level of certainty that domestic ethanol production is the cause of international indirect land use before it inhibits future domestic ethanol production and undermines Congressional intent in expanding renewable fuel usage in the United States. We do not believe that EPA has done so. (2463.2 Pg. 4).

Our Response:

Overall, EPA is confident that it is appropriate to consider indirect emissions, including those from both domestic and international land use changes, as "related to" the full fuel lifecycle, based on the results of our modeling. These results form a reasonable technical basis for the linkage between the full fuel lifecycle of transportation fuels and indirect emissions, as well as for the determination that these emissions are significant. EPA believes that while uncertainty in the resulting aggregate GHG estimates should be taken into consideration, it would be inappropriate to exclude indirect emissions estimates from this analysis. The use of reasonable estimates of these kinds of indirect emissions allows EPA to conduct a reasoned evaluation of total GHG impacts, which is needed to promote the objectives of this provision, as compared to ignoring or not accounting for these indirect emissions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) states that Congress places limits on what emission should be included in the lifecycle analysis adding that there is no evidence that Congress intended to address international indirect land use changes through the RFS program. Moreover, the limits Congress did place on EPA's authority to assess such emission evidences an intent not to include such attenuated and speculative emissions. The commenter adds that the goal of the RFS was to assist

this country's efforts to move away from its dependence on foreign oil, so it would be nonsensical for Congress not to have anticipated direct emissions from foreign production and transportation of oil would be included in the analysis. [[Docket number 2249.2, pp. 64-66]]

The commenter also believes that Congress required that there be "significant" indirect emissions from "significant" land use changes. The uncertainty and lack of evidence make it speculative that any such changes occur as a result of U.S. biofuel production much less that such changes would rise to the level of significance as to be required to be included in the lifecycle analysis. [[Docket number 2249.2, p. 66]]

Our Response

EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from international land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel. The statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question. EPA has not ignored the term "life cycle." The entire approach used by EPA is directed to fully analyzing emissions related to the complete lifecycle of renewable and baseline fuels.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the intent of this section of the amended Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the aggregate emissions related to the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution." Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

Drawing a distinction between GHG emissions that occur inside the U.S. as compared to emissions that occur outside the U.S. would result in a lifecycle analysis that bears no apparent relationship to the purpose of this provision. The purpose of the thresholds in EISA is to require the use of renewable fuels that achieve reductions in GHG emissions compared to the baseline. Ignoring international emissions, a large part of the GHG emission associated with the different fuels, would result in a GHG analysis that bears no relationship to the real world emissions impact of transportation fuels. The baseline would be significantly understated, given the large amount of imported crude and imported finished gasoline and diesel used in 2005. Likewise, the emissions estimates for imported renewable fuel would be grossly reduced in comparison to the aggregate emissions estimates for fuels made domestically with domestically-grown feedstocks, simply because the impacts of domestically produced fuels occurred within the U.S. EPA does not believe that Congress intended such a result.

Excluding international impacts means large percentages of GHG emissions would be ignored. This would take place in a context where the global warming impact of emissions is

irrespective of where the emissions occur. If the purpose of thresholds is to achieve some reduction in GHG emissions in order to help address climate change, then ignoring emissions outside our borders interferes with the ability to achieve this objective. Such an approach would essentially undermine the purpose of the provision, and would be an arbitrary interpretation of the broadly phrased text used by Congress.

Further, EPA does not agree that including international indirect emissions in EPA's lifecycle analysis exercises regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

Lastly, as to the comment that matters that could appropriately be considered part of a food lifecycle (new land clearing for overseas grain production as a result of decreased U.S. grain exports) should not be considered part of a renewable fuel lifecycle. However, the suggested approach would mean that EPA would fail to account for the significant indirect emissions that relate to renewable fuel production. EPA believes this would be counter to Congressional intent. Although a life cycle analysis of foreign food production may also take into account a given land use change, this does not mean that the same land use change should not be considered in evaluating its ultimate cause, which may be renewable fuel production in the United States.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) believes that EPA's regulations for conventional biofuels from new facilities cannot properly attribute "significant indirect" greenhouse gas lifecycle emissions impacts to compliance with the proposed standards without first developing scientifically credible methods of analyzing such indirect effects. The commenter makes two points. First, it must be recognized that the only indirect emissions impacts that EPA needs to address in the RFS2 rulemaking are those that the statute requires it to address. Second, EPA must recognize that the statute certainly gives it the authority to engage in "bifurcated" rulemaking, meaning, in this context, the publication of a Final Rule addressing all issues other than the indirect emissions assessment for biofuels that are subject to LCA requirements. [[Docket number 2383.1, pp. 19 and 20]] [[See docket number 2383.1, pp. 19-20 for extensive discussion of these points.]]

The commenter states that "Indirect" emissions, as the term is defined by EPA, involve a far more complex analytical framework. While the NPRM at one juncture makes the claim that "indirect land use change linkages are generally close, and not extended or overly complex," that

is not the position of EPA's peer reviewers nor, in fact, of the authors of several of the key predictive econometric models deployed by EPA in the rulemaking process. [[Docket number 2383.1, p. 22]] [[See docket number 2383.1, pp. 22-23 and docket number 2379.1, the declaration of Bruce E. Dale.]]

The commenter believes that least four threshold issues involving indirect effects need to be considered. The first is what type of causal link must exist between (i) compliance with the RFS2 using fuels subject to the 20 percent GHG reduction target, and (ii) land use change domestically or overseas. The second is whether the statute directs or permits EPA to treat international land use change differently from land use change in the United States. The third is whether it is appropriate, or permitted by the statute, to "discount" GHG emissions reductions and increases based on when the GHG reductions or increases occur. The fourth (which is a product mainly of the peer review process and the economic literature) is whether GHG emissions are to be considered and valued based on anything other than their mass and relative global warming potential. [[Docket number 2383.1, pp. 22-23]] [[See docket number 2383.1, pp. 22-34 for a detailed discussion of each of the four issues.]]

Document No.: EPA-HQ-OAR-2005-0161-2372
Organization: Illinois Corn Growers Association, Iowa Corn Growers Association, Minnesota Corn Growers Association, Missouri Corn Growers Association, and Illinois Renewable Fuels Association
Comment:
The commenters requested that EPA bifurcate the rulemaking docket into two separate dockets: keep the existing docket (EPA-HQ-OAR-2005-0161) as Docket A to establish GHG footprints for each category of renewable fuel and petroleum without consideration of ILUC; and open a new Docket B to develop verifiable and consistent international data and a reliable model for ILUC, and establish a timetable for any necessary studies and subsequent rulemaking action.

The commenters stated that, based on the record created, there are no currently available means for accurately determining the nature and quantity of ILUC or its GHG emissions, or for relating ILUC and its emissions to U.S. biofuel production. Bifurcation of the rulemaking creates an avenue by which EPA can revisit the ILUC impacts of biofuels as accurate and consistent data and models become available. The commenters stated that they believe the crux of the ILUC problem (as summarized by the Association of Public and Land-Grant Universities in a letter to Congressmen Peterson and Lucas): "…the scientific data aren't currently available on a global basis to be able to accurately determine the extent to which biofuel production causes land use changes in remote locations or the greenhouse gas emission that might exist."

The commenters suggested that EPA move forward with its rulemaking duty, but should not include assumed, inaccurate ILUC emissions in the GHG emission footprints. The commenters further stated that, given the highly level of error forecasted by EPA, indicated by various comments submitted on the rule, doing something is not better than doing nothing (and it is not a better alternative than creating a separate docket to develop a sound scientific basis for determining ILUC impacts). The commenters thus believe that bifurcation is the best option in this case because it will: 1) allow the RFS2 program to proceed as quickly as possible to achieve EISA's goals; 2) avoid applying an arbitrary penalty to U.S. biofuels; 3) allow the record on

ILUC GHG emissions to continue to be developed on a separate track as data and new models become available; and 4) reduce the likelihood that the RFS2 standards will be appealed, stayed, and vacated.

The commenters stated that they believe the ILUC component of the NPRM will not survive the Clean Air Act's "arbitrary and capricious" standard of review. Additionally, the commenters noted that bifurcation provides an avenue for completing the rulemaking consistent with statutory directives and with the evidence in the record, while also recognizing the need for additional study of the ILUC component on a separate tract, as consistent with the approach adopted in the Peterson Amendment to HR 2454 and the EU's conclusion that additional study of ILUC is necessary. The commenters further stated that bifurcation is consistent with EPA precedent, as EPA has previously bifurcated rulemaking proceedings and/or deferred consideration of elements of a rule when it determines that a portion of the rule is not supported by scientific or other factual information in the record.

The commenters stated that they also believe bifurcation is necessary because the key models used to forecast the emissions, FASOM and FAPRI, are not publicly available and their assumptions and inputs have not been available for public review, and thus cannot be finalized in the existing docket. The commenters also stated that additional currently available information will not remedy the deficiencies in the ILUC data and models—they believe the additional studies commissioned by EPA may improve the data, but will not change the fact that basic information on international land use is not available and the inputs on modeling are not consistent for domestic and international land use.

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above.

The advice and information received through EPA's peer review are reflected throughout the final rule. The reviewers also provided recommendations that have helped to inform the larger methodological decisions presented in the final rule. For example, the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. However, the review also recognized that no existing model comprehensively simulates the direct and indirect effects of biofuel production both domestically and internationally, and therefore model development is still evolving. The uncertainty associated with estimating indirect impacts and the difficulty in developing precise results also were reflected in the comments. The results of the peer review,

and the feedback we have received from the comment process, supported the value of conducting an uncertainty analysis to help quantify the magnitude of this uncertainty and its relative impact on resulting lifecycle emission estimates. Therefore, working closely with other government agencies as well as incorporating feedback from experts who commented on the rule, we have quantified the uncertainty associated specifically with the international indirect land use change emissions associated with increased biofuel production.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

EPA believes the final methodology addresses each of the threshold issues identified by the commenters.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2519
Organization: Canada, Foreign Affairs and International Trade
Comment:
The commenter (2519) believes that given the current state of biofuels trade between Canada and the U.S., the Government of Canada would like to emphasize the need for regulatory alignment on the lifecycle issue given that some of the aspects of the proposed EPA GHG assessment could create a technical trade barrier for future Canadian biofuels exported to the U.S. [[Docket number 2519.1, p. 2]]

Our Response:

The regulations finalized for RFS2 determine GHG threshold compliance on the basis of fuel pathways, irrespective of the country where the feedstock or the fuel was produced.

EPA establishes in the final rulemaking a petition process whereby a party can petition the Agency to consider new pathways for GHG reduction threshold compliance. We welcome parties, both domestic and foreign, to utilize the petition process described below to request EPA

to examine additional pathways. EPA will process these petitions as expeditiously as possible. A full description of the petition process can be located in the Preamble Section V.C.

Regarding regulatory alignment, EPA technical staff has had informal technical exchanges with their counterparts in Canada on lifecycle emissions assessment of transportation fuels and expect to continue those technical exchanges.

7.2.2.2 System Boundaries

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) noted that EPA's analysis does not comply with ISO standards on lifecycle analysis. The commenter also noted that EPA provided no explanation of how its methodology attempts to comport with the ISO Standard. (2329.1, p.31)

EPA's claim that its analysis of international land use changes complies with the ISO standards is wrong, and it is absolutely clear that substantially more work is needed to obtain better data and to understand the numerous factors that affect land use decisions and their interaction. These factors are:
-The analysis fails to use consistent system boundaries in conducting its comparisons between renewable fuels and the baseline petroleum.
-The analysis suffers from a lack of reliable and updated data, and it cannot be validated.
-The analysis is not transparent and cannot be reproduced.
-The analysis fails to provide sufficient explanation of the uncertainties involved in evaluating international indirect land use changes. (2329.1, pp.31-33) [[See Docket Number 2329.1, pp.31-33 for a more detailed discussion of this issue]]

Our Response

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology that appropriately incorporates indirect land use change into renewable fuels lifecycle analyses. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1052
Organization: Pennsylvania Energy Resources Group (ERG)
Comment:
The commenter (1052) believes that EPA's analysis compares estimated, future direct AND INDIRECT GHG emissions for biodiesel to only direct emissions for petroleum is a violation of sound science. Comparative analysis must contain the same comparative criteria, and should not be an "apples to oranges" comparison. Congress recognized this and from our discussions with members, it is clearly the intent to compare alternative fuels with fossil fuels on an even playing field. Such comparison is a specific requirement of the International Standards Organization (ISO) 14040 standard for lifecycle analysis. [[Docket number 1052.1, p. 2]]

Our Response:

The reason the threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to

the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) believe that it is inappropriate for EPA to set the starting point it uses for the period of the analysis of GHG emissions from biofuels in 2022 given that the GHGs are emitted in the present as the feedstock and fuel is produced and combusted. The commenters ask that EPA shift the baseline year for analysis from 2022 to a year that better reflects the average performance of the RFS, such as 2012, with a commitment to update the analysis regularly to

reflect documented changes in technologies and practices as well as better information on trends in land-use and associated emissions. (2129.1, p.6)

The commenters are supportive of including all direct emissions and indirect emissions that are shown to be significant in the baseline for gasoline and diesel fuel. (2129.1, p.6)

Our Response:

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans. Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2168
Organization: First United Ethanol, LLC
Comment:
The commenter (2168) noted that EPA's suggested process of measuring the lifecycle is based on flawed and outdated data that is often politically skewed. The chosen scientific methods must be based on current, accurate information that has undergone unbiased peer review. If a process is without precedent, it most often is not without error. (2168, p.2)

Our Response:

EPA has drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology that appropriately incorporates indirect land use change into renewable fuels lifecycle analyses. Further, EPA conducted a formal peer review of new pieces included in the lifecycle analysis. In accordance with OMB and EPA peer review guidance, EPA used independent, third-party contractors to conduct this external peer review by experts in relevant fields. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) states that Congress did not specify the level of "science" required, but EPA guidance and international standards require that any lifecycle analysis be based on sound scientific principles and at this point, it is undisputed that an analysis of indirect land use changes cannot meet these principles. The commenter refers to Federal government and ISO guidance, as well as other information [[See docket number 2232.1, Attachments 8, 9, 11, and 12]] to support their position. [[docket number 2249.2, p. 54]]

The commenter adds that it is simply insufficient to claim that indirect land use changes should be included in the lifecycle methodology simply because there are some models available. EPA must also provide sufficient support to indicate the models are reasonable to be used in this case. The lack of scientific and economic validity of the models used for purposes on which to base a regulatory rule is undisputed, which renders the entire methodology as wholly unreasonable and unreliable. [[docket number 2249.2, p. 61]]

[[See docket number 2249.2, pp. 54-61 for a comprehensive discussion of this issue. Also see docket number 2232.1, Attachments 8, 9, and 10]]

Our Response:

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA has followed EPA and federal regulatory procedures. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models with outside experts and across the federal government. After EISA's enactment in December 2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments.

EPA also conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the

reviewers as well as contractor summaries of the comments were made publically available in the docket.

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2367
Organization: New Fuels Alliance (NFA)
Comment:
The commenter (2367) believes that EPA's carbon accounting methodologies should adhere to the fundamental principles of a fair and balanced LCA, starting with common LCA System boundaries. [[Docket number 2367.1, p. 2]]

The commenter is concerned that the proposed RFS2 program would debit biofuels for direct and indirect carbon emissions, but would only debit petroleum for direct carbon emissions. The commenter believes this approach would establish an unbalanced carbon accounting metric that would distort the environmental benefits associated with producing and using biofuel. In addition, this approach is clearly to the benefit of petroleum, as the fuel being penalized for fewer general categories of carbon emissions, which runs counter to the overarching policy goals of EISA07 to reduce our dependence on petroleum fuel. [[Docket number 2367.1, p. 4]]

[[See docket number 2367.1, pp. 2-10 for a detailed discussion of this issue.]]

The commenter also believes that EPA should credit biofuels with an indirect "Avoidance Credit" for mitigating petroleum indirect effects [[Docket number 2367.1, p. 27]] [[See docket number 2367.1, pp. 27-29 for discussion of this issue.]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes

would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) urges EPA to be more clear about the indirect emissions that need to be included in a LCA. The statement that the aggregate quantity of GHG emissions includes direct emissions and significant indirect emissions such as significant emissions from land use changes can be very misleading. How does a company determine what is significant? Without clarity, there will be gaming in the system. The commenter recommends a clear list of both direct and indirect sources simply be supplied by EPA. [[Docket number 2425.1, p. 6]]

Our Response:

In the preamble, RIA, and other supporting documentation, EPA has detailed what is included in its LCA assessments including the boundary conditions for the assessment and impacts on land use. We note, however, that individual companies need not calculate their own LCA as EPA does this as part of its GHG threshold compliance assessment. We do not believe our methodology promotes "gaming of the system." However, we also note that the methodology and data inputs will be reviewed and updated as appropriate by EPA with updates reflected in subsequent rulemakings.

7.2.3 Modeling Framework

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2339
Organization: Illinois Com Growers Association (IGCA)
Comment:
The commenter states that EPA has used a single well-known model, GREET, to determine the lifecycle emissions for gasoline and diesel as well as the direct GHG emissions for renewable fuels. In contrast, for indirect emissions from renewable fuels, EPA has pieced together the output of a number of different models which were developed for entirely different purposes. While the GREET Model is up-to-date, the ICGA is concerned that the models used to calculate

indirect emissions may contain out-of-date information on matters such as state-of -the-art ethanol technology and processes, increased crop yields, and other new and evolving agricultural practices. Further, ICGA is concerned that the assumptions, confidence levels, and inputs for the models vary in general. [[#2339 p.3]]

Our Response:

EPA disagrees with the comment that the GREET model inputs are more up to date than the inputs used in our rulemaking analysis. Rather, our analysis takes into account various expectations for increases in technology throughout the renewable fuel manufacturing process, both in the field and in the plants. Accordingly, EPA's analysis of the agriculture sector includes crop yield projections that increase over time which are consistent with USDA's projections. EPA also takes into account current and future projected energy and technology improvements at biofuel production facilities. The lifecycle GHG results for the different biofuels are based on 2022 values which accounts for the agricultural and process technology improvements. Furthermore, EPA does not use the GREET model for the direct impacts of biofuel production, accounting for biofuel lifecycle GHG emissions are done with the use of agricultural sector models.

While the GREET model has been used extensively in the past to determine lifecycle GHG emissions from transportation fuels, it was not sufficient for the lifecycle modeling required for this rulemaking. The EISA mandate specifically required the assessment of indirect impacts of biofuel production, the GREET model does not include indirect impacts and therefore could not be solely used for this rulemaking analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2320.1
Document No.: EPA-HQ-OAR-2005-0161-2415.1
Organization: Informa for Growth Energy
Organization: Informa for Renewable Fuels Association, Illinois Corn Marketing Board and National Corn Growers Association
Comment:
There remained a significant difference in U.S. commodity price impacts of RFS2 despite attempts to harmonize U.S. export volumes of major commodities between FASOM and FAPRI models. The commenter asserts that this differential likely has a significant impact on land use change in other countries (2320.1, p1,11-12)

Informa suggests allowing ethanol yields per bushel to continue to increase instead of being static as assumed in FASOM. (2320.1, p3,13)

EPA crop yields are too low, Informa projects exceeding 200 bushels per acres for corn in 2022 and almost 52 bushels per acres of soybean yields by 2022. (2320.1,p32/33) (2415.1,p14/15)

Our Response:

Although the FASOM and FAPRI models serve a largely similar purpose in the RFS2 analysis, which is to model the economic impacts of the rule on the agriculture sector, they are fundamentally two different models. FASOM is a long-term model that analyzes the U.S. agriculture sector in five year time steps, where as FAPRI analyzes the global agriculture sector in annual time steps, taking world trade, consumption and production interactions into account. The differences in commodity price changes between the two models, as noted by the commenter, are primarily due to the fact that the FAPRI model allows for increased renewable fuel production in other countries, thereby muting price impacts worldwide and in the U.S. While the EPA analysis for the proposed rulemaking has specifically attempted to harmonize as many assumptions between the two models as possible (e.g., corn and soybean yields based on USDA projections), a number of additional assumptions have been coordinated between both models for the final rulemaking analysis. These include modeling the same levels of renewable fuels expected to fulfill the RFS2 requirements by 2022 (e.g., corn ethanol, soy oil biodiesel, corn oil biodiesel, etc.), distillers grains replacement rates of corn and soybean meal in animal feed (based on research by Argonne National Laboratory), and others. With this additional coordination, combined with a number of improvements to the models (e.g., the addition of the forestry sector in the FASOM model, and the addition of the regional Brazil Module in the FAPRI model) EPA believes that its analysis of the global agriculture sector is more consistent, refined, and detailed as a result. For details on the improvements to the FASOM and FAPRI models, as well as the assumptions used in each model, please refer to Chapter 5 of the RIA.

The corn ethanol conversion yields (2.71 gallons/bushel for dry mill ethanol and 2.5 gallons/bushel) used in our agricultural sector modeling represent the average yields for all ethanol mills in production. These yields reflect the lower yields achieved by older existing plants, as well as higher yields expected in future plants. The average ethanol yield used in our modeling is higher than the current industry average, therefore it implicitly reflects anticipated increases in efficiency in the future. As a point of clarification, the ethanol yields cited in the Informa report appear to be for 5% denatured corn ethanol, which must be converted to pure ethanol for an equivalent comparison.

Our crop yield projections are based on USDA's most recent forecasts through 2018, and then extrapolated out through 2022. We believe these projections represent a feasible future scenario. However, we have also included a sensitivity analysis that increases corn and soybean yields by approximately 25% by 2022. The results of this analysis are included in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2320.1
Document No.: EPA-HQ-OAR-2005-0161-2415.1
Organization: Informa for Growth Energy
Organization: Informa for Renewable Fuels Association, Illinois Corn Marketing Board and National Corn Growers Association
Comment:

FASOM used an unrealistically low level of soybean oil as feedstock in its reference case. (2320.1, p2,18,34) (2415.1, p16)

Our Response:

Based on comments we have received, for the final rulemaking, we have revised our reference case to include higher volumes of soybean oil as a biodiesel feedstock. However, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2320.1
Organization: Informa for Growth Energy
Comment:

Informa was unable to run the FAPRI models independently as only staff members at Iowa State University can operate and solve the model. (2320.1, p1)

The time period in estimating key coefficients within equations in FAPRI could not be determined. There appears to be no peer review of the adjustments made to these coefficients outside of CARD. (2320.1, p19)

Informa conducted a "backcast" with the FASOM model and found that historical and current export estimates from FASOM did not match or come close to actual historical exports. The soybean oil and meal exports simulated by FASOM for the 2000-2004 period are more than double the actual levels occurred. This is important because soybean oil is used in biodiesel. (2320.1, p1,9-11)

Our Response:

The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from these models that are used in the analysis; detailed documentation in the form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment. See the related response to Document Number EPA-HQ-OAR-2005-0161-0952 for additional information on this topic.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the Center for Agricultural and Rural Development (CARD) staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

The FAPRI model as used for the NPRM analysis was made available on the docket in a "solved" model state for one of the volume scenarios analyzed. This allows the public to view all of the elements of the model, and includes all formulas, assumptions, and elasticities used. These factors apply to all volume scenarios run through the FAPRI model. EPA will also provide the updated version of the model in a "solved" state on the docket for the final rulemaking analysis. In addition, all data used for the lifecycle analysis is available on the docket. This includes data for all sensitivity analysis (e.g., "high yield" scenarios). Also, a technical report authored by those who "run" the models, CARD staff at Iowa State University, is available on the docket, and provides details on assumptions used, how the model functions, and results from the model.

EPA disagrees that the FAPRI model is not reviewed outside of staff at CARD at Iowa State University. In regards to a review of the FAPRI model, FAPRI (which consists of both the Center for National Food and Agriculture Policy at the University of Missouri-Columbia, and CARD at Iowa State University) conducts an annual baseline review and publishes their baseline projections for the U.S. agricultural sector and international commodity markets. These published baseline projections are known as FAPRI Outlooks. These baseline projections are extensively reviewed by several groups prior to publication, including USDA, various international organizations, other academic institutions, and other industry experts. Comments and recommendations from these groups are taken into account for the final baseline projection published in the FAPRI Outlook each year. EPA's analysis of the global agriculture sector is based on the latest FAPRI baseline available, taking into account assumptions used in the EPA analysis, as well as the adding to the model's capabilities where appropriate, such as the addition

of the regional Brazil Module. All adjustments made to the FAPRI model for EPA's analysis is thoroughly documented in the RIA and items in the docket mentioned above. Additional information on the review of the FAPRI model, baseline projection review, and publications of the FAPRI Outlook can be found on FAPRI's website.

It should also be noted that the results of these models will not exactly reflect historical observations when "backcasting" is conducted. To analyze each renewable fuel feedstock, EPA analyzes the effect of an increase in demand for each particular renewable fuel, holding all other factors constant. Through this method, all changes that occur in the model are attributable to this change in demand. However, this evaluation will not reflect historical data patterns, as there are several varying factors occurring simultaneously in history.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2320.1
Document No.: EPA-HQ-OAR-2005-0161-2415.1
Organization: Informa for Growth Energy
Organization: Informa for Renewable Fuels Association, Illinois Corn Marketing Board and National Corn Growers Association
Comment:

Both FASOM and FAPRI use oversimplified assumptions regarding the amounts of corn and soybean meal displaced by DGs. Informa considers the update of Dr. Jerry Shurson in March of 2009 of the Argonne report to be the best available for determining corn and soybean meal displacement, which calls for 0.895 and 0.334 for corn and soybean meal displacement ratios, respectively. (2415.1,p10 Appendix H) The FASOM and FAPRI models should assume that one pound of distillers grains displaces 1.23 lbs of corn and soybean meal combined. (2320.1, p2)

The FASOM model understates distillers grains production. There appears to be a discrepancy in the model to cause a shortfall in number of tons produced. Also, FASOM's distillers grain yield is lower than that used by USDA. (2320.1, p15)

Our Response:

For the final rulemaking analysis, distillers grains replacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both the FASOM and FAPRI models. These replacement rates are higher and more efficient than those used in the proposal's analysis. It should be noted that replacement rates vary by animal in the Argonne report, and have been implemented as such in EPA's analysis. This method provides a more accurate analysis than the replacement rates for corn and soybean meal suggested by the commenter, which are weighted averages across different animal types. Details on these assumptions can be found in the RIA and the technical reports for each respective model. EPA believes that this is an important part of the agriculture sector analysis, and will continue to monitor the scientific progress made on this topic. As updated scientific data becomes available in, EPA will update its assumptions accordingly in future analyses.

Between the analysis for the proposal and the final rulemaking, we also recognized the discrepancy in the amount of distillers grains produced. We have updated the FASOM model to reflect the appropriate amount of distiller grains production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2320.1
Document No.: EPA-HQ-OAR-2005-0161-2415.1
Organization: Informa for Growth Energy
Organization: Informa for Renewable Fuels Association, Illinois Corn Marketing Board and National Corn Growers Association
Comment:

Informa believes that corn-based ethanol production will reach 17 billion gallons in a reference case by 2022 due to continued corn yield improvements and global economic growth will support high energy prices so that corn-based ethanol volumes are over the RFS2 level to be produced. (2415.1,p7 Appendix H)

Informa suggests using AEO 2008 early release version rather than AEO2007 as the basis for reference case volumes. Land use change is likely overstated during the 2012 and 2017 periods due to differences between the two AEO cases. (2320.1, p3,13)

Our Response:

Even if corn ethanol volumes in the reference case would have been higher using either the AEO 2008 early release volumes or Informa's projections, we disagree that our analysis overstates land use change impacts. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2463.2
Organization: National Farmers Union
Comment:
The commenter (2463) states that there is little certainty that international land use changes will occur, and if so, that they are the result of U.S. corn ethanol production. The significant lack of transparency and inability of stakeholders to replicate EPA's results severely undermines the confidence in the proposed rule's findings. (2463.2 Pg. 4).

Document No.: EPA-HQ-OAR-2005-0161-0952

Organization: Renewable Fuels Association

Comment:

The commenter (0952.1) noted that even though EPA indicated it is being transparent with respect to its lifecycle analysis, the information that has been provided is wholly insufficient. Based on the information currently provided in the Notice of Proposed Rulemaking, Regulatory Impact Analysis, and supporting and related materials posted to docket EPA-HQ-OAR-2005-0161 as of May 29, 2009, third parties are unable to replicate the results of EPA's biofuels lifecycle modeling for proposed changes to the RFS program. While certain inputs, outputs, and documentation for independent models are made available on the docket, stakeholders are unable to assemble these disparate components in a way that would reasonably allow replication of the EPA modeling process. (0952.1, p.2)

The commenter noted that it is important that stakeholders have the ability to replicate EPA's results for several reasons: 1.) To allow stakeholders to understand the structure of the modeling framework and the impact of certain parameters on the modeling outcomes; 2.) To validate the accuracy and precision of EPA's analysis; 3.) To allow stakeholders to perform independent analyses using alternative assumptions and inputs. (0952.1, p.2)

The commenter believes that the inaccessibility of these models and the lack of clear, detailed documentation on how the various models and data sets were integrated appears to violate EPA's guidance regarding transparency. (0952.1, p.2)

The commenter requested the following items:

1. EPA should provide public access to the FAPRI system of models as configured for the RFS analysis. This should include all assumptions, inputs, price and demand elasticities used, outputs for all scenarios and sensitivity cases, and other pertinent information.
2. EPA should provide public access to the FASOM model as configured for the RFS analysis. This should include all assumptions, inputs, price and demand elasticities used, outputs for all scenarios and sensitivity cases, and other pertinent information.
3. EPA should provide the version of the GREET model it used for the RFS analysis along with all assumptions and inputs that differ from GREET defaults. Further, the ASPEN-based model used by EPA should be made available with documentation describing how the model was used to generate 2022-era performance assessments.
4. EPA should provide detailed documentation describing exactly how all of the various models used (FAPRI, FASOM, GREET, ASPEN, etc.) were integrated and what adjustments were made to each to enable amalgamation. For example, there is no documentation available on how the emissions data provided by Winrock Corp. Was applied to the FAPRI model results. A thorough description of how all of the inputs and outputs from each model were reconciled and harmonized is absolutely essential. (0952.1, pp.2-3)

On August 4, the commenter submitted comments expressing their concerns that there is still insufficient information for the public to adequately comment on the proposal and, therefore, meaningfully participate in the rulemaking process. Of particular concern, and the focus of this letter, is the inability of the public to replicate EPA's analysis with respect to international ILUC. (1042.1, p.1)

One of the specific concerns outlined in the commenter's June comments was that the Food and Agriculture Policy Research Institute (FAPRI) system of models as configured and used by EPA was not available for public use. Therefore, stakeholders were unable to replicate EPA's work. The commenter had requested that the FAPRI model itself and all associated materials be made available so that stakeholders could "run" the model to replicate EPA's results and to conduct sensitivity analyses. Several dozen spreadsheets and documents containing model inputs and results were posted to the docket during the first week of June 2009. The information provided by EPA does not allow the public to replicate EPA's findings. According to the docket, the FAPRI model is contained on a CD with the ID # of EPA-HQ-OAR-2005-0161-967. Upon receipt, the CD was found to contain 10 Microsoft EXCEL files, but no other documentation. Upon opening each file, the EXCEL program immediately generated an error message stating that additional information was needed from other workbooks. Examination of these missing links determined that none of the listed files and spreadsheets was included on the CD. Indeed, some of these files were even referenced by inaccessible web addresses. Since these auxiliary files are missing, EXCEL only allows the user to "Edit", "Update", or "Ignore" these links. In this situation, the "Edit" and "Update" options are invalid, since the required files are simply not available. Selecting the "Ignore" option leaves each spreadsheet in a quasi-finished state, with many incomplete cells and equations, broken executables (macros), etc. Consequently, the FAPRI system, as delivered on the CD, is inoperable and insufficient to explain how EPA reached its results. (1042.1, p.2-3)

The commenter also commented on a subsequent document posted to the docket (EPA-HQ-OAR-2005-0161-1020) entitled "Solving the Food and Agriculture Policy Research Institute Model", which provided a broad overview of the FAPRI modeling system. Unfortunately, the document does not give any information regarding how to set up or run the spreadsheets, what data needs to be shared between them, or how to determine when the system has reached "equilibrium." As a result, the FAPRI system is still inoperable by stakeholders. In investigating the issue further and discussing the model's configuration with professors at Iowa State University, the commenter learned that due to the structural nature of the FAPRI model, no one outside of the FAPRI/CARD system can actually "run" the model in the way that it was run for EPA's analysis. Thus, it appears the only way to conduct independent FAPRI model runs and sensitivity analysis is to establish a contract with FAPRI/CARD. This is a great concern to the commenter. (1042.1, p.3)

The commenter noted that because the model is inaccessible to run by anyone other than current FAPRI/CARD staff in the same manner that it was run for EPA, the FAPRI model results cannot be verified and, moreover, lack corroboration and validity. While the commenter is not questioning the integrity or acumen of the FAPRI modelers who conducted the EPA analysis, the results do not have the same level of validity that they would if someone outside of the CARD/FAPRI system were able to replicate the results. The inability to replicate EPA's FAPRI model results greatly weakens the capacity of stakeholders to provide meaningful comment. Further, the inability of stakeholders to conduct sensitivity runs is particularly problematic because EPA did not conduct any sensitivity analyses of its own on the effects of various inputs on land use emissions with the FAPRI model. In addition to providing sufficient information to allow the public to replicate EPA's analysis, EPA also must "apply especially rigorous

robustness checks to analytical results and carefully document all checks that were undertaken." The commenter requests that robust sensitivity analysis of the impacts of various input variables on land use emissions be conducted. The commenter also requests that EPA provide the results of these sensitivity runs to the public for their review and comment, as well as any changes to its analysis and results that EPA anticipates for the final rule. At a minimum, the commenter believes sensitivity runs should be conducted and provided to the public on the following major factors:
- Projected domestic and international crop yields
- Distillers grains (DG) displacement ratios and ingredients displaced
- Conservation Reserve Program (CRP) and cropland pasture land inventories
- Pasture stocking rates in Brazil (1042.1, pp.3-4)

[[A more thorough description of these factors and others, as well as the desired EPA sensitivity analysis is can be found on pp. 6-7 of Docket Number 1042.1.]]

The commenter also believes that the FASOM and FAPRI models being used by EPA to assess indirect land use changes were not intended for the purposes in which they are being used by EPA. These are economic models that attempt to assess the impacts of changes in policy and economic parameters on prices and agricultural commodities, and were not intended to forecast absolute levels of exports. (2329.1, p.27). [[See Docket Number 2329.1, pp.27-29 for a detailed discussion of this issue]]

The commenter noted that even though they support the California Air Resources Board's (CARB) analysis of emissions from indirect land use change, CARB's disparate results compared to EPA show the high uncertainty in using economic models. The widely disparate results coming from EPA, CARB, and others is further evidence that the results are highly sensitive to a number of exceedingly uncertain input parameters and assumptions. (2329.1, pp.33-34)

The commenter also noted that comparing the results to the real world shows that the economic models are not reasonable to assess emissions attributable to ethanol. The commenter noted that agricultural markets in the real world frequently contradict economic theory and highlight the need to exercise caution when interpreting the results of economic models. (2329.1, pp.34-35)

Our Response:

The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from these models that are used in the analysis; detailed documentation in the form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) is consistent with Agency and OMB

guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the CARD staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

In regards to the items specifically requested by the commenter:

1. The FAPRI model as used for the NPRM analysis was made available on the docket in a "solved" model state for one of the volume scenarios analyzed. This allows the public to view all of the elements of the model, and includes all formulas, assumptions, and elasticities used. These factors apply to all volume scenarios run through the FAPRI model. EPA will also provide the updated version of the model in a "solved" state on the docket for the final rulemaking analysis. In addition, all data used for the lifecycle analysis is available on the docket. This includes data for all sensitivity analysis (e.g., "high yield" scenarios). Also, a technical report authored by those who "run" the models, CARD staff at Iowa State University, is available on the docket, and provides details on assumptions used, how the model functions, and results from the model.
2. The FASOM model, as used for the NPRM analysis, was made available on the docket in the form of a CD. The updated version of the model used for the final rulemaking analysis will also be available on the docket, as well as the data from the model used for the analysis, and a technical report that provides details on assumptions used, how the model functions, and results from the model.
3. The GREET model used in the analysis was provided in the Docket, the RIA documents any changes made to the assumptions in GREET. The spreadsheets used in our analysis are available in the Docket as well and they provide, along with documentation in the RIA, all the assumptions used regarding process energy use.

4. Details regarding the assumptions made for each model, as well as how the models were used together to complete the lifecycle analysis is discussed in the RIA. In addition, the docket contains detailed technical reports for the FASOM and FAPRI models which document how the models work, as well as a discussion of the assumptions used and results from the RFS2 analysis.

One of the technical difficulties associated with replication of the FAPRI model is that it is a complex set of models that does not rely on an automated process. Rather, it requires experts at CARD to run the complete set of FAPRI models. Documentation on the general structure and operation of the FAPRI models is available on the docket. This documentation is not intended to be a set of instructions. Rather, it is intended to reveal how the models actually operate in an effort to be as transparent as possible

Although the FAPRI model cannot be operated by any third parties, EPA has provided all data from FAPRI runs used in the lifecycle analysis, as well as those for sensitivity analyses, on the docket. In addition, EPA quantified in the uncertainty in our evaluation of GHG emissions impacts from biofuel-induced land use changes. These uncertainty ranges, and the procedures used to calculate them, are presented and discussed in preamble Section V and in additional detail in RIA Chapter 2.

Regarding alternative scenarios, the analysis for the final rulemaking includes a sensitivity run with higher domestic and international yields for corn and soybean. These results will be available on the docket. In regards to the other requests for sensitivity runs, a number of other updates have been made to the FASOM and FAPRI models that affect these factors. Namely, distillers grains replacement rates for corn and soybean meal in animal feed are updated to reflect the latest research by Argonne National Laboratory in both the FASOM and FAPRI models, and the FAPRI Brazil module includes livestock production and pasture acres on a regional basis within Brazil. Each region allows for livestock intensification on pasture land in response to competition for other land uses, demand for livestock production, and other factors. Additional detail on these updates can be found in the RIA and the technical reports for each respective model.

Throughout the rulemaking process, EPA consulted with numerous experts and stakeholders in industry, academia, and government in regards to all aspects of the analysis. Based on feedback received through this consultation process, but also through the publicly available peer review of EPA's lifecycle methodology, EPA has received support for the use of economic agricultural models (FASOM and FAPRI) to estimate changes in cropland worldwide based on changes in demand for renewable fuel. EPA also received feedback on the use of general equilibrium models, such as GTAP, to estimate land use change. However, partial equilibrium economic models used for the lifecycle analysis (FASOM and FAPRI) provide more refined detail than a general equilibrium model is able to. In order to further explore how these two types of models compare with one another, using similar assumptions, EPA has provided a complementary analysis of the RFS2 using the GTAP model. Details on the use of the GTAP model, and how it compares to the FAPRI models used in the lifecycle analysis, can be found in the RIA.

It should be noted that the results of these models will not exactly reflect historical observations. To analyze each renewable fuel feedstock, EPA analyzes the effect of an increase in demand for each particular renewable fuel, holding all other factors constant. Through this method, all changes that occur in the model are attributable to this change in demand. However, this evaluation will not reflect historical data patterns, as there are several varying factors occurring simultaneously in history.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0953
Organization: Great River Energy
Comment:
The commenter (0953.1) believes that user- friendly models and metrics are needed for industry participants to understand how a wide variety of technologies will be evaluated under Net Lifecycle Greenhouse Gas Emissions. (P.1)

Our Response:

The models chosen to evaluate the lifecycle GHG emissions for a particular renewable fuel feedstock are among the most recommended models that can be used for their particular purpose. How each model was used, and how each model interacted with another, is thoroughly documented through the RIA and a series of technical reports provided on the docket, written by the creators/implementers of the models. The data used for analysis is also provided, and when possible, the models themselves have been made available to the public to evaluate how the models applied.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter ((0981) states that the LCA in the RFS2 is excessively complicated, and particularly as the basis for regulation. It employs such a large number of excessively complex models that regulated entities and researchers will have limited abilities to evaluate the accuracy of the estimations. The commenter adds that the RFS2 LCA methodology must approach complete transparency of methods, data, and references used. Achieving adequate transparency of assumptions and data employed in LCAs for regulation of biofuels is best achieved using only one or a few models, but comprehensive evaluation in the LCA of indirect effects requires multiple complicated models. The commenter asks if transparency and comprehensive evaluation are mutually exclusive, and if so, suggests it may be justified to concentrate the first round of RFS2 LCA methodology on direct emission only. (Pp. 5-7)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter recommends that all values and corresponding units for primary data inputs used in the proposed LCA framework be provided and clearly linked to the supporting documentation. Preference should be given to documentation taken from peer-reviewed publications or other widely accessible databases. If acceptable transparency can not be reached, the EPA should consider forgoing analysis of secondary indirect effects, while focusing on direct emission in the interim. (P. 7)

Our Response:

The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from the models that are used in the analysis; detailed documentation in the form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) and Final rule is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the CARD staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

Specifically, the FAPRI model as used for the NPRM analysis was made available on the docket in a "solved" model state for one of the volume scenarios analyzed. This allows the public to view all of the elements of the model, and includes all formulas, assumptions, and elasticities used. These factors apply to all volume scenarios run through the FAPRI model. EPA will also provide the updated version of the model in a "solved" state on the docket for the final rulemaking analysis. In addition, all data used for the lifecycle analysis is available on the docket. This includes data for all sensitivity analysis (e.g., "high yield" scenarios). Also, a technical report authored by those who "run" the models, CARD staff at Iowa State University, is available on the docket, and provides details on assumptions used, how the model functions, and results from the model.

The FAPRI model is a complex set of models that does not rely on an automated process. Rather, it requires experts at CARD to run the complete set of FAPRI models. Documentation on the general structure and operation of the FAPRI models is available on the docket. This documentation is not intended to be a step-by-step set of instructions. Rather, it is intended to reveal how the models actually operate in an effort to be as transparent as possible.

The FASOM model, as used for the NPRM analysis, was made available on the docket in the form of a CD. The updated version of the model used for the final rulemaking analysis will also be available on the docket, as well as the data from the model used for the analysis, and a technical report that provides details on assumptions used, how the model functions, and results from the model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter also recommends that default parameter values and emission factors for each individual fuel type in the GREET model undergo rigorous external peer review managed by the EPA, and a summary list of all internal parameters and supporting citations be included with GREET for each fuel type. The commenter points to the EBAMM and BESS [Biofuel Energy Systems Simulator] LCA emissions models and their associated documentation of primary data as examples of appropriate transparency and disclosure. (P. 9)

Our Response:

EPA conducted an external peer review of the lifecycle analysis used in the RFS2 proposed rule. This peer review included consideration of the use of GREET emission factors for fertilizer production, petroleum fuel use, electricity production, and fuel and feedstock transport. The peer reviewers concluded that the GREET factors were adequate for our analyses. In addition, the GREET parameters used for our lifecycle analyses are all available in Chapter 2 of the RIA of this final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, EPA-HQ-OAR-2005-0161-2079, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, AE Biofuels, Inc., et al.
Comment:
The commenters noted that much of the data and assumptions contained within the nine models used by EPA are inaccurate. Examples of errors include:
-Energy balance data used by EPA is out of date.
-Co-product allocations for glycerin were not incorporated.
-Global market drivers for feedstocks, like soybeans are not included.

Document No.: EPA-HQ-OAR-2005-0161-1051, EPA-HQ-OAR-2005-0161-2435, et al.
Organization: Aberdeen Development Corp., R.W. Heiden Associates LLC, et al.
Comment:
The commenters believe EPA's methodology is not ready to be used for purposes of regulating biofuels. They stated that EPA's method of lifecycle analysis, which utilizes various models and incorporates indirect emissions from land use changes, is not widely accepted and is not

consistent with standards for such analysis. As such, and until a reasonable level of scientific consensus is achieved, the methodology should not be used to regulate biodiesel. [[Docket number 2435.1, p. 3]]

The commenters also believe much of the data and assumptions contained within the nine models used by EPA are inaccurate. Examples include: Energy balance data used by EPA is out of date, co-product allocations for glycerine were not incorporated, Global market drivers for feedstocks, like soybeans are not included. [[Docket number 2435.1, p. 4]]

Our Response:

To the maximum extent possible, we have continued to review and update the data and assumptions underlying our modeling tools. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports including the University of Idaho Study. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis. In addition, we have revised our analysis to assume that glycerin will displace residual oil as an energy source for this final rulemaking. We disagree, however, that global market drivers for feedstocks are not included in our models. For example, our partial equilibrium agricultural sector models FASOM and FAPRI both take into account that approximately 80% of the soybean is meal, whereas approximately 20% of the soybean is oil. Profit maximization that takes into account both streams of ree is included in the projected planting decisions of farmers. In addition, both agricultural sector models take into account changes in macroeconomic conditions over time, such as increases in income and population that also affect world markets for feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1015, EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2013, et al.
Organization: Renewable Energy Group, SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC, et al.
Comment:
The commenters stated that the renewable fuels industry is experiencing economic challenges that necessitate creativity and innovation to ensure marketplace viability. However, credit market uncertainty is exacerbated due to the EPA's use of LCA that does not conform to ISO LCA standards and EPA guidelines for LCA use. EPA's Information Quality Guidelines define environmental model use.

Regarding LCA on biofuels, the commenter believes that EPA has not provided complete, transparent, and relevant information to the extent practicable for comprehensive review.

ISO LCA principles and framework are long standing and well tested. Again, EPA has allowed the data quality requirements to be dated and the use of partial equilibrium models that were not specifically designed for the outcome intended by Congress. The commenters pointed to other weaknesses, as noted by peer reviewer Dr. Wang.

EPA states in the preamble that it has utilized the best science available in reference to analyzing renewable fuels GHG threshold compliance, but the response to the draft rules demonstrates the inadequacy of the best science available. The commenters believe that additional analysis must proceed before regulatory measures are finalized, otherwise, the commenter asks will we instead replace imported foreign oil with imported foreign renewable fuel? Is this outcome the intent of policy makers? The commenters believe EPA should implement interim rules and proceed with the mandated gallons on 1/1/10, but not attribute GHG thresholds until further scientific analysis can be completed.

Our Response:

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA has followed EPA and federal regulatory procedures. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models with outside experts and across the federal government. After EISA's enactment in December 2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments.

EPA conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

With regard to domestically and foreign-produced fuel, the regulations finalized for RFS2 determine GHG threshold compliance on the basis of fuel pathways, irrespective of the country where the feedstock or the fuel was produced.

Lastly, with regard to Dr. Wang's comments summarized in the comment letter: For the LCA analysis done for this rulemaking EPA has built into the models used activities and technologies for the pathways considered. As part of the threshold analysis needed for this rulemaking we do not need to identify individual plant or location specific profiles but rather average values for specific fuel and feedstock pathways. As new technologies become available

we have a number of ways of incorporating those into our analysis going forward. EPA provides a petition process in the FRM through which fuel pathways not included in the FRM can be analyzed and provided a compliance determination by EPA. Furthermore, EPA is committed to periodic updates that will take into account in the modeling new activities and technologies.

EPA's approach of using agriculture economic models like FASOM and FAPRI to model biofuel production are specifically designed to simulate the use of different agricultural sector products and co-products. The models consider the markets and value of the different products and the interactions in these markets with the production and use of different products and co-products. So for biodiesel production, the markets for soybean meal and soybean oil are specifically captured and the changes in these markets with more or less soybean meal produced and more or less soybean oil used for biodiesel are captured.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1669
Organization: Environmental Intelligence, Inc.
Comment:
The commenter (1669.1) noted that some research has stated that the GREET model, upon which some federal policy analysis is based, overstates the energy required to produce soybeans and other crops. RFS2 should be delayed to allow completion of a multi-year study (with a statistically significant study population) of the energy inputs to row crop production. Some other research has stated that the GREET model also overstates energy requirements for ethanol processing. (1669.1, p.1)

Our Response:

EPA disagrees with this comment, as described in the proposal and final rule, we do not rely on GREET factors and inputs for energy required for row crop production or for energy used at ethanol facilities. The values we do use in the FASOM model on row crop production are based on USDA and State data on production and it varies by management practice and region. For foreign production our input data was based on FAO and IEA data and were peer reviewed as part of this rulemaking process.

Ethanol energy use was based on a study by the University of Illinois at Chicago Energy Resource Center and assumes efficiency improvements over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1722
Organization: Citizen
Comment:
The commenter (1722) noted that EPA repeatedly noted that “the best science available” is used, yet the models used do not meet the standards that EPA uses for findings, such as the science

cited in EPA's recent determination regarding the six greenhouse gases that cause or contribute to endangerment of health and welfare. (1722, p.3)

Our Response:

The lifecycle methodology developed by EPA, and explained in detail in this final rule, is based on the best available scientific techniques. It also relies on a body of scientific literature on this topic as well as an independent scientific peer review of EPA's methodology. The peer review, the public comments we have received, and the analysis conducted for the proposal and final rule indicate that it is important to take into account indirect emissions. Through this evaluation, EPA also has determined that biofuels production leads to both negative and positive indirect land use changes. We also recognize the uncertainties inherent in this estimation and therefore have taken an approach that quantifies the uncertainty and presents the weight of currently available evidence in making our threshold determination.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2002
Organization: Novozymes North America, Inc. (Novozymes)
Comment:
The commenter (2002) has serious concerns with the "pasture replacement method", which the EPA has developed as an add-on to the modeling of international land use change in the FAPRl Model. The commenter makes the following recommendations:
1. The agency should give further consideration to the mechanisms that lead to conversion of grassland/savanna to pasture land and incorporate that in the modeling for the final rule.
2. EPA may consider using the GTAP Model to quantify the level of livestock intensification and encourages EPA to align pasture replacement and livestock intensification with the changes in livestock production predicted by the FAPRI Model in order to ensure consistency.
3. EPA should reconsider not just the amount of land being affected by pasture replacement but also the types of land (the biomes) being affected. [[Docket number 2002.1, pp. 2-3]]

Our Response:

1. For the final rule we made several improvements in our analysis of land converted to pasture.

As explained in preamble Section V, one of the major changes made to the FAPRI model between the NPRM and FRM includes the more detailed representation of Brazil through a new integrated module. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

In addition to modifying how pasture acres are treated in Brazil, we also improved the methodology for calculating pasture acreage changes in other countries. We received several comments through the public comment period and peer reviewers supporting a better analysis of the interaction between crops, pasture, and livestock. In the NPRM, although we accounted for GHG emissions from livestock production (e.g., manure management), we did not explicitly account for GHG emissions from changes in pasture demand. In response to comments received, our new methodology accounts for changes in pasture area resulting from livestock fluctuations and therefore captures the link between livestock and land used for grazing. Based on regional pasture stocking rates (livestock per acre), we now calculate the amount of land used for livestock grazing. The regional stocking rates were determined with data on livestock populations from the UN Food and Agricultural Organization (FAO) and data on pasture area measured with agricultural inventory and satellite-derived land cover data. As a result of this change, in countries where livestock numbers decrease, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes, especially in regions where livestock populations are changing significantly. For additional information on the pasture replacement methodology, see RIA Chapter 2.

2. For the reasons discussed in preamble Section V, we considered the use of the GTAP model, but based on the input we received from commenters and expert reviewers, we did not rely on GTAP in our analysis for this rulemaking. Instead, we opted to use the GTAP model to inform the range of potential GHG emissions associated with land use change resulting from an increase in biofuels. As the commenter states, GTAP does attempt to explicitly model pasture area and the potential for pasture intensification and extensification.

As described in more detail in RIA Chapter 2, the quantity of total acres converted to crop land projected by GTAP were generally consistent with the FAPRI results when normalized on a per BTU basis, although there were differences in the regional distribution of these changes. The land use changes projected by GTAP were smaller than land use changes predicted by FAPRI, which is most likely due to two differences in the modeling frameworks. First, demand for other uses of land are explicitly captured in GTAP, which puts downward pressure on the amount of land that can be converted to crops from pasture or forest. Second, none of the peer-reviewed versions of GTAP currently contain unmanaged cropland, thereby omitting additional sources of land. The GTAP model also predicted larger increases in forest conversion than the FAPRI/Winrock analysis, in part because the GTAP model includes only three types of land (i.e., crops, pasture, forest). As discussed in the FAPRI/Winrock section, there are many other categories of land which may be converted to pasture and crop land.

As the GTAP model results are sensitive to the key parameter values, it was also useful for developing a set of confidence intervals around the projected land use changes using a systematic sensitivity analysis. Several key parameters were identified that have a significant impact on the land use change projections, including the yield elasticity (i.e., the change in yield that results from a change in that commodity's price), the elasticity of transformation of land supply (i.e., the measure of how easily land can be converted between forest, pasture, and crop

land), and the elasticity of transformation of crop land (i.e., the measure of how easily land can be converted between crops). Although the confidence intervals are relatively large, in most cases the ranges do not bracket zero. Therefore, we conclude that the impacts of the corn ethanol and soybean biodiesel mandates on land use change are statistically significant. Additional information on the GTAP results is discussed in RIA Chapter 2.

3. Among the most important revisions to our international analysis, in terms of their net effect on GHG emissions, were improvements that we made in our modeling of the interactions between livestock, pasture, crops and unused, or underutilized, grasslands globally. In the NPRM we made the broad assumption that international crop expansion would necessarily displace pasture, which would require an equivalent amount of pasture to expand into forests and shrublands. In the FRM analysis as discussed above, we have linked international changes in livestock production with changes in pasture area to allow for pasture abandonment in regions where livestock production decreases as a result of biofuel production. We also incorporated the ability of pasture to expand onto unused, or underutilized, grasslands and savannas which on a global basis reduced the amount of forest conversion compared to the proposal. For more details on our revised analysis of the types of land affected by pasture conversion, see RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.10 believes that the latest data must be use in models used. The data in Table VI.B5-1 of the proposal preamble for the Winrock Model are outdated being from 2001 to 2004 and do not reflect the latest trend. The percentage of land converted from forest in Malaysia (74%) appears to be misleading and may include replanting of old oil palm trees. (2016.1, p.2)

Our Response:

EPA strongly agrees with the commenter that the latest data and models should be used for lifecycle GHG analysis. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. In order to maximize stakeholder outreach opportunities, the comment period for the proposed rule was extended to 120 days. In addition to this formal comment period, EPA made multiple efforts to solicit public and expert feedback on our approach. Beginning early in the NPRM process and continuing throughout the development of this final rule, EPA held hundreds of meetings with stakeholders, including government, academia, industry, and non-profit organizations, to gather expert technical input. Our work was also informed heavily by consultation with other federal agencies. For example, we have relied on the expert advice of USDA and DOE, as well as incorporating the most recent inputs and models provided by these Agencies. Dialogue with the State of California and the European Union on their parallel, on-going efforts in GHG lifecycle analysis also helped inform EPA's methodology. As described below, formal technical exchanges and an independent, formal peer review of the methodology were also significant

components of the Agency's outreach. A key result of our outreach effort has been awareness of new studies and data that have been incorporated into our final rule analysis.

EPA also agrees with the commenters' recommendation that the most recent satellite imagery should be incorporated. All of the expert peer reviewers agreed that the version 4 MODIS data set used in the proposed rule, which covers 2001-2004 with one square-kilometer (1km) spatial resolution, was appropriate for our analysis given the goals of the study at the time. However, almost all of the reviewers strongly recommended using a data set covering a longer time period. The reviewers argued that the 3-year time period from 2001-2004 was too short to capture the often gradual, or sequential, cropland expansion that has been observed in the tropics. The short time period may also show unusual or temporary trends in land use caused by short-term policy changes or market influences. The reviewers suggested that remote sensing observations covering 5-10 years would be adequate to address these problems. The reviewers also recommended that remote sensing observations should be as recent as possible in order to capture current land use change drivers and patterns (e.g., political systems, infrastructure, and protected areas). To use the best available data and respond to the peer reviewers' recommendations, the analysis was updated to include the most recent MODIS data set, version 5, which covers the time period 2001-2007. MODIS land cover products are not available for years prior to 2001, so it is not currently possible to analyze a time period longer than six years (i.e., 2001-2007) with a single, or consistent, data set. Thus, consistent with the peer review recommendations, we are now using the most recent global data set which covers at least 5 years.

There are other advantages to using the version 5 MODIS data, such as improved spatial resolution, and robust data validation. MODIS V5 provides 4-times better spatial resolution than the data used in our proposed rule analysis. Based on this improved data set, and our validation results, which are discussed further in the Section V of the preamble and Chapter 2.4.4 of the RIA, our updated estimate of the percentage of new cropland from forest in Malaysia is 52%, with 27% coming from mixed land (which is a mosaic of savanna, grassland, forest and cropland) and 13% coming from savanna. While we think this represents a much improved estimate compared to our analysis for the proposed rule, we are still aware of the uncertainty in this part of our analysis. For example, we acknowledge that satellite imagery could confuse forest land and oil palm plantations in Malaysia. Therefore, for the final rule, we quantified the uncertainty in these estimates and presented a range of results. Furthermore, to narrow the uncertainty, we utilized data validation from NASA, which compared the satellite land cover classifications to on the ground surveys. This data validation helped us to correct the original data set for systematic classification errors, such as the potential issues raised by the commenter.

Finally, it should be noted we have not directly analyzed land use change impacts from U.S. consumption of biodiesel derived from palm oil. For such an analysis, we would want to consider additional data sources to determine the areas where palm oil production would be most likely to expand in that particular scenario.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048

Organization: BioPure Fuels
Comment:
The commenter (2048.1) recommends that U.S. EPA staff follow the recommendations of UNICA in re-adjusting the GREET model to update it to the more realistic situation in production of sugar cane in the current production now centered in Sao Paulo and other southern states. (2048.1, p.10) (See Docket Number 2048.1, pp.9-10 for a detailed discussion of this issue)

Our Response:

For the final rule we have updated our imported sugarcane ethanol analysis based on those comments submitted by UNICA as well as recommendations from Brazilian researchers. Changes since the proposal include assuming the additional production of electricity due to the collection of sugarcane trash, phase out of sugarcane burning in the future, mechanization of harvesting, and updates in feedstock and ethanol transport. These changes reflect the improvements expected to be possible by 2022.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that the economic modeling can not meet the ISO standards for the following reasons:
- Country specific data is required, but rarely exists.
- Models are based on insights, assumptions, simplifications, and many subjective judgment calls.
- EPA and the California Air Resources Board (CARB) are using economic policy decision models (FAPRI and GTAP) to make billion dollar regulatory laws.
- Model accuracy is not high enough to achieve EISA mandate objectives. (2112.1, p.7)

Our Response:

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA has followed EPA and federal regulatory procedures. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models

with outside experts and across the federal government. After EISA's enactment in December 2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments.

EPA conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

Lastly, throughout the development of the lifecycle methodology EPA has worked closely with the State of California. While each agency's statutory requirements necessitate some differences (as noted by the commenter) in general, CARB and EPA have developed the same methodological approach to assessing the lifecycle impacts of biofuels. EPA will continue to coordinate with CARB as we implement the RFS2 program and reassess the lifecycle estimates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) believes that the assumption in the FASOM model that grain sorghum only produces 2.281 gallons of ethanol per bushel of grain sorghum needs to be changed to reflect actual use of sorghum in the ethanol industry. (2119.1, p.2)

Our Response:

EPA has clearly acknowledged that there are uncertainties associated with these estimates--particularly with regard to indirect land use change--and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. EPA has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) believes that the assumption in the FASOM model that grain sorghum only produces 2.281 gallons of ethanol per bushel of grain sorghum needs to be changed to reflect actual use of sorghum in the ethanol industry. (2119.1, p.2)

The commenter also believes that the FASOM assumption of grain sorghum trend yield only increasing 0.09% per year needs to be updated. Based upon grain sorghum yields since 1988, the trend yield would be 0.8% per year. By increasing the trend yield to 0.8% per year, GHG reduction would increase by 2.2%. Increasing the trend yield to 1.3% (the commenter's recommendation) would result in 3.6% more GHG reduction. By setting the ethanol conversion rate to 2.66 gallons per bushel and increasing the trend yield to 1.3%, grain sorghum's GHG reduction would be 64.1% for a dry mill facility fueled with natural gas. (2119.1, p.3)

The commenter believes that the assumptions on the input elasticities of grain sorghum need to be corrected. The current FASOM assumptions for grain sorghum input elasticities are much higher than compared to corn, the closest other feedgrain in the model. FASOM has the sorghum input elasticity for both nitrogen and potassium at six times the input elasticity of corn. This penalizes sorghum due to the GHG emissions from producing nitrogen and potassium fertilizers. (2119.1, pp.3-4)

The commenter also believes that FASOM assumptions for sweet sorghum to ethanol yields should be increased to a minimum of 11 gallons per wet ton on first crop sweet sorghum and 13 gallons per wet ton of rattooned sorghum. (2119.1, p.4)

The commenter noted that the term "energy sorghum" is now being used for high tonnage hybrid forage sorghum that can be used in the making of cellulosic biofuel. Energy sorghum was not included in the proposed rule, but the latest version of FASOM does include energy sorghum. (2119.1, p.6)

Our Response:

EPA appreciates the provision of data by the commenter and welcomes continued input. We recognize that a number of possible renewable feedstocks are not evaluated in the current analysis. EPA anticipates modeling grain sorghum ethanol, woody pulp ethanol, and palm oil biodiesel after this final rule and including the determinations in a rulemaking within 6 months. EPA established in the final rulemaking a petition process whereby parties can petition EPA to evaluate fuel pathways that have not been modeled for this rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
1. The commenters (2129.1) recommendation on the modeling of agricultural markets is to follow the guidance of the peer reviewers. A clear message from the peer review process was that the basic modeling approach pursued by EPA is appropriate. The commenters recommend that EPA updates its analysis based on actual data on U.S. and international land-use changes. (2129.1, p.7) [[See Docket Number 2129.1, pp.7-8 for a detailed discussion on modeling of agricultural markets]]

2. The commenter said that the peer reviewers supported the use of partial equilibrium models because they can incorporate greater detail in the agricultural sector than general equilibrium models. However, it is important the EPA heed peer review concerns about potential inconsistencies from the dual use of the FAPRI and FASOM models. According to the commenters, Dr. Wang and Mr. Searchinger pointed to inconsistencies in this approach. Dr. Banse pointed out that it is logically possible to meld models but only if they are used iteratively. The commenters recommended that EPA explore the viability of this iterative approach. The commenters also suggested that adopting FAPRI as a single model would be an appropriate way to resolve the inconsistencies.

3. The commenters generally agree that the approach used by EPA to model indirect land use change outside of the U.S. is scientifically and legally appropriate in light of the data and modeling tools currently available to EPA. (2129.1, pp.8-9) [[See Docket Number 2129.1, pp.8-9 for a detailed discussion on modeling of international land-use changes]]

Our Response:

1. EPA agrees with the commenters that the language in EISA requires EPA to include indirect land use impacts. EPA also agrees with the commenters that the expert peer reviewers provided valuable guidance for international agricultural modeling. We also agree that the independent peer reviewers generally supported EPA's analytical approach as scientifically justifiable, however the expert reviewers pointed out problematic areas in our analysis and suggested many new studies and data sources for consideration. Consistent with the reviewers' guidance, we maintained our overall modeling approach, but we also took a number of specific steps to improve our analysis based on the peer reviewers' recommendations.

2. Although we have used the partial equilibrium (PE) models FASOM and FAPRI as the primary tools for evaluating whether individual biofuels meet the GHG thresholds, as part of the peer review process, we explicitly requested input on whether the general equilibrium (GE) models should be used. None of the comments recommended using a GE model as the sole tool for estimating GHG emissions, given the limited details on the agricultural sector contained in most GE models. The peer reviewers generally supported the use of the FASOM and FAPRI

models for our GHG analysis given the level of detail included in the PE models, however several comments suggested incorporating GE models into the analysis. Given these recommendations, we opted to use the GTAP model to inform the range of potential GHG emissions associated with land use change resulting from an increase in biofuels. Our consideration of the GTAP model is described in preamble Section V.

We also received comments on the combined use of FASOM and FAPRI. Several comments and peer reviewers questioned the benefit of using two agricultural sector models. Specifically reviewers pointed to some of the inconsistencies in the FASOM and FAPRI domestic results. For the final rule analysis we worked to reconcile the two model results. We apply the same set of scenarios and key input assumptions in both models. For example, both models were updated to apply consistent treatment of DGs in domestic livestock feed replacement and consistent assumptions regarding DG export.

Some reviewers questioned the benefits of using FASOM and suggested we rely entirely on the FAPRI model for the analysis. However, we continue to believe there are benefits to the use of FASOM. Specifically, the fact that FASOM has domestic land use change interactions between crop, pasture, and forest integrated into the modeling is an advantage over using the domestic FAPRI model that only tracks cropland.

3. One of the main comments we received on our choice of models was the issue of transparency. Several comments were concerned that the results of EPA's modeling efforts can not be duplicated outside the experts who developed the models and conducted the analysis used by EPA in the proposal. Upon the release of the proposal, EPA requested comment on the use of these various models. EPA conducted a number of measures to gather comments, including the public comment period upon release of the NPRM analysis, holding a public workshop on the lifecycle methodology, and conducting a peer review of the lifecycle methodology. Specifically, one of the major tasks of the peer review of EPA's lifecycle GHG methodology was to review and comment on the use of the various models and their linkages. The response we received through the peer review is supportive of our use of the FASOM and FAPRI models, affirming that they are the strong and appropriate tools for the task of estimating land use changes stemming from agricultural economic impacts due to changes in biofuel policy.

In addition, in an effort to garner as useful comments as possible and to be as transparent as possible about the modeling process, EPA supplied in the docket technical documents for the FASOM and FAPRI models, the output received by EPA from each model, and the models themselves such that the public and commenters could learn and examine how each model operates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:

The commenter believes the use of FASOM and FAPRI to model ILUC is appropriate and that linking the models is also appropriate and allows the analytical strengths of both models to be utilized. The commenter also supports examination of GTAP as an alternative modeling platform with global scope. [[Docket number 2130.1, p. 19]]

Our Response:

We appreciate comments provided by ExxonMobil supporting our use of FASOM and FAPRI to determine indirect land use change. As recommended by ExxonMobil and others, we have also explored the option of incorporating the GTAP model into our modeling framework, and have included the results of this analysis in the Chapter 2 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2133
Organization: The Brazilian Vegetable Oil Industry Association (ABIOVE) and the Brazilian Biodiesel Union (UBRABIO)
Comment:
1. The commenter (2133) believes that the integration of long-term projections based on deterministic models, which did not consider the peculiarities of the oilseed complexes and the new agricultural research that will lead to increased productivity, produces results not connected to the real economy and market projections. [[Docket number 2133.1, p. 25]] [[See docket number 2133.1, pp. 5-8 for extensive discussion of this issue.]]

The economic incentives are all focused on these objectives. Attributing all the increase in biodiesel production to soy is to ignore the real economic determinants of oilseed production and that biodiesel will incentivate raw material diversification and agricultural research. (2133.1, p.8)

2. Brazil grows an average of only one head of beef cattle per hectare of pasture, according to the results of IBGE's Agriculture-Livestock Census. This number can increase to eight head of cattle per hectare, using adequate handling and crop-livestock rotation, thus freeing up a gigantic area for agriculture and not putting pressure on areas of native vegetation. However, even a very conservative estimate shows the potential for taking advantage of Brazil's pastures. Increasing the Brazilian average from 1 to 1.4 head per hectare (for the state of São Paulo) will make 33 million hectares available for agriculture, equivalent to 70% of Brazil's grain acreage. This is more than sufficient to meet all Brazil's needs for domestic consumption and exports, especially in view of the growth potential for agricultural productivity and the possibility of growing two or even three grain harvests in the same area every year. (2133.1, p.11)

The commenter says the model does not consider the national statistics bases for land use, agriculture, and deforestation, which is another mistake since Brazil is internationally recognized for its competence in production of information of this nature. [[Docket number 2133.1, p. 25]]

3. The commenter believes that the use of remote sensory techniques creates another uncertainty due to the low resolution and incorrect date of the images used for analysis of land use changes.

In addition, the Winrock International model commits a serious mistake in adopting the hypothesis that only part of the pastures is available for allocation to agriculture. To calculate forgone sequestration, the model again overestimated emission as it did not consider the initial hypothesis that deforestation occurs in areas of mature native vegetation. [[Docket number 2133.1, p. 25]] [[See docket number 2133.1, pp. 9-12 for extensive discussion of this issue.]]

Our Response:

1. To estimate lifecycle indirect impacts of biofuel production requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The use of economic models and the uncertainty of those models to accurately predict future agricultural sector scenarios was one of the main comments we received on our analysis. While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production, they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

However, it is important to note that while there are many factors that impact the uncertainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops and other variables in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

Furthermore, one of the key uncertainties associated with our agricultural sector economic modeling that impacts land use change results is the assumptions around crop yields. In addition to including an assessment of the commodity price impact on international crop yields, as discussed in preamble Section V.A.2, we conducted sensitivity analysis around different future yield assumptions for cron and soy in our analysis.

Therefore, because of the fact that we are only using the economic models to determine the difference between two projected scenarios and the fact that we are conducting sensitivity analysis around the yield assumptions we feel it is appropriate and acceptable to use economic models in our analysis of determining GHG thresholds in our final rule analysis.

Our modeling does not attribute all of the biodiesel increase to soybeans. The biodiesel standard in 2022 is one billion gallons. In our modeling we assume that this biodiesel will be produced with a variety of feedstocks, with soybeans accounting for approximately 660 million gallons. Furthermore, the FASOM and FAPRI models which we used do account for the soy meal co-product. For crops with by-products, behavioral equations for the by-products are included (e.g., soybean meal, soybean oil and biodiesel from soybeans). For each commodity, a market-clearing price is achieved by equating quantity supplied to quantity demanded. The

market linkages imply that changes in one commodity sector will have impacts on the other sectors.

2. A significant improvement in our modeling was the incorporation of FAPRI's improved Brazil model, which is based on the high-quality statistics collected by the Brazilian Government. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. In the NPRM, we requested additional data for countries outside the U.S. We received comments encouraging us to use regional and country specific data where it was available. We also received comments encouraging us to take into account the available supply of abandoned pastureland in Brazil as a potential source of new crop land. The new Brazil module addresses these comments. Since the Brazil module contains data specific to six regions, this additional level of details allows FAPRI to more accurately capture real-world responses to higher agricultural prices. For example, double cropping (the practice of planting a winter crop of corn or wheat on existing crop acres) is a common practice in Brazil. Increased double cropping is feasible in response to higher agricultural prices, which increases total production without increasing land use conversion. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

In addition to modifying how pasture acres are treated in Brazil, we also improved the methodology for calculating pasture acreage changes in other countries. We received several comments through the public comment period and peer reviewers supporting a better analysis of the interaction between crops, pasture, and livestock. In the NPRM, although we accounted for GHG emissions from livestock production (e.g., manure management), we did not explicitly account for GHG emissions from changes in pasture demand. In response to comments received, our new methodology accounts for changes in pasture area resulting from livestock fluctuations and therefore captures the link between livestock and land used for grazing. Based on regional pasture stocking rates (livestock per acre), we now calculate the amount of land used for livestock grazing. The regional stocking rates were determined with data on livestock populations from the UN Food and Agricultural Organization (FAO) and data on pasture area measured with agricultural inventory and satellite-derived land cover data. As a result of this change, in countries where livestock numbers decrease, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes, especially in regions where livestock populations are changing significantly.

3. All five of the expert peer reviewers that reviewed our use of satellite imagery agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in

favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

In the proposed rule, to estimate annual forgone forest sequestration, we used IPCC default data for the growth rates of forests greater than 20 years old. The expert peer reviewers noted that these estimates could be refined with more detailed information from the scientific literature. Many of the public commenters were also concerned that EPA's approach overestimated foregone sequestration because it did not adequately account for natural disturbances, such as fires and disease. To address these comments, our analysis has been updated with peer reviewed studies of long-term growth rates for both tropical and temperate forests. These estimates are based on long-term records (i.e., monitoring stations in old-growth forests for the tropics and multi-decadal inventory comparisons for the temperate regions) and reflect all losses/gains over time. These studies show that the old-growth forests in the tropics that many once assumed to be in "steady state" (i.e., carbon gains equal losses) are in fact still gaining carbon. In summary, our analysis now includes more conservative foregone forest sequestration estimates that account for natural gains and losses over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Document No.: EPA-HQ-OAR-2005-0161-2320.1
Organization: Informa, for Growth Energy
Comment:
The commenter (2136) states that if the Agency's combination of models was correctly forecasting the international linkages and impacts of increased biofuels production in the future, they would also be able to accurately "backcast" the same linkages and impacts. However, the real world data does not even remotely support this conclusion. [[Docket number 2136.1, p. 3]] [[See docket number 2136.1, pp. 3-4 for additional discussion of this issue.]]

Informa conducted a "backcast" with the FASOM model and found that historical and current export estimates from FASOM did not match or come close to actual historical exports. The soybean oil and meal exports simulated by FASOM for the 2000-2004 period are more than double the actual levels occurred. This is important because soybean oil is used in biodiesel. (2320.1, p1,9-11)

Our Response:

For the evaluation of domestic and international cropland change, the FASOM and FAPRI models were used, respectively. Both models incorporate elasticities and assumptions based on historical data trends. However, for the purpose of evaluating a particular renewable fuel, each feedstock is analyzed by examining the result of only increasing the volume demanded of that particular renewable fuel, ceteris parabis. Through this method, all changes that occur in the model are attributable to this change in demand. This evaluation will not reflect historical data patterns, as there are several varying factors occurring simultaneously in history.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) recognizes the complexity of completing the lifecycle analysis and in general believes that it was carefully done and captured many of the complexities of agriculture, land use and biofuel production worldwide. At the same time, the commenter also believes that further refinement is warranted and necessary for the final rule. The commenter identifies the necessary changes to EPA's "direct" lifecycle calculation (including the need to incorporate the anticipated changes to the sugarcane ethanol pathway through 2022 as well as to include emissions credits for the surplus bioelectricity that displaces other more carbon-intensive energy sources in Brazil) and addresses the "indirect" calculations, with a particular focus on the need to incorporate a Brazil-specific land use model into EPA's calculations.[[Docket number 2137.1, pp. 17-18]] [[See docket number 2137.1, pp 18-34 for details of this discussion.]]

Our Response:

For the final rule we have incorporated many of the suggestions for the direct lifecycle calculations for the sugarcane pathway in our analyses. First, we now account for the expected phase-out of sugarcane harvest burning in the future. Secondly, we have included an increase in mechanical harvesting. Thirdly, we have included emissions credits for surplus electricity from the use of sugarcane trash and efficiency improvements at mills as expected by 2022. In addition, we support the method of assuming marginal electricity (i.e., natural gas) as the electricity being displaced when accounting for surplus electricity generated at the sugarcane ethanol facility.

Several clarifications were also requested by the commenter. First, we have corrected our assessment to include a scenario where sugarcane straw is assumed to be collected at 40% (i.e., 56 kg dry leaves and tops per metric ton of cane). Straw is assumed to have a moisture content of 50% or 140 kg of dry leaves and tops per metric ton of cane. Please refer to Section 2.4.3.5 of the RIA for more detail on sugarcane burning. Secondly, we did not double-count transport emissions in the United States. The misunderstanding is due to a mislabeling of the items "Fuel Production" and "Other (fuel and feedstock transport)". "Fuel Production"

mistakenly included ethanol transport outside the U.S. (for travel from Brazil to U.S.) whereas "Other (fuel and feedstock transport)" only included the ethanol transport within the U.S. We have for the final rule corrected this error and aggregated all ethanol transport emissions along with feedstock transport emissions for better clarification so that the "Fuel Production" category is correctly represented. Thirdly, we have used the suggestion to assume negligible "haul back" shipping emissions for ethanol transport from Brazil to the U.S. Lastly, the Agency uses the Global Warming Potential (GWP) values from IPCC's Second Assessment Report. These GWP values have been agreed upon in the international framework for addressing climate change and are used in EPA's Endangerment Finding for greenhouse gases and for the official U.S. GHG Inventory.

Furthermore, in terms of the indirect impacts, we have included a Brazil component of our international agricultural sector modeling.

EPA recognizes the importance of accurately modeling the land use change in Brazil. For the final rulemaking analysis, EPA has worked with FAPRI to incorporate a separate Brazil module which analyzes Brazil through six geographic regions, providing extensive information on land used for cropland and livestock production in each region. This is the first non-U.S. country modeled on a regional basis in the FAPRI model, and includes analysis of other variables. For example, double cropping (the practice of planting a winter crop of corn or wheat on existing crop acres) is a common practice in Brazil. Increased double cropping is feasible in response to higher agricultural prices, which increases total production without increasing land use conversion. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land. EPA believes that this will provide a much more detailed and accurate representation of land use change in Brazil.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) noted that while EPA's analysis is a major attempt at bringing together multiple inputs and models, the commenter is concerned that several of the individual models used were not developed with these applications in mind, but rather were intended to capture / analyze agricultural economic decisions and their impacts. (2146.1, p.4) [[See Docket Number 2146.1, pp.4-5 for a detailed discussion of the commenter's problem with the models]]

Our Response:

While the models we have used to measure lifecycle greenhouse gas emissions may not have been explicitly developed to capture indirect land use change, both the FASOM and FAPRI models were designed to analyze the impacts of government policies in the agricultural sector.

FASOM has been used for over a decade to analyze the impacts of economy-wide greenhouse gas policies on the agricultural and forestry sector in the U.S. In addition, the FAPRI model has been used extensively over the last 25 years to analyze the agricultural sector impacts of policies designed to increase biofuel demand and other agricultural policy questions.

Both the FASOM and FAPRI models are best suited for analyzing the impact of a policy relative to a predetermined baseline, not for projecting absolute future levels. Because we recognize this limitation, we have structured our analysis to rely on the change in prices and quantities as a result of renewable fuel volumes required by the RFS2, which reduces the sensitivity of the results on any single future level of production, exports, or acreage projections.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2174
Organization: Illinois Soybean Association
Comment:
The commenter (2174) noted that Under the Energy Independence & Security Act (EISA) of 2007, to be eligible for the new RFS2, biodiesel must meet a 50% greenhouse gas (GHG) reduction relative to petroleum diesel. Under the existing GREET model (Greenhouse gases, Regulated Emissions, and Energy use in Transportation) used by the EPA and the U.S. Department of Energy, biodiesel achieves a 78% GHG reduction relative to petroleum diesel. (2174, p.1)

Our Response:

Under EISA biodiesel must meet a 50% reduction in lifecycle GHG emissions including significant indirect emissions. The GREET analysis cited does not include indirect emissions. Therefore, EPA had to do our own analysis including indirect impacts in order to determine if biodiesel met the threshold requirements of biomass based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes a collaborative effort to develop agreed upon models is needed. Before the models are incorporated into regulation, all stakeholders must accept the science behind them. [[Docket number 2233.2, p. 46]]

The commenter discusses issues related to EPA's use of FASOM/FAPRI models plus Winrock data. The commenter is concerned that EPA methodology lacks transparency in a number of respects including the lack of data to replicate and verify EPA's results. The commenter also believes that EPA needs to use complete versions of each model (FAPRI and FASOM) with appropriate parameters, and EPA needs to calibrate models to a more consistent Reference Case.

The commenter notes that the FASOM model results in a corn price increase in 2022 of 4.6% compared to the baseline looks low, especially given some recent historical corn price changes. [[Docket number 2233.2, pp. 49-51]]

Our Response:

Throughout the rulemaking process, EPA consulted with numerous experts and stakeholders in industry, academia, and government in regards to all aspects of the analysis. In addition, EPA hosted a public forum on lifecycle analysis and our methodology, welcoming participation and discussion with outside stakeholders. This, in combination with the release of all data used in the analysis; detailed documentation in the form of the draft preamble, RIA, and technical reports; the availability of models on the docket to the extent possible; and the publication of a peer review of the lifecycle methodology; EPA believes that the information provided in the NPRM is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment. Following the release of the NPRM analysis, EPA received helpful feedback on assumptions and methodology used in the analysis as well as support for the use of various models in the analysis and how they are used together.

For the final rulemaking analysis, EPA worked to ensure that the assumptions used in the FASOM and FAPRI models are more consistent, and expanded the amount of detail each model provides. For instance, the FASOM model now incorporates both the forestry and agricultural sectors of the model, showing the dynamic interaction between the two sectors in terms of land competition and other factors. Also, the FAPRI model now includes a Brazil module which analyzes Brazil in terms of six geographical regions, providing extensive information on land used for cropland and livestock production in each region. EPA believes that these model improvements provide a more complete, refined, and accurate lifecycle analysis.

In regards to corn prices, the change in the price of corn estimated in the FASOM model is only the result of an increased demand for renewable fuel. Historical changes in prices that are subject to a number of varying factors and is not directly comparable to model estimates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2234
Organization: University of California Energy & Resources Group
Comment:
1. The commenter [[2234]] lists major concerns as: The lack of forestry in FASOM (as run for the NPRM) prevents any domestic conversion of forests to cropping. FASOM predicts less domestic land conversion than does the domestic FAPRI model, yet the latter drives the international LUC estimates, resulting in an underestimate of total land conversion.

2. MODIS underestimates forest and wetland conversion, resulting in low emission factors. (See detailed comments by Ralph Heimlich.)

3. The use of a 2022 rather than a near-term baseline, with very high projected crop and biorefining yields predicted with no sound prediction model reduces the quantity of land required to replace land used to produce any fixed quantity of biofuels relative to that required in the near term.

4. Summing emission flows rather than considering radiative forcing fails to properly account for the early release of CO_2 from LUC (O'Hare, Plevin et al. 2009). We note that several peer reviewers raised this issue. Displacing soybeans with corn earns a spurious N_2O "benefit" in FASOM. (We have been unable to ascertain the rationale for this benefit.) The GHG benefits of conversion to no-till cultivation appear to be overstated. [[2234.1 p.3]

Our Response:

1. Following the publication of the NPRM analysis, EPA worked to expand the coverage of the FASOM model. For the final rulemaking analysis, the FASOM model includes both the forestry and agricultural sectors. These two sectors dynamically interact with one another in terms of land competition over time. In addition, the FASOM model now provides a detailed accounting of various types of land in the U.S., including cropland, pasture, forestland, rangeland and developed land.

We recognize that FASOM and FAPRI do not provide identical land use change results as a result of an increase of renewable fuel demand. However, for the purposes of lifecycle analysis, results from these two models are analyzed on a normalized basis, minimizing distortionary effects from using two models. It should also be noted that EPA has coordinated numerous assumptions between the two models, and relies on each model for its relative analytical strength. For instance, FASOM provides valuable detail for several land types in the U.S., as well as the incorporation of various greenhouse gas factors. The strength of using the model is to provide a detailed analysis of international cropland use, as affected by changes in world trade of commodities (price and quantity) following changes in U.S. demand for renewable fuel.

Information on the assumptions used in both models, as well as details on the operation of each model can be found in the Preamble, RIA, and technical reports included in the docket.

2. One benefit of using the MODIS data set is that it is routinely and extensively validated by NASA's MODIS land validation team. NASA uses several validation techniques for quality assurance and to develop uncertainty information for its products. NASA's primary validation technique includes comparing the satellite classifications to data collected through field and aircraft surveys, and other satellite data sensors. The accuracy of the version 5 MODIS land cover product was assessed over a significant set of international locations, including roughly 1,900 sample site clusters covering close to 150 million square kilometers. The results of these validation efforts are summarized in a "confusion matrix" which compares the satellite's land classifications with the actual land types observed on the ground. We used this information to assess the accuracy and systematic biases in the published MODIS data. In general, the validation process found that MODIS version 5 was quite accurate at distinguishing forest from

cropland or grassland. However, the satellite was more likely; for example, to confuse savanna and shrubland because these land types can look quite similar from space.

Using the data validation information from NASA about which types of land MODIS tends to confuse which each other, our Monte Carlo analysis was able to account for systematic misclassifications in the MODIS data set. We did not know how these improvements would affect the final results, but, as the commenters suggested, our updated analysis shows that the MODIS data used in our proposed rule analysis underestimated the percentage of land converted from forest in many of the regions analyzed.

The reviewers specifically recommended the addition cropland/natural vegetation mosaic, permanent wetlands, and barren or sparsely vegetated land, all of which are now included in our analysis. Consistent with these recommendations, there are 9 aggregate land categories in our revised analysis: barren, cropland, excluded (e.g., urban, ice, water bodies), forest, grassland, mixed (i.e., cropland/natural vegetation mosaic), savanna, shrubland and wetland. These land cover categories capture all significant types of land affected by agricultural land use changes. As described below in Section V.B.2.b.iii, we also estimated carbon sequestrations for all of these land categories.

As the commenters' point out, wetlands were not included in the proposed rule analysis. The expert reviewers specifically recommended the addition cropland/natural vegetation mosaic, permanent wetlands, and barren or sparsely vegetated land, all of which are now included in our analysis. Consistent with these recommendations, there are 9 aggregate land categories in our revised analysis: barren, cropland, excluded (e.g., urban, ice, water bodies), forest, grassland, mixed (i.e., cropland/natural vegetation mosaic), savanna, shrubland and wetland. We found a relatively small share of agricultural land converted from wetlands. The region with the largest share of wetlands converted to cropland was Bangladesh, where 5% of new cropland was projected to come from wetlands.

3. We project our analysis and economic modeling through the life of the program. We then consider the impacts of an increase of biofuels on the agricultural sector in 2022 as the basis for our threshold analysis. This was an area that we received numerous comments on highlighting that this approach adds uncertainty to our results because we are projecting uncertain technology and other changes out into the future. One of the recommendations was to base the lifecycle GHG assessments on a near term time frame and update the analysis every few years to capture actual technology changes.

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans. Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology

changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

4. EPA accounts for GHG emission impacts based on the GWPs of the emissions considered. The EISA language specifically states that GHG emissions should be weighted based on GWPs. The definition of "Lifecycle Greenhouse Gas Emissions" in EISA specifies that:

> " the mass values for all greenhouse gases are adjusted to account for their relative global warming potential."

Furthermore, peer reviewers generally supported EPA's approach of using GWPs and highlighted several areas where the Fuel Warming Potential (FWP) approach that considers radiative forcing could be improved upon before applying it to this type of analysis.

In the proposal analysis for this rulemaking displacing soybeans with corn in FASOM did generate an N_2O benefit because of the assumptions concerning soybean N_2O emissions. The proposal analysis used outdated N_2O emission factors for soybeans that overestimated emissions; therefore, replacing soybeans with corn generated N_2O reductions. The N_2O emission factors for soybeans have been updated as part of the final rulemaking analysis.

The GHG emissions associated with conversion to no-till cultivation has also been updated as part of the final rulemaking analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council

Comment:
1. The commenters (2245.1) recommend that a detailed peer review of global corn export demand be conducted to help improve and validate the FAPRI model results. (2245.1, p.23)

The commenters believe that FAPRI is unable to address changes in international pasture. There are a number of errors that exist in EPA's attempt to identify changes in international pasture.

First, the use of MODIS satellite data from 2001 and 2004 to predict future land use change designations that is not able to identify pasture as a land use category, second, the use of an EPA add on to the FAPRI model in an unvalidated attempt to predict pasture displacement, third, no recognition of pasture intensification in Brazil which has been repeatedly highlighted by Brazilian experts in EPA workshops, and finally, the assumption that any displaced pastureland is re-established on forest or scrubland. The EPA should defer the recommendations on this approach to specifically commissioned experts with the appropriate technical expertise to provide accurate, in country, ground up assessments of land use change. (2245.1, p.26)

2. The commenters also believe that EPA used dated or inadequate data for components of its proposed rule. This data needs to be made current and kept current. EPA needs to update its direct GHG determinations for corn based ethanol to reflect current, versus dated, operational performance data. EPA also needs to update its base GHG values for current, versus historic fertilizer usage. The baseline data used by GREET also needs to be updated to reflect current technology adoption and a mechanism needs to be created for annual updates. It is not appropriate to hold these assumptions constant until 2022. (2245.1, pp.26-27)

3. The commenters would like EPA to provide to the public all inputs and all assumptions, the source of all inputs and assumptions, a mechanism by which the public can access and run all modeling scenarios, and scenarios demonstrating model sensitivities. (2245.1, p.28)

Our Response:

1. A significant improvement in our modeling was the incorporation of FAPRI's improved Brazil model, which is based on the high-quality statistics collected by the Brazilian Government. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. In the NPRM, we requested additional data for countries outside the U.S. We received comments encouraging us to use regional and country specific data where it was available. We also received comments encouraging us to take into account the available supply of abandoned pastureland in Brazil as a potential source of new crop land. The new Brazil module addresses these comments. Since the Brazil module contains data specific to six regions, this additional level of details allows FAPRI to more accurately capture real-world responses to higher agricultural prices. For example, double cropping (the practice of planting a winter crop of corn or wheat on existing crop acres) is a common practice in Brazil. Increased double cropping is feasible in response to higher agricultural prices, which increases total production without increasing land use conversion. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

In addition to modifying how pasture acres are treated in Brazil, we also improved the methodology for calculating pasture acreage changes in other countries. We received several comments through the public comment period and peer reviewers supporting a better analysis of the interaction between crops, pasture, and livestock. In the NPRM, although we accounted for

GHG emissions from livestock production (e.g., manure management), we did not explicitly account for GHG emissions from changes in pasture demand. In response to comments received, our new methodology accounts for changes in pasture area resulting from livestock fluctuations and therefore captures the link between livestock and land used for grazing. Based on regional pasture stocking rates (livestock per acre), we now calculate the amount of land used for livestock grazing. The regional stocking rates were determined with data on livestock populations from the UN Food and Agricultural Organization (FAO) and data on pasture area measured with agricultural inventory and satellite-derived land cover data. As a result of this change, in countries where livestock numbers decrease, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes, especially in regions where livestock populations are changing significantly.

Another important addition to our analysis was consideration of the types of land affected by changes in pasture area, and the interaction of pasture land with cropland. In the proposed rule, we made a broad assumption that the total land area used for pasture would stay the same in each country or region. Thus, in the proposed rule, we assumed that any crop expansion onto pasture would necessarily require an equal amount of pasture to be replaced on forest or shrubland. We received a large number of comments questioning these assumptions, and the expert peer reviewers encouraged us to develop a better representation of the interactions between cropland and pasture land. The results from the FAPRI model are now used to determine pasture area changes in each country or region. In regions where we project that pasture and crop area both increase, the land types affected by pasture expansion are determined using the same analysis used for crop expansion. This new approach accounts for the ability of pasture to expand on to previously unused, or underutilized, grasslands and savanna. In regions where we project that crop and pasture area will change in opposite directions (e.g., crop area increases and pasture decreases) we assume that crops will expand onto abandoned pasture, and vice versa. Our analysis also now accounts for carbon sequestration resulting from crop or pasture abandonment. We used our satellite analysis, which shows the dominant ecosystems and land cover types in each region, to determine which types of ecosystems would grow back on abandoned agricultural lands in each region.

We believe that our analysis incorporates the best available data on pasture stocking rates on a globally consistent basis. However, we recognize that this is an area for further work, and it is one of the issues that we specifically intend to recommend for study by the National Academy of Sciences as part of its review of our analysis for this rulemaking.

2. EPA disagrees with this comment. For the proposal, one of the key sources of information on energy use for corn ethanol production was a study from the University of Illinois at Chicago Energy Resource Center. Between proposal and final rule, the study was updated, therefore, we incorporated the results of the updated study in our corn ethanol pathways process energy use for the final rule. We also updated corn ethanol production energy use for different technologies in the final rule based on feedback from industry technology providers as part of the

public comment period. This analysis assumes energy efficiency gain out to 2022 and does not rely on current energy use data.

Fertilizer use data is based on values in the FASOM model on row crop production which are based on USDA and State data on production, values vary by management practice and region. Our agricultural sector modeling includes projections out to 2022 and not relying on current data for threshold determinations.

3. Accompanying the Preamble and RIA in the release of the Notice of Proposed Rulemaking (NPRM), EPA provided on the docket the model data used for the analysis, detailed technical reports of the models used, as well as access to the models to the extent possible. In addition, EPA hosted a public forum on lifecycle analysis and our methodology, welcoming participation and discussion with outside stakeholders; published a peer review of the lifecycle methodology; and consulted with numerous experts and stakeholders in industry, academia, and government in regards to all aspects of the analysis. Following the release of the NPRM analysis, EPA received helpful feedback on assumptions and methodology used in the analysis.

For the final rulemaking analysis, EPA provided updated documentation on the methodology used with updated assumptions. Correspondingly, all data used for the final analysis, as well as data used for sensitivity analyses, has been provided. Lastly, the models used for this analysis have been provided to the extent possible on the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
1. The commenter (2249.2) states that while FASOM and FAPRI are well-known, they were not intended to be used in the manner EPA has proposed. FASOM and FAPRI are economic models that attempt to assess the impacts of changes in policy and economic parameters on prices and agricultural commodities. These economic models were not intended to forecast absolute levels of exports, and the inherent assumptions of the models trend the findings toward overestimating exports compared to actual data. In addition, these models were not meant to be used to calculate land use decisions for regulatory purposes. Economic forecasting using models as tools to identify policy is fundamentally different than assessing emissions for regulatory purposes. [[Docket number 2249.2, pp. 53-54]] [[Also see docket number 2232.1, Attachments 6 and 7 for additional information.]]

The commenter adds that EPA and others claim that the FAPRI model is appropriate because it has been used by numerous government entities to inform agricultural policy decisions, largely economic policies that may influence agricultural prices, but there are no examples of FAPRI being used to identify a specific score to be used for regulatory purposes. EPA was required to make adjustments to both models, which are highly dependent on inputs and assumptions used. [[Docket number 2249.2, p. 54]

2. The commenter believes there are also numerous flaws in the models that make their application to the lifecycle analysis here questionable. (A more detailed analysis of the weaknesses of these models and EPA's methodology is included as Attachment 7 [[docket number 2232.1]] (John M. Urbanchuk, Review of Models Used By EPA to Estimate Indirect Land Use Changes to Renewable Fuel Standard (Sept. 7, 2009) and Attachment 6 [[docket number 2232.1]] (Nelson Report).) Significantly, the models are limited in analyzing other market factors. In addition, the commenter states that EPA also fails to provide sufficient information as to the coordination between the two models. [[Docket number 2249.2, p. 54]]

3. The commenter adds that the mere fact that models were peer reviewed is not sufficient to ensure the validity of an approach. The commenter refers to OMB and EPA guidance and peer review reports to support their position, noting a lack of consensus among the peer reviewers. [[Docket number 2249.2, pp. 61-64]]

Our Response:

1. To estimate lifecycle indirect impacts of biofuel production, as specified in EISA, requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The complexity and uncertainty inherent in this work made it extremely important that we seek the advice and input of a broad group of stakeholders. EPA's multiple efforts to solicit public and expert feedback are described in preamble Section V.

Based on the all of the feedback received by the agency through the public-comment process and from the expert peer reviewers we determined that FASOM and FAPRI are the best available models for this analysis. This determination was based on several factors. For one, the expert peer reviewers generally agreed that EPA's approach of linking partial equilibrium models was preferable to using a general equilibrium model, especially given the fact that no single existing model comprehensively simulates the direct and indirect effects of biofuel production both domestically and internationally. Support for FASOM and FAPRI was based, in part, on the level of detail included in the models and the fact that the models were designed to project physical quantities (as opposed to *ex-post* conversion of economic units into physical units). Furthermore, we made a number of improvements to these models to incorporate new/supplemental data, and to address specific concerns. These improvements, discussed in preamble Section V, include FAPRI's updated Brazil model, updated DDG displacement rates incorporated into both models, consideration of price-induced yields in the FAPRI modeling structure, and improved treatment of international pasture modeling.

Even with all of the improvements made to our analysis, we recognize inherent uncertainty in the use of economic models to accurately predict future agricultural sector scenarios. However, it is important to note that while there are many factors that impact the uncertainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops and other variables in the model projections are not as important

as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

As described in the proposal, to estimate lifecycle indirect impacts of biofuel production requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The use of economic models and the uncertainty of those models to accurately predict future agricultural sector scenarios was one of the main comments we received on our analysis. While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production, they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

However, it is important to note that while there are many factors that impact the uncertainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops and other variables in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

Furthermore, one of the key uncertainties associated with our agricultural sector economic modeling that has the biggest impact on land use change results is the assumptions around crop yields. As discussed in preamble Section V.A.2, we are conducting sensitivity analysis around different yield assumptions in our analysis.

Therefore, because of the fact that we are only using the economic models to determine the difference between two projected scenarios and the fact that we are conducting sensitivity analysis around the yield assumptions we feel it is appropriate and acceptable to use economic models in our analysis of determining GHG thresholds in our final rule analysis.

2. Several comments and peer reviewers questioned the benefit of using two agricultural sector models. Specifically reviewers pointed to some of the inconsistencies in the FASOM and FAPRI domestic results. For the final rule analysis we worked to reconcile the two model results. We applied the same set of scenarios and key input assumptions in both models. For example, both models were updated to apply consistent treatment of DGs in domestic livestock feed replacement and consistent assumptions regarding DG export.

Some reviewers questioned the benefits of using FASOM and suggested we rely entirely on the FAPRI model for the analysis. However, we continue to believe there are benefits to the use of FASOM. Specifically, the fact that FASOM has domestic land use change interactions between crop, pasture, and forest integrated into the modeling is an advantage over using the domestic FAPRI model that only tracks cropland.

The RIA provides a detailed look on the coordination between the two models, namely ensuring that the assumptions used and the scenarios analyzed are the same. Further information on how these assumptions and scenarios were analyzed in each model can be found in the technical documentation for each model in the docket.

3. To ensure the Agency made its decisions for this final rule on the best science available, EPA conducted a formal, independent peer review of key components of the analysis. The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science. They were asked to evaluate four key components of EPA's methodology: (1) land use modeling, specifically the use of satellite data and EPA's proposed land conversion GHG emission factors; (2) methods to account for the variable timing of GHG emissions; (3) GHG emissions from foreign crop production (both the modeling and data used); and (4) how the models EPA relied upon are used together to provide overall lifecycle estimates.

The advice and information received through this peer review are reflected throughout this section. EPA's use of higher resolution satellite data is one example of a direct outcome of the peer review, as is the Agency's decision to retain its reliance upon this data. The reviewers also provided recommendations that have helped to inform the larger methodological decisions presented in this final rule. For example, the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. However, the review also recognized that no existing model comprehensively simulates the direct and indirect effects of biofuel production both domestically and internationally, and therefore model development is still evolving. The uncertainty associated with estimating indirect impacts and the difficulty in developing precise results also were reflected in the comments. In the long term, this peer review will help focus EPA's ongoing lifecycle analysis work as well as our future interactions with the National Academy of Science and other experts.

The peer review was one of many efforts by EPA to seek the advice and input of a broad group of stakeholders. In order to maximize stakeholder outreach opportunities, the comment period for the proposed rule was extended to 120 days. In addition to this formal comment period, EPA made multiple efforts to solicit public and expert feedback on our approach. Beginning early in the NPRM process and continuing throughout the development of this final rule, EPA held hundreds of meetings with stakeholders, including government, academia, industry, and non-profit organizations, to gather expert technical input. Our work was also informed heavily by consultation with other federal agencies. For example, we have relied on the expert advice of USDA and DOE, as well as incorporating the most recent inputs and models provided by these Agencies. Dialogue with the State of California and the European Union on their parallel, on-going efforts in GHG lifecycle analysis also helped inform EPA's methodology. As described below, formal technical exchanges and an independent, formal peer

review of the methodology were also significant components of the Agency's outreach. A key result of our outreach effort has been awareness of new studies and data that have been incorporated into our final rule analysis.

Altogether, the many and extensive public comments we received to the rule docket, the numerous meetings, workshops and technical exchanges, and the scientific peer review have all been instrumental to EPA's ability to advance our analysis between proposal and final and to develop the methodological and regulatory approach for this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
1. The commenter (2317) urges EPA to make its models available to the public so that they can evaluate the impact of accurate corn yield projections on the modeled GHG impacts and meet its commitment to transparency and the requirements of the Information Quality Act. [[Docket number 2317.1, p. 17]] [[See docket number 2317.1, pp. 17-20 for extensive discussion of this issue.]]

2. The commenter believes that because the Winrock analysis has been shown to be inaccurate, any model that relies on it is likely to be inaccurate as well.

3. Given that EPA uses models in combination for its analysis, erroneous inputs to FASOM and FAPRI based on Winrock modeling multiplies the errors in the results of the analysis. [[Docket number 2317.1, p. 24]] [[See docket number 2317.1, pp. 24-26 for extensive discussion of this issue.]]

4. Even if Winrock's analyses were accurate, which the commenter believes is not the case, the problem with EPA's approach is that it simply does not follow that the social, political and economic forces that led to particular land use shifts in 2001-2004 would be replicated over the next 20 to 30 years under the RFS2 program. EPA has provided no support in the docket or explanation in the Proposed Rule as to why it believes the land use patterns of 2001-2004 are representative of the land use shifts that will occur in the future. While this may be the only data that EPA has, that is not a sufficient basis to use it. EPA must show that such land use conversion patterns are *relevant* to what will happen as a result of implementation of the RFS2. It is not surprising that such an analysis is not provided in the proposal because it is highly unlikely that the same forces that affected land use change in 2001-2004 will be replicated in the future (23117.1, p.26).

5. In addition, there appears to be another error in the Winrock analysis (making the leap that earlier social, economic and political forces will be replicated in the future), the failure of Winrock to estimate the rate of conversion of cropland *back* to pasture or forest. We know this occurs as the 1 billion acres of abandoned cropland in the world attests. Winrock should have provided the net rate of conversion of forest to cropland, if any, rather than assuming that once

forest was converted to cropland, it would always stay in cropland and would never revert to forest or pasture, both of which store large amounts of carbon and simultaneously tie up nitrogen.

Our Response:

1. The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from these models that are used in the analysis; detailed documentation in the form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the CARD staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

The FAPRI model is a complex set of models that does not rely on an automated process. Rather, it requires experts at CARD to run the complete set of FAPRI models. Documentation on the general structure and operation of the FAPRI models is available on the docket. This documentation is not intended to be a step-by-step set of instructions. Rather, it is intended to reveal how the models actually operate in an effort to be as transparent as possible

For the final rulemaking analysis, EPA will provide updated documentation on the methodology used with updated assumptions. Correspondingly, all data used for the final analysis, as well as data used for sensitivity analyses (including from model runs conducted for a higher corn and soybean yield scenario), will be provided. Lastly, the models used for this analysis will be provided to the extent possible on the docket.

2. The proposed rule included a detailed description of the FAPRI/Winrock approach used to determine the type of land affected internationally. This approach uses satellite data depicting recent land conversion trends in conjunction with economic projections from the FAPRI model (an economic model of global agricultural markets) to determine the type of land converted internationally. In the proposed rule we described areas of uncertainty in this approach, illustrated the uncertainty with sensitivity analyses, and discussed other potential approaches for this analysis. To encourage expert and stakeholder feedback, EPA specifically invited comment on this issue, held public hearings and workshops, and sponsored an independent peer-review, all of which specifically highlighted this part of our analysis for feedback. While there were a wide range of views expressed in these forums, the feedback received by the Agency generally supported the FAPRI/Winrock approach as appropriate for this analysis. For example, all five experts that peer reviewed EPA's use of satellite imagery agreed that it is scientifically justifiable to use historic remote sensing data in conjunction with agricultural sector models to evaluate and project land use change emissions associated with biofuel production. Additionally, the peer reviewers and public commenters highlighted problematic areas and suggested revisions to improve our analysis. In preamble Section V, we describe the key revisions that were implemented which have significantly improved our analysis based on the feedback received.

As discussed above, all five of the expert peer reviewers that reviewed our use of satellite imagery for this analysis agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

3. As explained in preamble Section V, none of the satellite data analysis or emissions factors that EPA developed with Winrock was used as inputs into the FASOM or FAPRI modeling used in our analysis.

4. As discussed in preamble section V, our assessment of satellite data uncertainty did not try to fully quantify the uncertainty of using historical data to make future projections about the types of land that would be affected internationally. However, we think it is reasonable to assume that in general, recent land use change patterns will continue in the future absent major economic or land use regime shifts caused, for example, by changes in government policies. Thus, our uncertainty assessment provides a reasonable estimate of the variability in land use change patterns absent any fundamental shifts in the factors that affect land use patterns. However, our uncertainty assessment does not attempt to fully quantify the probability of major shifts in land use regimes, such as the implementation of effective international policies to curb deforestation. Although, the likelihood of these changes was not fully quantified, we conducted sensitivity analysis illustrating potential scenarios (e.g., if all or none of the land use changes affected forests) and how they could affect lifecycle GHG emissions from each biofuel.

5. The satellite data is used to determine what types of land would be affected by agricultural expansion or reversion as projected by the economic models used. The rate of conversion of croplands to other land types is therefore not relevant in our analysis. However, the satellite data showing these rates is available on the public docket.

Furthermore, as an improvement in our land use modeling framework, we now capture the possibility that an indirect effect of biofuel production could be crop or pasture abandonment in certain regions. For example, in countries where we project that livestock numbers decrease as a result of biofuel production, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes. Our analysis of the types of land that would grow back on abandoned agricultural land, and the resulting carbon uptake, is discussed in more detail RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2353
Organization: Iowa Soybean Association
Comment:
The commenter [[2353]] states that soybeans are raised in a rotation with corn. Since soybeans fix nitrogen from the air, the nitrogen nodules on their roots help fertilize the next crop, reducing both fertilizer use and tillage. Nitrogen fertilizer is not used on soybeans. [[#2353 p.2]]

Our Response:

EPA's analysis takes into account the fact that soybeans fix nitrogen. The crop budgets included in the FASOM model include data on input use that varies by crop, management practices, and region. There is often considerable variation in the inputs used per acre. Crop budgets are based on USDA Agricultural Resource Management Survey (ARMS) data and crop

budgets developed by university extension offices. More information on this can be found in the FASOM documentation in the Docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) believes that EPA should provide a mechanism for site specific fuel assessment and pathway creation. (2360.1, p.6)

Our Response:

EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) states that the case law, ISO criteria and EPA protocols establish clear requirements for predictive models that EPA must apply in order to determine any indirect impacts of compliance with the RFS2 regulation on GHG emissions. The commenter adds that the lifecycle emissions analysis presented in the NPRM relies upon an unusually complex chain of predictive models. EPA's use of such models must comply with the standards of transparency and reliability established by the Clean Air Act, as well the standards set by EPA and the Office of Management and Budget. The Agency cannot rely on data or analysis known only to itself and its contractors. Moreover, the right and need for the public to participate in the rulemaking process requires that agencies like EPA in this rulemaking follow a simple path. The commenter is concerned that the current approach being taken by EPA to the complex issue of international indirect land use change and GHG emissions too often deviates from that path. [[Docket number 2383.1, pp. 34-35]] [[See docket number 2383.1, pp. 34-37 and 2380.1 p. 2 for a detailed discussion of this issue.]]

The commenter also states that EPA's current analytical methods do not permit it to determine that conventional biofuels from new facilities in the united states will cause "significant"indirect GHG emissions increases, adding that there are strong reasons to be skeptical of the type of LCA analysis on which the NPRM relies to project international land-use change. The commenter points to the declaration of Bruce E. Dale. [[Docket number 2382.1, p. 37]] [[See docket number 2382.1, pp. 37-40 and docket number 2379.1, declaration of Bruce E. Dale for a detailed discussion of this issue.]]

Additionally, the commenter states that EPA is not permitted to rely on models that lack adequate transparency and that have not been peer reviewed. The inability of the public (and EPA's peer reviewers) to examine adequately the FAPRI and FASOM models is documented in a report by Informa Economics for Growth Energy, and has been described in the commenter's recent letter to EPA. The commenter believes that FASOM fails basic tests for model reliability and therefore cannot be used in estimating land use change. The commenter also believes that FAPRI's design is ad hoc and lacks objectivity and consistent boundaries. [[Docket number 2382.1, pp. 40-44]] [[See docket number 2382.1, pp. 40-44 for a detailed discussion of these issues.]]

The commenter believes that EPA is not relying on the "Best Available Science" for key factors in its land use change analysis. Also EPA has not procured and published systemic sensitivity analyses for its economic modeling. The LCA analysis does not apply consistent system boundaries, contrary to the requirements of the Statute. Based on current documentation, EPA's analysis does not permit it to allocate property land use and land-cover change among relevant causes, and does not include important sensitivity analyses. Finally, the commenter states that portions of EPA's analysis appear to violate a basic law of science. [[Docket number 2382.1, pp. 44-51]] [[See docket number 2382.1, pp. 44-51 and docket number 2379.1, declaration of Bruce E. Dale for a detailed discussion of these issues.]]

The commenter explains that after considerable effort, experts retained by the commenter were unable to operate the FAPRI models. This means that they could not replicate the models' results, conduct sensitivity analyses, or test the credibility of the outputs produced. The commenter believes that other stakeholders similarly have not been able to operate the FAPRI models. [[Docket number 1959.1, p. 1]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA. As part of this effort we made publically available detailed descriptions of the models used, data sources and assumptions including a fuel description of the FAPRI model and its algorithms and provided copies of outputs of the model including underlying outputs that affected the final results. This level of information is sufficient to provide adequate notice and opportunity for comment.

The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from these models that are used in the analysis; detailed documentation in the

form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the CARD staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

The FAPRI model is a complex set of models that does not rely on an automated process. Rather, it requires experts at CARD to run the complete set of FAPRI models. Documentation on the general structure and operation of the FAPRI models is available on the docket. This documentation is not intended to be a step-by-step set of instructions. Rather, it is intended to reveal how the models actually operate in an effort to be as transparent as possible.

Although the FAPRI model cannot be operated by any third parties, EPA has provided all data from FAPRI runs used in the lifecycle analysis, as well as those for sensitivity analyses, on the docket. In addition, EPA quantified in the uncertainty in our evaluation of GHG emissions impacts from biofuel-induced land use changes. These uncertainty ranges, and the procedures used to calculate them, are presented and discussed in preamble Section V and in additional detail in RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter is also concerned about the method used to translate the FAPRI models into estimates of how the RFS2 program would affect land use and land cover. EPA has not provided to the public the specific protocols used in interpreting and applying the satellite data. In addition, EPA has not explained with any specificity some very important assumptions about the release of carbon during the predicted land-use changes. [[Docket number 1959.1, pp. 1-2]]

Our Response:

The proposed rule included a detailed description of the FAPRI/Winrock approach used to determine the type of land affected internationally. This approach uses satellite data depicting recent land conversion trends in conjunction with economic projections from the FAPRI model (an economic model of global agricultural markets) to determine the type of land converted internationally. EPA explained the reasoning for every assumption used our analysis in the Section VI of the preamble to the proposed rule and in Draft RIA Chapter 2. In the proposed rule we described areas of uncertainty in this approach, illustrated the uncertainty with sensitivity analyses, and discussed other potential approaches for this analysis. Furthermore, every single data input and calculation that EPA used to translate the FAPRI model estimates into land cover and GHG emissions impacts were made publicly available in memoranda and spreadsheets in the public docket (see document numbers: 0938, 0945, 0949, and 0891).

To encourage expert and stakeholder feedback, EPA specifically invited comment on this issue, held public hearings and workshops, and sponsored an independent peer-review, all of which specifically highlighted this part of our analysis for feedback. While there were a wide range of views expressed in these forums, the feedback received by the Agency generally supported the FAPRI/Winrock approach as appropriate for this analysis. For example, all five experts that peer reviewed EPA's use of satellite imagery agreed that it is scientifically justifiable to use historic remote sensing data in conjunction with agricultural sector models to evaluate and project land use change emissions associated with biofuel production. Additionally, the peer reviewers and public commenters highlighted problematic areas and suggested revisions to improve our analysis. In preamble Section V, we describe the key revisions that were implemented which have significantly improved our analysis based on the feedback received. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter also expresses concern about the Agency's apparent determination to consider the results of one or more additional modeling systems in the land-use change analysis in the

Final Rule. The public cannot comment effectively on these additional modeling approaches without concrete information. The commenter suggests actions that will make the lifecycle analyses more transparent. [[Docket number 1959.1, p. 2]] [[See docket number 1959.1, pp. 2-3 for suggested actions.]]

[[Also see Attachment at docket number 1959.1 for explanation of commenter's concerns with certain aspects of the process by which EPA is developing its biofuels lifecycle analysis.]]

Our Response:

Again, the Agency has been transparent in its use of the different models and how these models inter-relate. We have also provided in the RIA details of sensitivity analyses conducted by the Agency as part of the documentation supporting this rule. These include results from GTAP modeling, an alternative modeling framework which we did not use directly for our lifecycle GHG assessments but the results of which we believed were informative in assessing the reliability of the modeling results directly used.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
The commenter (2387) expresses concern about the level of transparency of the macro-economic models. The commenter explains that in order to check the validity of a modeling approach, or to understand why different models give different results, it is important to know the justification for the modeling approaches that are adopted, the data fitting processes and data that have been used to determine parameters, for example elasticities, in the model. In many cases this is lacking in current ME models. [[Docket number 2387.1, p. 3]] [[See docket number 2387.1, pp. 4-5 for further discussion of this issue.]]

Our Response:

EPA has gone to great and appropriately reasonable lengths to detail the design of models used, the input parameters, sources of data, outputs of individual analyses and has included uncertainty assessments and sensitivity analyses about key parameters likely to have the most significant impacts on results. To the extent possible, these were documented in the public docket and made available to the public before close of comment. Additionally, we conducted a public workshop during the comment period in which we explained the models and data sources used and responded to comments and questions in order to assure full understanding of the analyses conducted for the proposal and thus to help assure complete and informed comments. We also held dozens of meetings with industry and others to understand their concerns, explain our analyses, receive updated information and otherwise benefit from comments. Further we have conducted a peer review of the models used and data sources and have reflected the results of those peer reviews in its final rule assessments. For this final rule, we have included detailed information of the models used and the outputs of individual models including the

macroeconomic models. We remain cond that we have used the best data and analytical tools available and have appropriately used these tools and data in constructing the final rule analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) notes that EPA employed a suite of tools and analytical procedures to model domestic and international agricultural sector impacts. This "synthesizing" of models and analytical procedures is particularly problematic in that it is an approach that lacks transparency. [[Docket number 2393.1, p. 45]] [[See docket number 2393.1, pp. 45-47 for further discussion of this issue.]]

The commenter adds that use of biomass to generate electricity in general provides much larger GHG benefits than does the conversion of biomass to fuel. Therefore the commenter recommends that EPA evaluate cellulosic ethanol on an electricity neutral basis in order to isolate the GHG impact of the biofuel activity from that of electricity generation. The commenter states that no-till farming should not be tied directly to stover collection. Under many scenarios corn stover could lead to soil carbon depletion instead of accumulation. [[Docket number 2393.1, pp. 47-48]]

Regarding the modeling of direct and indirect nitrous oxide emissions from agricultural sources, the commenter urges EPA to exercise caution in using the DAYCENT model outputs as inputs to FASOM. Concerns have been raised to the effect that the DAYCENT model reportedly overestimates N_2O emissions by more than a factor of two for some types of corn farming applications. How has EPA addressed this potential for overestimation in making the determination to use DAYCENT model output to update the N_2O factors in FASOM? If a model output that is subject to such a large degree of error is used as an input to another model, what will be the impact on the uncertainty associated with the overall biofuel lifecycle GHG calculation? The commenter believes that EPA should subject DAYCENT to careful scrutiny so that its contribution to the lifecycle GHG associated with producing a biofuel can be properly understood and evaluated.[[Docket number 2393.1, p. 48]]

Our Response:

We have made models and results available in the docket, used the same set of assumptions in both sets of models, and performed an uncertainty analysis around results.

Regarding the commenter's statements about the use of biomass the generate electricity, we are evaluating only the RFS2 biofuel policy, not other GHG policies that could impact the use of biomass for electricity. In terms of the biofuel production we do evaluate cellulosic biofuel pathways that do not produce excess electricity, for example the thermochemical ethanol pathway and the F-T diesel pathway.

No-till is not directly linked to corn stover production. The model does assume that with no-tll practices farmers could remove more stover from the field. Therefore, based on economics as stover becomes more profitable it is more economical for farmers to switch to no-till practices in order to remove more stover from the field.

Regarding the commenter's concern about the DAYCENT model, the main difference between using IPCC factors directly as opposed to relying on DAYCENT modeling is that IPCC provides default factors by crop by country, while DAYCENT models N_2O emissions by crop but also by region within the US, accounting for different soil types and weather factors. For the final rule we still rely on the DAYCENT modeling results as we believe them to be more accurate. For example, the National Greenhouse Gas Inventory as reported annually by the U.S. to the Framework Convention on Climate Change uses the DAYCENT model to determine N_2O emissions from domestic fertilizer use as opposed to using default IPCC factors as the DAYCENT modeling is recognized to be a more accurate approach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) notes that EPA references the Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) model. The commenter states that the GREET model is very limited on feedstock pathways and does not include any pathways associated with algae or other non-food biomass such as micro-crops. Further analysis of this model and its applicability to micro-crops needs to be closely evaluated. Without this model, the commenter asks what will EPA accept to support the LCA. [[Docket number 2425.1, p. 6]]

Our Response:

EPA agrees that the GREET model does not have and algae pathway, therefore for the final rule analysis EPA conducted our own analysis of algae to biodiesel production. EPA worked with NREL to develop process information for algae to biofuel production process. This analysis indicated that algae would qualify as an advanced biofuel.

Furthermore, for the final rule we have set up a petition process where fuel providers can provide information to EPA if their specific process is not captured by EPA's current analysis or rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:

The commenter (2486) believes that land-use change is only one of many indirect/market-mediated effects of the fuels industry. Other market mediated environmental impacts include water use, urban sprawl, etc. The focus on land-use change as the ONLY indirect/market-mediated impact considered in EPA's modeling results in an unreasonable focus on biofuels. While indirect land use changes of petroleum fuels have been considered, other market mediated impacts have not. EPA must therefore consider analogous market-mediated impacts from conventional petroleum fuels in the event that biofuels are NOT used. For example, the increased demand for crude oil would drive crude oil prices up. There are a number of detrimental environmental consequences caused by higher oil prices, expanded conventional drilling, expanded tar-sands mining, rising commodity prices, rising food prices. All these rising prices cause widespread expansion of extractive industries and agriculture, well documented through the last oil super spike in 2008. To assume that these impacts are negligible is effectively subsidizing the largest polluters. [[Docket number 2486.1, p. 2]] [[See docket number 2486.1, p. 3 for examples provided for EPA's consideration.]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule did not include indirect emissions from petroleum production was to be consistent with the goals and scope of the analysis as defined by the Energy Independence and Security Act (EISA).

The text of EISA specifies that the lifecycle threshold analysis for the different renewable fuel categories be compared to baseline lifecycle greenhouse gas emissions. EISA defines baseline lifecycle GHG emissions as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-

products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2497
Organization: Wisconsin Department of Natural Resources
Comment:
The commenter (2497.1) believes that EPA did not analyze other types of renewable fuels/blendstocks, such as cellulosic diesel or gasoline, biogas, biofuels from e.g., algae, or other biomass-to-liquids (BTL). The modeling should describe the impacts of the production and/or use of these renewable fuels on air quality and model the impacts, if deemed appropriate. (2497.1, p.2)

The commenter also noted that the Midwest currently is and will likely continue to be a significant production center and user of renewable biofuels. The commenter believes that the modeling should acknowledge this by focusing sufficient resources to conduct the needed modeling in this region. The commenter requests that the needed modeling and information gathering be completed within two years of the rule becoming final (i.e., November 2011). If EPA does not have the resources to complete the required modeling in a timely manner, assistance from other credible entities, such as LADCO, should be utilized. (2497.1, p.2)

The commenter also requests that the modeling take into consideration the ongoing, regular reviews of existing criteria pollutant and toxics rules. The modeling should include an

evaluation of the broader implications of rule implementation, including the full suite of renewable fuels, on the standards and objectives of the Clean Air Act and impacts/affects to land use. (2497.1, p.2)

Our Response:

EPA has updated its analyses for the final rule and has included a number of additional pathways including cellulosic diesel and algae as recommended by the commenter. We have modeled all those pathways we expect will be significant contributors of biofuel in the foreseeable future. We note however that for some of these pathways such as for cellulosic diesel and biofuels using algae oil as feedstock, the technologies remain under development and assessment of GHG performance may need to be updated to reflect this ongoing development. EPA has indicated its plans to continue assessment of biofuels including emerging pathways and will incorporate these in subsequent rulemakings as soon as practicable.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2500
Organization: Citizen
Comment:
The commenter (2500.1) noted that the use of the FASOM and FAPRI models in the manner used is not justifiable by any principle of modeling, and "after the fact" jiggling with models to address the most visible inconsistencies is as much a cause for concern as a sign of progress. (2500.1, p.2)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA. The adjustments made to the FASOM and FAPRI models were intended to provide consistency of assumptions across the models. EPA believes making these adjustments for consistency is warranted and appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2500
Organization: Citizen
Comment:

The commenter noted that one of the greatest opportunities for inconsistency lies in the differing modeling treatments of switchgrass ethanol. FASOM uses one set of tools that predict one set of lands will be used to produce cellulosic ethanol, which will in turn generate large reductions in the amount of cropland devoted to a range of other crops. An increase of slightly more than 2 million acres of switchgrass results in a reduction of roughly 1.8 million acres of other croplands and hay. There are large reductions in agricultural production emissions in the U.S. However, FAPRI predicts only around 1.3 million acres of increased agricultural production abroad. The large differences in the predicted exports highlight the discrepancies and appear to lead to a significant underestimation of emissions. (2500.1, p.2) (See Docket Number 2500.1, pp.2-3 for a detailed discussion of this issue)

Our Response:

For the final rule analysis EPA has updated the treatment of switchgrass ethanol in FASOM and FAPRI. For the final rule EPA took the projected domestic crop acre changes impacted by increased switchgrass from the FASOM model and applied those acre and crop impacts to the domestic component of the FAPRI model. We then determine the international impacts of those domestic changes in the FAPRI model. This is a more consistent approach for measuring the impacts of switchgrass production. We are also working with FAPRI to get switchgrass specifically added to the model for future analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2500
Organization: Citizen
Comment:
The commenter also noted that the broad categories of biofuels do not provide a sound basis for estimating future greenhouse gas emissions because they incorporate large numbers of pure assumptions. A better approach would derive a simple model from its other model results of key assumed factors that drive the results and establish categories based on future actual experience. For example, EPA can estimate the type of land use change likely to rely from the use of land of particular productivity, which can then be turned into variable emissions per unit based on switchgrass yields and conversion efficiencies in plants. (2500.1, p.3)

Our Response:

The requirements from EISA do not require EPA to develop specific GHG estimates per gallon of fuel produced. The thresholds are per categories of fuels so EPA can develop average GHG emission estimates per pathway for the different categories. EPA will continue to update our analysis based on future actual analysis. Furthermore, if a fuel producer has a process or feedstock that is not specifically modeled by EPA they could provide their own information as part of a petition process to have their fuels analyzed.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) approves of EPA's proposal to move to the Daycent model for nitrous oxide emissions, however until there is a new approach to estimating indirect emissions that is better than using the IPCC parameters, the commenter recommends use of those IPCC parameters. (2508, p.4)

Our Response:

The difference between using IPCC factors directly vs. the DAYCENT model is that IPCC provides default factors by crop by country, while DAYCENT models N_2O emissions by crop but also by region within the US, accounting for different soil types and weather factors. For the final rule we still rely on the DAYCENT modeling results for domestic N_2O emissions as we believe them to be more accurate. For example, the National Greenhouse Gas Inventory as reported annually by the U.S. to the Framework Convention on Climate Change uses the DAYCENT model to determine N_2O emissions from domestic fertilizer use as opposed to using default IPCC factors as the DAYCENT modeling is recognized to be a more accurate approach. For international N_2O emissions we use IPCC default factors by crop.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512.1) asserts that it is not appropriate to use a weighted average approach for estimating the type of land is converted to crop land at the national level. The commenter believes this is an important shortcoming of the current models, and crops should be assessed regionally, as the agricultural models do for domestic crop production. If the Winrock land type classes are also assessed uniformly for each country (as it appears they are), this is also a problem for this assessment. The commenter suggests that, for large countries at a minimum, sub-national units be used for modeling. (2512.1, pp.5-6)

The commenter believes that where the degree of blending for market-traded commodities is such that no region of origin can be proscribed, a weighted average should be assigned to regions which produce the commodity, based on the percentage of national production each represents. This would allow the assessments to more accurately reflect the impact of biofuel production on emissions and other factors. (2512.1, p.6)

The commenter noted that while the strongly supports the inclusion of potential impacts of biofuel development on biodiversity in the models, the commenter did not see biodiversity referenced elsewhere in RFS2. If EPA is going to include in the analysis, the commenter would appreciate seeing further details. (2512.1, p.11)

Our Response:

We agree with the commentor that details on where land conversion takes place at a sub-national level would be preferable, particularly for large countries. This is one of the reasons we have include the Brazil module in our FAPRI analysis for the final rulemaking. Since the FAPRI model now quantifies changes in acreage at a sub-national level in Brazil, we are able to use Winrock data to classify the type of land that is converted at a sub-national level. While we plan to continue to add this level of detail to the FAPRI model for other countries over time, we do not yet have the capability to estimate acreage changes at the sub-national level outside of the U.S. and Brazil.

We were not able to include an analysis of the biodiversity impacts of the renewable standard for this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2525
Organization: Embassy of Brazil
Comment:
The commenter (2525) requests that special emphasis be placed on the following issues:
1. The application of deterministic economic models for predicting outcomes from single value parameters is disputable. Minor parameters variations can generate output discrepancies leading to enormous margins of error.
2. A proposed biofuels lifecycle analysis must be undertaken in a comparable base of fossil fuels lifecycle analysis.
3. While Brazil has a large volume of data to inform carbon content calculations, this will not be the case for several other developing countries. Little accuracy carbon content calculations model, with an average margin of error between 75 and 90%, represents an additional challenge to the reliability of aggregating such data to the overall analysis.
4. Cogeneration of electricity from sugarcane bagasse - already acknowledged in the Californian LCFS - is not currently contemplated on EPA's lifecycle analysis model. [[Docket number 2525, p.1]]

[[Also see docket number 2525.1, the annex transcript, that contains 5 hours of the discussions containing assessments and considerations from Brazilian specialists to the lifecycle analysis model preliminary developed by EPA.]]

Our Response:

1. The peer review, the public comments we have received, and the analysis conducted for the proposal and updated here for the final rule, indicate that it is important to take into account indirect emissions when looking at lifecycle emissions from biofuels. It is clear that, especially when considering commodity feedstocks, including the market interactions of biofuel demand on feedstock and agricultural markets is a more accurate representation of the impacts of

an increase in biofuels production on GHG emissions than if these market interactions are not considered.

However, it is also clear that there are uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. Reviewers highlighted the uncertainty associated with our lifecycle GHG analysis and pointed to the inherent uncertainty of the economic modeling.

In the proposal, we asked for comment on whether and how to conduct an uncertainty analysis to help quantify the magnitude of this uncertainty and its relative impact on the resulting lifecycle emissions estimates. The results of the peer review, and the feedback we have received from the comment process, supported the value of conducting such an analysis. Therefore, working closely with other government agencies as well as incorporating feedback from experts who commented on the rule, we have quantified the uncertainty associated specifically with the international indirect land use change emissions associated with increased biofuel production.

Although there is uncertainty in all portions of the lifecycle modeling, we focused our uncertainty analysis on the factors that are the most uncertain and have the biggest impact on the results. For example, the energy and GHG emissions used by a natural gas-fired ethanol plant to produce one gallon of ethanol can be calculated through direct observations, though this will vary somewhat between individual facilities. The indirect domestic emissions are also fairly well understood, however these results are sensitive to a number of key assumptions (e.g., current and future corn yields). The indirect, international emissions are the component of our analysis with the highest level of uncertainty. For example, identifying what type of land is converted internationally and the emissions associated with this land conversion are critical issues that have a large impact on the GHG emissions estimates.

Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts in three ways: (1) getting the best information possible and updating our analysis to narrow the uncertainty, (2) performing sensitivity analysis around key factors to test the impact on the results, and (3) establishing reasonable ranges of uncertainty and using probability distributions within these ranges in threshold assessment.

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in preamble Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change - the types of land converted and the GHG emission associated with different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

2. The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

3. For the final rule our evaluation of biofuel lifecycle GHG emissions specifically considered the geographic variability in land cover carbon content data quality and quantity.

For all countries analyzed, we followed the 2006 IPCC Agricultural Forest and Other Land Use Guidelines (AFOLU) and used the best available data in the scientific literature. In addition to seeking comment on our analysis in the proposed rule, EPA organized public hearings and workshops, and an expert peer review specifically eliciting feedback on this part of the lifecycle analysis. All of the expert peer reviewers generally felt that our analysis followed IPCC guidelines and was scientifically justifiable; however, they did make several suggestions of new data sources and recommended areas that could benefit from additional clarification. Based on the detailed comments we received, we worked with Winrock to make a number of important revisions, which have significantly improved this part of our analysis. These improvements include the incorporation of a higher resolution soil map of the world, several new studies on biomass carbon stocks, and new studies on annual forest carbon uptake by old-growth forests. All of these improvements are discussed in more detail in preamble Section V.

As discussed in preamble Section V, we conducted a full assessment of the uncertainty in international land use change emissions factors consistent with 2006 IPCC guidance.[1] This analysis considers the uncertainty in the every parameter used in our emissions factor estimates. Standard deviations for each parameter were estimated based on the quality and quantity the underlying data for each. For example, in our analysis the standard errors (as a percent of the mean) tend to be smallest for forest carbon stocks in Brazil, because a large amount of high quality/resolution data was considered to estimate that parameter. Standard errors are largest for parameters that were estimated by scaling other data, or applying IPCC defaults, e.g., savanna carbon stocks in Yemen.

4. For the proposal we did include cogeneration of electricity from sugarcane bagasse. However, it was brought to our attention to also consider the use of sugarcane trash to generate additional electricity credit. For the final rule we have incorporated the use of sugarcane trash and other anticipated improvements by 2022 into our analyses.

[1] 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 1: General Guidance and Reporting, Chapter 3: Uncertainties, available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol1.html

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2541
Organization: Citizen
Comment:
The commenter (2541) noted that while they support modeling efforts of the type solicited by the EPA, they do not believe that the particular applications are appropriate. The commenter noted that these models just are not designed to provide the details needed. Much more country by country research would be required. (2541, p.1)

Our Response:

We have significantly updated our modeling analyses since the proposal including our assessments of international impacts which now include more country specific information.. As explained in both the proposal and the final rule, we believe econometric models such as FASOM and FAPRI are essential in evaluating the agricultural industry's response to increase demand for biofuel feedstock. The specific use of these two models is supported by their related use in other government assessment of agricultural industry response. Their use for biofuel feedstock assessment is support by peer review and other comments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161
Organization: Growth Energy
Comment:
[*The following is from Growth Energy's late supplemental comment document-a document number has not been assigned yet*]:
The commenter reviewed comments submitted by ICONE on what ICONE calls the Brazilian Land Use Change Model (BLUM) (See docket number 1958.1). The commenter does not believe that the predictive models adapted for use in BLUM are appropriate for use in attempting to estimate the environmental impacts of compliance the RFS2 regulation.

Our Response:

The Brazil module (an early version of which was used in the ICONE's analysis) was developed by Iowa State University with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. In the NPRM, we requested additional data for countries outside the U.S. We received comments encouraging us to use regional and country specific data where it was available. We also received comments encouraging us to take into account the available supply of abandoned pastureland in Brazil as a potential source of new crop land. The new Brazil module addresses these comments. Since the Brazil module contains data specific to six regions, this additional level of details allows FAPRI to more accurately capture real-world responses to higher agricultural prices. For example,

double cropping (the practice of planting a winter crop of corn or wheat on existing crop acres) is a common practice in Brazil. Increased double cropping is feasible in response to higher agricultural prices, which increases total production without increasing land use conversion. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

ICONE's analysis uses BLUM by itself based on the assumption that sugarcane ethanol production in Brazil has no effect or interactions with agricultural markets in other countries. We did not think this was a valid assumption, so instead of modeling Brazil in isolation we integrated updated Brazil module into FAPRI's global modeling framework. We used this modeling structure to analyze all of the renewable fuels assessed with FAPRI in this rulemaking.

What Commenters Said:

The commenter is not aware of any means by which the public can fully understand and test BLUM, and doubts that EPA can do so either, because the necessary documentation is unpublished.

Our Response:

As was done for the NPRM analysis, EPA will be making available on the docket documentation of the agriculture sector models used, including FAPRI and the use/integration of the Brazil Module, in the RIA as well as a detailed technical report authored by CARD staff that operated the FAPRI model for EPA's analysis. In addition, a "solved" Reference Case version of the FAPRI model used for EPA's analysis will be available on the docket as well. In combination, this should provide sufficient information to the public about how the FAPRI model (with the Brazil Module) was used in EPA's analysis, and how various assumptions are incorporated into the modeling analysis.

What Commenters Said:

The commenter has been unable to locate any indication that BLUM has experienced the type of review required by EPA's March 2009 *Guidance on the Development, Evaluation and Application of Environmental Models*. This omission is not explained in ICONE's filing. Is it apparent from other materials placed on the docket by ICONE and affiliated organizations that ICONE has been at work on BLUM for many months, and could have sought evaluation of BLUM using the March 2009 protocols. Even if all the necessary documentation were available to EPA, it would not be consistent with EPA's goals of transparency nor with the Clean Air Act for EPA to rely on results of a model that has not been made available for full public review and that has not been fully and publicly evaluated in the manner required by the March 2009 *Guidance* on modeling.

Our Response

EPA has followed EPA and federal regulatory procedures. EPA described as part of the proposal working to build a Brazil specific module in the FAPRI framework. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models with outside experts and across the federal government. After EISA's enactment in December 2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments. The Brazil module as also part of the discussions of the lifecycle workshop held during the comment period.

In regards to a review of the FAPRI model, FAPRI (which consists of both the Center for National Food and Agriculture Policy at the University of Missouri-Columbia, and CARD at Iowa State University) conducts an annual baseline review and publishes their baseline projections for the U.S. agricultural sector and international commodity markets. These published baseline projections are known as FAPRI Outlooks. These baseline projections are extensively reviewed by several groups prior to publication, including USDA, various international organizations, other academic institutions, and other industry experts. Comments and recommendations from these groups are taken into account for the final baseline projection published in the FAPRI Outlook each year. EPA's analysis of the global agriculture sector is based on the latest FAPRI baseline available, taking into account assumptions used in the EPA analysis, as well as the adding to the model's capabilities where appropriate, including the addition of the regional Brazil Module. All adjustments made to the FAPRI model for EPA's analysis are thoroughly documented in the RIA and items in the docket mentioned above. Additional information on the review of the FAPRI model, baseline projection review, and publications of the FAPRI Outlook can be found on FAPRI's website.

What Commenters Said:

The materials placed in the docket by ICONE do not appear to provide complete references for important assumptions about area elasticities for various crops, or to explain why those elasticities are different from those used in the models that EPA used in the proposed rule. There is also no complete explanation for the inclusion of pasture elasticity in BLUM; such an elasticity is not found in EPA's version of the FAPRI models.

Our Response:

The Brazil Module of FAPRI was developed by the Center for Agriculture and Rural Development at Iowa State University, with input from Brazilian agricultural sector experts, and utilizes data collected by the Brazilian Agriculture Census. The Brazil Module was not completely developed in time for use in the Proposal's analysis, but was available for use in the final rulemaking analysis. Technical documentation for the FAPRI model as used in the final rulemaking analysis provides additional information behind the development of the Brazil Module and the data sources used.

What Commenters Said:

BLUM makes unexplained assumptions about land conversion in different area in Brazil. For example, in the Southeast Region defined by BLUM, all expansion of crop land is assumed to occur in the Cerrado.

Our Response:

As explained in preamble Section V, we used the results from the global FAPRI model, which incorporated the new Brazil module, to project the amount of crop and pasture area changes in each country or region. The new Brazil module explicitly projects crop and pasture area in 6 distinct regions in Brazil. To determine the types of land affected by these land use changes, we did not use the same assumptions as ICONE. Instead, we used the FAPRI/Winrock satellite data analysis explained in preamble Section V. This approach uses satellite data depicting recent land conversion trends to determine the type of land converted internationally. As explained in preamble Section V, all of the expert peer reviewers that reviewed EPA's use of satellite data agreed that in general EPA's approach is scientifically justifiable.

What Commenters Said:

ICONE also has not fully explained why it assumed a higher carbon uptake for sugar cane than proposed by EPA.

Our Response:

The land conversion emissions estimates used in our analysis consider the carbon stored in crop biomass. In the proposed rule, we used the IPCC default biomass sequestration factor of 5 metric tons of carbon per hectare for annual crops, and applied this value to all crops globally. The final rule analysis now distinguishes between annual and perennial crops, with separate sequestration estimates for sugarcane and oil palm determined from the scientific literature.

Carbon stocks in sugarcane after one year of growth were assumed to be 44 t CO2e/ha. (Carbon stocks for long-lived tree species such as oil palm accumulate carbon more slowly in the early phases of growth.) The value for sugarcane was derived from estimates of carbon stocks in sugarcane in aboveground biomass (17 t C ha^{-1} or 62 t CO_2, Amaral et al. 2008)[i] and in belowground biomass (7 t C/ha or 26 t CO_2/ha, Smith et al. 2005)[ii] for a total of 88 t CO2e/ha. We assumed a growth period of two years to achieve full carbon stocks, therefore the carbon stock in sugarcane after one year of growth was assumed to be 44 t CO_2/ha.

What Commenters Said:

Growth Energy believes that EPA should complete the portion of the RFS2 rulemaking necessary to implement volumetric requirements for renewable fuels for calendar year 2010, and to complete work on other portions of the May 2009 regulatory proposal at a later point. If the Agency adopts that approach, Growth Energy recommends that EPA publish in the *Federal Register* a "Notice of Data and Availability" concerning the BLUM model, and any other additional models that PEA might include in the Notice, and invite public comment. This would permit ICONE to address the issues presented in this letter and otherwise to supplement their earlier filing in order to permit effective consideration of its analysis. It would also permit all interested parties to comment on BLUM and any other materials covered by such as Notice.

Our Response:

EPA believes it has sufficient information on which to base its lifecycle GHG assessments through 2022 for the fuel pathways included in this final rule. It has thoroughly documented the sources of data and models used for this final rule

What Commenters Said:

The commenter includes a draft paper, submitted for publication in a peer-review journal, by scientists at the Oak Ride National Laboratory (ORNL), supported by the U.S. Department of Energy. The work by the ORNL scientists included the following: (i) an examination of the basic methodological issues presented by the indirect land use change (ILUC) theory, (ii) an evalutation of the Global Trade Analysis Project (GTAP) models, and (iii) results of the indirect emissions impacts estimated using a version of GTAP developed at ORNL.

The commenter states that the ORNL scientists have concluded that the quantitative results of land use change models "requires more data and more detailed land-use modeling," if it is to be used to support regulatory action. Their work is obviously important if EPA is considering using the GTAP modeling framework for purpose of a Final Rule analysis. Their work is also important in assessing the ILUC by means of any other modeling framework, including the much-criticized alternatives to GTAP that are discussed in EPA's proposed rule. The ORNL scientists' paper contains analyses that "apply equally well to non-GTAP simulations of U.S. biofuels policy."

The commenter also calls attention to a number of "critical flaws" in other GTAP simulations raised in the ORNL paper. First, the commenter asserts that prior estimates of the impact of an "ethanol shock" on land use should be attributed to the impacts of oil prices. The paper also asserts that GTAP's substitution of land types is not reflective of how land is actually substituted among different uses. The ORNL study concludes that appropriate adjustments are made, the impacts of increased biofuels use outside the United States "are quite small" (See enclosed ORNL study for details). Growth Energy therefore recommends that EPA rely on the ORNL scientists' work, rather than other simulations using less accurate versions of GTAP or the models discussed in the May 2009 Federal Register, if the Agency is obliged to proceed with ILUC analysis at this point.

Our Response:

EPA reviewed the ORNL study and identified three major criticisms of the GTAP model in the study. EPA also found several criticisms of Searchinger et al. (2008) in the ORNL study. As discussed below, while the ORNL researchers raise some important issues associated with modeling, we disagree that these criticisms apply equally well to other simulations (e.g., our lifecycle analysis for this rulemaking.) Furthermore, we have also identified several methodological concerns with their modifications to the GTAP model, and therefore disagree that it is the most appropriate model for measuring indirect land use change at this time.

First, the ORNL study argues that previous GTAP simulations inappropriately shock oil prices in order to shock ethanol production. The study also argues that Searchinger et al. (2008) also used this methodology, which ORNL authors argue is invalid. This criticism is not relevant to EPA's analysis for this rulemaking because we exogenously specified the oil prices and biofuel volumes in our simulation scenarios with the FASOM and FAPRI models. In other words, we only shocked the level of biofuel production, and held oil prices constant. In our GTAP scenarios, we also exogenously required an increase in biofuel volumes between our reference case and our policy case, therefore the land use changes observed are a direct result of the change in biofuel volumes. We therefore believe this criticism is not applicable to our analysis for this rulemaking.

Second, the ORNL study changes the original GTAP elasticities of substitution between renewable fuels and petroleum products to zero implying that both the fuels are consumed in fixed proportions and cannot act as substitutes. This assumption does not accurately reflect transportation fuel markets, since it assumes that consumers cannot choose to substitute renewable fuels (e.g., E-85) for petroleum products if the relative prices change.

Third, the ORNL study argues that previous GTAP simulations inappropriately excluded so-called "unmanaged land" from its modeling of land cover changes. This criticism does not apply to EPA's FAPRI/Winrock modeling, because our modeling framework does not exclude unmanaged natural ecosystems from the land resource that could be used for agricultural purposes. As discussed in preamble Section V, we agree that one of the current limitations of the GTAP model is that it does not allow some of the land that is currently classified as "unmanaged" (e.g., grassland and savannah) to be transferred into crop or pastureland. However, the nested model structure made by ORNL to address this issue raises several important methodological concerns. ORNL equates the percentage change in effective land with the percentage change in physical land implying that all lands are equally productive. While a percentage change approach is commonly used in computable general equilibrium (CGE) modeling due to linearization, we believe it is problematic when determining land use changes, since the total amount of land is not held constant as a result of policy changes (e.g., total physical land will not be forced to add up). Furthermore, this approach does not make any productivity adjustments based on new land that is brought into crop production, which is an important factor to consider. It is inappropriate to include the physical land hectares directly in a constant elasticity of transformation (CET) land supply function, as the share weighted percent change in hectares would not sum to zero. In addition, the ORNL study also adapts the elasticity

of transformation (ETRAE1) across land covers as -0.1 compared to -0.2 in the EPA studies. This would result in lower land cover change as reflected in our systematic sensitivity analyses.

Fourth, the ORNL study claims that "the GTAP models exclude more than 300 million hectares of land in the U.S. (about one third of total U.S. land area) and the ORNL study includes this area." However, their entire work is based on the data base provided by the GTAP. Our studies indicate that GTAP data base in fact has 2.14 billion acres of land which is very close the actual U.S. land area of 2.3 billion acres. This indicates that there is a critical flaw in the way the ORNL study has utilized the GTAP land use data base.

Fifth, the ORNL study argues that GTAP is a static model so that it cannot properly model technological improvements, such as increasing crop yields over time. The ORNL study also argues that Searchinger et al. (2008) did not appropriately account for future crop yield increases. These criticisms do not apply to EPA's modeling for this rulemaking. We used dynamic models that account for technological advancements over time. As discussed in preamble Section V, throughout the rulemaking process EPA made this issue a priority and employed an open, collaborative and science-based approach to determine the appropriate technological improvement rates to include in our modeling.

For the reasons cited above, EPA disagrees with the commenter that we should use the ORNL version of the GTAP model. We believe it is premature to use this version of the model since it has not yet been published in a peer-reviewed journal, nor has it undergone peer-review through the Center for Global Trade Analysis at Purdue University, which is the coordinating center for the GTAP model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2339
Organization: Illinois Com Growers Association
Comment:
The commenter states that EPA has used a single well-known model, GREET, to determine the lifecycle emissions for gasoline and diesel as well as the direct GHG emissions for renewable fuels. In contrast, for indirect emissions from renewable fuels, EPA has pieced together the output of a number of different models which were developed for entirely different purposes. While the GREET Model is up-to-date, the ICGA is concerned that the models used to calculate indirect emissions may contain out-of-date information on matters such as state-of-the-art ethanol technology and processes, increased crop yields, and other new and evolving agricultural practices. Further, ICGA is concerned that the assumptions, confidence levels, and inputs for the models vary in general. [[#2339 p.3]]

Our Response:

EPA disagrees with the comment that the GREET model inputs are more up to date than the inputs used in our rulemaking analysis. Rather, our analysis takes into account various expectations for increases in technology throughout the renewable fuel manufacturing process,

both in the field and in the plants. Accordingly, EPA's analysis of the agriculture sector includes crop yield projections that increase over time which are consistent with USDA's projections. EPA also takes into account current and future projected energy and technology improvements at biofuel production facilities. The lifecycle GHG results for the different biofuels are based on 2022 values which accounts for the agricultural and process technology improvements. Furthermore, EPA does not use the GREET model for the direct impacts of biofuel production, accounting for biofuel lifecycle GHG emissions are done with the use of agricultural sector models.

While the GREET model has been used extensively in the past to determine lifecycle GHG emissions from transportation fuels, it was not sufficient for the lifecycle modeling required for this rulemaking. The EISA mandate specifically required the assessment of indirect impacts of biofuel production, the GREET model does not include indirect impacts and therefore could not be used for this rulemaking analysis.

What Commenters Said:

Document No.: (EPA-HQ-OAR-2005-0161-3084)
Organization: Renewable Fuels Association
Comment:
We carefully examined the proposed RFS2 rule for any evidence that EPA evaluated FASOM's predictions of corn and soybean meal production and their sensitivity to the distillers grains feed replacement assumptions, but found no sensitivity analyses. Therefore, we asked Air Improvement Resource, Inc. (AIR) to run sensitivity analysis of FASOM results The commenter ran three scenarios:

1. Default DG: used the DG replacement rates used in EPA's proposed rule analysis
2. RFA DG: scaled-up the DG replacement rates based on research from University of Minnesota
3. Zero DG: assumed DG does not replace feed at all

There are three findings from this analysis:

1. The model shows that DG use does reduce land devoted to soybeans, and also reduces soybean production.

2. The model shows that DG use does reduce land devoted to corn, but for some unidentifiable reason, does not reduce corn production.

3. The model does not reduce corn and soybean acreage in response to increased DG displacement to the degree our external calculations suggest should reasonably occur. The reasons for this are not clear.

Since DGs have a significant effect on net land use for corn ethanol, we think these FASOM modeling issues should be carefully examined by EPA before finalizing the RFS2. While the

directional effects of increasing DG substitution inside the FASOM model appear correct, the magnitude of the effects appears grossly understated. The reasons for this should be investigated. Based on the apparent gross understatement of the land impact of increasing DG substitution, it appears the FASOM model may possibly be flawed in how it translates changes in DG substitution rates into acreage impacts.

Our Response:

There are many factors that are impacted in a detailed agricultural sector economic model like FASOM when a factor is changed. When the efficiency of DGS use is changed this could have impacts on many other factors like the value (and price) of corn, soybean meal, livestock, etc. These changes will all have ripple effects on the amounts and types of crops grown.

The commenter bases their finding on "back of the envelope" calculations of the differences in corn and soybean acreage that they expected *a priori* between the RFA DG and Zero DG scenarios. These back of the envelope calculations include no accounting for market responses, which, as discussed above are essential to understand the impacts of agricultural technology or policy changes. Furthermore, the "Zero DDG" case is such a radical departure from the current reality of corn ethanol production that we can not respond to the results of that simulation without more information. In summary, we do not think that "back of the envelope" calculations that make no attempt to consider market responses can be used as a basis to validate the efficacy of complex economic models such as FASOM.

In the proposed rule EPA discussed DGS replacement rates and specifically requested comment on this input into our modeling. For the final rulemaking analysis, both the FASOM and FAPRI models have incorporated updated distillers grains replacement rates for corn and soybean meal in animal feed. These updated assumptions are based on recent research conducted by Argonne National Laboratory. These assumptions, however, are applied to all volume scenarios analyzed in the FASOM and FAPRI models for this rulemaking. Therefore, an increase in demand for renewable fuel under these circumstances still results in land use. Our modeling is described in more detail in preamble Section V.

7.2.4 Treatment of Uncertainty

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
1. The commenter (0952.1) believes that EPA should provide the results of formal uncertainty analysis (if such an analysis was conducted) including confidence intervals and probability distributions. Uncertainty analysis is necessary so that decision makers can reasonably understand the degree of confidence they can place in the model results. (09582.1, pp.3)

2. As of September 24, 2009, the commenter is not aware that EPA has neither conducted nor provided to the public such analyses. The lack of reproducibility of EPAs results (with respect to FAPRI), and the lack of analysis as to robustness of these results, calls into question whether the FAPRI or FASOM models rise to the level of scientific validity, utility, objectivity or integrity that can be reasonably used in this type of rulemaking process. The commenter beleives that it is inappropriate at this time to use either model to establish point estimates for international indirect land use change emissions in this rulemaking. (2329.1, 24)

Our Response:

1. The peer review, the public comments we have received, and the analysis conducted for the proposal and updated here for the final rule, indicate that it is important to take into account indirect emissions when looking at lifecycle emissions from biofuels. It is clear that, especially when considering commodity feedstocks, including the market interactions of biofuel demand on feedstock and agricultural markets is a more accurate representation of the impacts of an increase in biofuels production on GHG emissions than if these market interactions are not considered.

However, it is also clear that there are uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. Reviewers highlighted the uncertainty associated with our lifecycle GHG analysis and pointed to the inherent uncertainty of the economic modeling.

In the proposal, we asked for comment on whether and how to conduct an uncertainty analysis to help quantify the magnitude of this uncertainty and its relative impact on the resulting lifecycle emissions estimates. The results of the peer review, and the feedback we have received from the comment process, supported the value of conducting such an analysis. Therefore, working closely with other government agencies as well as incorporating feedback from experts who commented on the rule, we have quantified the uncertainty associated specifically with the international indirect land use change emissions associated with increased biofuel production.

Although there is uncertainty in all portions of the lifecycle modeling, we focused our uncertainty analysis on the factors that are the most uncertain and have the biggest impact on the results. For example, the energy and GHG emissions used by a natural gas-fired ethanol plant to produce one gallon of ethanol can be calculated through direct observations, though this will vary somewhat between individual facilities. The indirect domestic emissions are also fairly well understood, however these results are sensitive to a number of key assumptions (e.g., current and future corn yields). The indirect, international emissions are the component of our analysis with the highest level of uncertainty. For example, identifying what type of land is converted internationally and the emissions associated with this land conversion are critical issues that have a large impact on the GHG emissions estimates.

Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts in three ways: (1) getting the best information possible and updating our analysis to narrow the uncertainty, (2) performing sensitivity analysis around key factors to test the impact on the results, and (3) establishing

reasonable ranges of uncertainty and using probability distributions within these ranges in threshold assessment.

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in preamble Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change - the types of land converted and the GHG emission associated with different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

2. The FASOM and FAPRI models contain a number of updates for the final rulemaking analysis that incorporate several of the items cited by the commenter. Namely, distillers grains displacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both models. In addition, a sensitivity analysis of higher projected yields of corn and soybeans was conducted in both the FASOM and FAPRI models. The FAPRI model also includes a new Brazil module, which analyzes the country of Brazil on a 6-geographic region basis. The Brazil module includes various data for cropland, pasture land, and livestock production rates in each region, and allows for livestock intensification on pasture land in response to competition for other land uses, demand for livestock production, and other factors. Details on these updates can be found in the RIA and the technical reports for each respective model. In addition, all data from the FASOM and FAPRI models from the base analysis and sensitivity runs, as well as the models themselves (to the extent possible), are available on the docket.

The FASOM and FAPRI models were used for the economic agricultural analysis. EPA has provided in the docket a number of materials explaining how the models work and how they produced the results in the proposal as well as the results provides in the final rule, including: the release of data from these models that are used in the analysis; detailed documentation in the form of the preamble, RIA, and technical reports; and making the models themselves available to the extent possible. This, in combination with EPA's outreach to stakeholders throughout the analytical process, hosting a public forum on the lifecycle analysis methodology, and the publication of a peer review of the methodology used, EPA believes that the information provided in the Notice of Proposed Rulemaking (NPRM) is consistent with Agency and OMB guidelines on information quality and provides a comprehensive source of information allowing robust opportunity for public comment.

EPA recognizes that the FAPRI model can not be run by others without obtaining the services of the CARD staff at Iowa State University. While this makes it harder for commenters to have the model run for themselves, that does not mean they have not been provided adequate information and opportunity to comment on EPA's proposal. There are other rulemaking situations where EPA relies on information in a proposal that is not automatically replicable by commenters, and this does not mean EPA may not rely on it or that commenters are not provided an adequate opportunity to comment. For example, in some rulemakings EPA relies on peer reviewed studies of health effects associated with air pollution, and commenters may or may not have access to the underlying data in the study, hence may not be able to replicate the study themselves. However that does not mean EPA may not rely on relevant and credible studies, or that EPA has not provided an adequate opportunity to comment on the basis for EPA's proposal, including comment on the pros and cons of that study or other studies or modeling that also shed light on the same issue. In this case, EPA provided a comprehensive variety of information that explains in detail the analysis and modeling underlying the proposal and final rule. Commenters have commented on many of these elements of EPA's work, and have in some cases referred EPA to other relevant modeling results or studies. EPA has provided all of the information it could about the basis for its modeling, and commenters have had a full opportunity to comment on it. Any inability to have the FAPRI model run for the commenter themselves, whether to replicate EPA's results or run variations on them, does not preclude comemnters from providing comment on the results of that modeling and all of the underlying information provided by EPA related to it, and to obtain other information they deem relevant to support their comments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter (0981) states that the current RFS2 methodology does not accurately represent the actual GHG emission performance of biofuel producers relative to petroleum producers. The RFS2 methodology for the LCA of biofuels relies heavily on hypothetical data derived from complex models. (Pp. 1-4)

The commenter recommends that EPA perform a baseline LCA of the most prevalent biorefinery types of the corn-ethanol industry as it has operated in 2007-2010, and use these estimates as the benchmark for refining LCA methodology of other biofuels. The LCA of biofuel producers should be determined for operational biorefineries and cropping systems based on relevant statistics, on an annual or biannual basis. The full impact of the RFS2 should be estimated based on projections from the current status of the industry, where possible. (P. 4)

Our Response:

It is possible to perform an LCA of corn ethanol based on measured and collected data from biofuel refineries and cropping practices to produce the corn used for the ethanol. However, this is not an accurate assessment of the full lifecycle impacts as it does not account

for any indirect impacts. As mandated by EISA EPA needs to account for significant indirect impacts of biofuel production in the lifecycle assessment. This necessitates the use of economic modeling as was done for the proposal and final rule assessment.

This being said we do use to most up to date data on biofuel processing and recent data from crop production practices in the models used in this analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) states that the Lifecycle GHG methodology for biodiesel is flawed. The commenter's primary concern is the uncertainty and speculation associated with EPA's lifecycle GHG analysis of biofuels, including the methodology relating to significant indirect emissions. [[Docket number 1051.1, p. 2]]

Our Response:

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels.

The Agency also has clearly acknowledged that there are uncertainties associated with the lifecycle estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. In the proposal, we asked for comment on whether and how to conduct an uncertainty analysis to help quantify the magnitude of this uncertainty and its relative impact on the resulting lifecycle emissions estimates. The results of the peer review, and the feedback we have received from the comment process, supported the value of conducting such an analysis. Therefore, working closely with other government agencies as well as incorporating feedback from experts who commented on the rule, the final rule quantifies the uncertainty associated specifically with the international indirect land use change emissions associated with increased biofuel production.

EPA focused our uncertainty analysis on international indirect land use change emissions (the component of our analysis we found to have the highest level of uncertainty). We have worked to manage the uncertainty around those impacts in three ways: (1) getting the best information possible and updating our analysis to narrow the uncertainty, (2) performing sensitivity analysis around key factors to test the impact on the results, and (3) establishing reasonable ranges of uncertainty and using probability distributions within these ranges in threshold assessment. The following sections outline how we have incorporated these three approaches into our analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
With respect to the level of uncertainty associated with the EPA's modeling approach, the commenters (2129.1) believe that many aspects of the analysis have the effect of lowering the estimate of ILUC. Aspects of the proposal that have the effect of lowering ILUC estimates include, but are not limited to: the lack of forestry data in FASOM; the difference in the amounts of land conversion projected by FASOM and FAPRI; the tendency of MODIS to underestimate the amount of forest and wetland conversion, and the resulting use of generally low emissions factors; the use of a future year baseline along with the expected but as of yet unrealized improvements for the analysis; and the decision to sum emission flows rather than consider radiative forcing (thus ignoring the residence time of climate-forcing pollutants). The net effect of these elements may result in an underestimate of the total lifecycle emissions. (2129.1, p.7)

Our Response:

Regarding Uncertainty In Our Analysis:

It is clear that there are uncertainties associated with indirect emissions estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. Reviewers highlighted the uncertainty associated with our lifecycle GHG analysis and pointed to the inherent uncertainty of the economic modeling.

In the proposal, we asked for comment on whether and how to conduct an uncertainty analysis to help quantify the magnitude of this uncertainty and its relative impact on the resulting lifecycle emissions estimates. The results of the peer review, and the feedback we have received from the comment process, supported the value of conducting such an analysis. Therefore, working closely with other government agencies as well as incorporating feedback from experts who commented on the rule, we have quantified the uncertainty associated specifically with the international indirect land use change emissions associated with increased biofuel production.

Although there is uncertainty in all portions of the lifecycle modeling, we focused our uncertainty analysis on the factors that are the most uncertain and have the biggest impact on the results. For example, the energy and GHG emissions used by a natural gas-fired ethanol plant to produce one gallon of ethanol can be calculated through direct observations, though this will vary somewhat between individual facilities. The indirect domestic emissions are also fairly well understood, however these results are sensitive to a number of key assumptions (e.g., current and future corn yields). The indirect, international emissions are the component of our analysis with the highest level of uncertainty. For example, identifying what type of land is

converted internationally and the emissions associated with this land conversion are critical issues that have a large impact on the GHG emissions estimates.

Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts in three ways: (1) getting the best information possible and updating our analysis to narrow the uncertainty, (2) performing sensitivity analysis around key factors to test the impact on the results, and (3) establishing reasonable ranges of uncertainty and using probability distributions within these ranges in threshold assessment. The following sections outline how we have incorporated these three approaches into our analysis.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

Regarding the Specific Points Raised By Commenters:

First, in our response we assume that the commenter intended to say that the items listed would increase (as opposed to lower) the ILUC estimates.

As discussed in preamble Section V, the forest component of FASOM has now been incorporated into our analysis.

Regarding the combined use of FASOM and FAPRI, several commenters and peer reviewers questioned the benefit of using two agricultural sector models. Specifically reviewers pointed to some of the inconsistencies in the FASOM and FAPRI domestic results. For the final rule analysis we worked to reconcile the two model results. We apply the same set of scenarios and key input assumptions in both models. For example, both models were updated to apply consistent treatment of DGs in domestic livestock feed replacement and consistent assumptions regarding DG export. Some reviewers questioned the benefits of using FASOM and suggested we rely entirely on the FAPRI model for the analysis. However, we continue to believe there are benefits to the use of FASOM. Specifically, the fact that FASOM has domestic land use change interactions between crop, pasture, and forest integrated into the modeling is an advantage over using the domestic FAPRI model that only tracks cropland. In our judgment these benefits outweigh any uncertainty added by generating two model results.

Regarding potential problems in the MODIS satellite data used in our analysis, we used data validation studies conducted by NASA to evaluate the accuracy of the satellite data and to correct systematic errors. In general, the validation process found that MODIS version 5 was quite accurate at distinguishing forest from cropland or grassland. However, the satellite was more likely; for example, to confuse savanna and shrubland because these land types can look quite similar from space. We did not know how these improvements would affect the final results, but, as the commenters suggest, our updated analysis shows that the MODIS data used in our proposed rule analysis underestimated the percentage of land converted from forest in many of the regions analyzed. We also conducted a quantitative uncertainty assessment of our use of satellite imagery. More information about the satellite data validation and uncertainty assessment is provided above and in preamble Section V.

As the commenters' point out, wetlands were not included in the proposed rule analysis, but they have been added to the final rule analysis. We found a relatively small share of agricultural land converted from wetlands. The region with the largest share of wetlands converted to cropland was Bangladesh, where 5% of new cropland came from wetlands.

As discussed in Section V.A.2, the uncertainty of land use change emissions is an important consideration in EPA's threshold determinations as part of this rulemaking. We conducted a full assessment of the uncertainty in international land use change emissions factors consistent with 2006 IPCC guidance.[2] This analysis considers the uncertainty in the every parameter used in our emissions factor estimates. Standard deviations for each parameter were estimated based on the quality and quantity the underlying data. Following IPCC guidance, the uncertainties in individual parameters of an emissions factor were combined using a Tier 2 Monte Carlo simulation approach.

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans. Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

Finally, we evaluated the aggregated quantity of GHG emissions adjusted to account for their relative global warming potential (GWP). We used the 100-year GWP's developed by the

[2] 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 1: General Guidance and Reporting, Chapter 3: Uncertainties, available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol1.html

IPCC and listed in their Second Assessment Report. The 100-year GWP's were used for the biofuels as well as the petroleum baseline.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter (2136) believes that several uncertainty assumptions related to plant efficiencies, crop yield projections, coproduct credits, and nitrogen emissions from soybean production fed into the ILUC models that they believe need major adjustment. The commenter urges the Agency to fully consider other, more in-depth, submissions in this area from national biofuels associations. [[Docket number 2136.1, p. 5]] [[See docket number 2136.1, pp. 5-8 for a discussion of each of the assumptions.]]

Our Response:

As part of the final rulemaking EPA has updated our analysis to include new data for soybean biodiesel production energy use, we have included a sensitivity analysis on higher crop yields, we have included a co-product credit for the glycerin produced from biodiesel production, and we have updated the N_2O emissions factors for soybean production. These updates were based in part on all of the data submissions we received.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Comment:
The commenter (2157) notes that EPA did not assume a statistical distribution of uncertainty in their input data to perform the standard Monte Carlo analysis. EPA instead used point values. This is contrary to lifecycle analysis principles. EPA justifies the use of a point value by claiming that they do not know how these data are statistically distributed (normal vs. Poisson, vs. log normal, etc). This is not an acceptable response. It would be more appropriate for EPA to determine the effect of assuming various distribution functions through such analyses. (2157 p.55)

Our Response:

For the final rule analysis EPA has performed an uncertainty analysis around the key components of indirect land use change modeling. These include types of land impacted and the emission factors from this land conversion. The uncertainty around these factors is based on actual information on data variation. EPA still believes that it is difficult to include an uncertainty on all input data for the same reasons stated in the proposal, the lack of data on the covariance of all factors and information on factor variation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) states that the uncertainty analysis is lacking throughout the analysis. EPA claims to have addressed uncertainty in part by conducting sensitivity analyses of with the FASOM and FAPRI models using 4 different types of feed stocks. However, this is not a real uncertainty analysis. The commenter recommends that EPA do much more to quantify the sources of uncertainty in its modeling results. [[Docket number 2233.2, p. 52]]

Our Response:

For the final rule analysis EPA has done more to quantify the uncertainty in our modeling results. Although there is uncertainty in all portions of the lifecycle modeling, we focused our uncertainty analysis on the factors that are the most uncertain and have the biggest impact on the results. For example, the energy and GHG emissions used by a natural gas-fired ethanol plant to produce one gallon of ethanol can be calculated through direct observations, though this will vary somewhat between individual facilities. The indirect domestic emissions are also fairly well understood, however these results are sensitive to a number of key assumptions (e.g., current and future corn yields). The indirect, international emissions are the component of our analysis with the highest level of uncertainty and have particularly significant impact on our overall assessment results. For example, identifying what type of land is converted internationally and the emissions associated with this land conversion are critical issues that have a large impact on the GHG emissions estimates.

Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts in three ways: (1) getting the best information possible and updating our analysis to narrow the uncertainty, (2) performing sensitivity analysis around key factors to test the impact on the results, and (3) establishing reasonable ranges of uncertainty and using probability distributions within these ranges in threshold assessment.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2234
Organization: Energy & Resources Group University of California
Comment:
The commenter [[2234]] states that two key distinct, though related, uncertainty analyses that can be performed: 1. Uncertainty importance analysis (global sensitivity analysis) identifies which parameters are important contributors to the uncertainty in model outputs. This analysis doesn't require precise distributions since the results are essentially qualitative: a list of the key factors and their relative contribution to uncertainty. This analysis helps isolate the parameters

for which more precise probability distributions should be developed. 2. Uncertainty propagation characterizes the overall uncertainty in model outputs, given the uncertainties in model inputs. An accurate assessment does require accurate input probability distributions and parameter correlations, but these are not required to estimate the order of magnitude of the uncertainty in the result. Moreover, sensitivity analysis can be performed on the key distributions and parameter correlations identified in the uncertainty importance analysis, to bound the range of results for the output probability distributions. In its NPRM and DRIA, EPA has failed to address (i), and has largely punted on (ii), opting instead for a one-at-a-time sensitivity analysis. [[2234.1 p.10-11]]

Our Response:

For the final rule analysis EPA has performed an uncertainty analysis around the key components of indirect land use change modeling. These include types of land impacted and the emission factors from this land conversion. The uncertainty around these factors is based on actual information on data variation. EPA has also included sensitivity analysis around key components such as crop yields. EPA still believes that it is difficult to include an uncertainty on all input data for the same reasons stated in the proposal, the lack of data on the covariance of all factors and information on factor variation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA needs to include error propagation such that we can all understand the accuracy of their land use prediction and thus the accuracy associated with their GHG predictions for various fuel types. It is not clear from the analysis the EPA has presented on RFS2 how accurately existing econometric models are able to predict land usage. Model validation is an important facet to ensure RFS2 regulations are made based upon accurate predictions. The commenters believe that there is a need to reduce the errors associated with land use calculations by improving and validating input assumptions, particularly crop yield projections. There is also a need to validate the sensitivity of the land use change models to changes in macroeconomic assumptions. (2245.1, p.21)

The commenters believe that EPA should run sensitivity analyses for key input variables The commenters noted that it is readily assumed, but has not been proven that errors in

macroeconomic and policy forecasting between the reference and control cancel themselves out. EPA should validate this assumption by running the following scenarios:
- A case where crop yields increase globally - due to changes in technology and / or attributable to yield responses to higher demand.
-A case where the key macroeconomic policy variables, including factors such as energy price, value of the dollar in relation to other currencies and in particular to the real, population growth and GDP growth. (2245.1, p.22)

Our Response:

Throughout the rulemaking process, EPA consulted with numerous experts and stakeholders in industry, academia, and government in regards to all aspects of the analysis. Based on feedback received through this consultation process, but also through the publicly available peer review of EPA's lifecycle methodology, EPA has received support for the use of economic agricultural models (FASOM and FAPRI) to estimate changes in cropland worldwide based on changes in demand for renewable fuel.

We recognize that deterministic models (i.e., FASOM and FAPRI) do not reflect the range of potential values for key parameters. For this final rulemaking, we have incorporated uncertainty analysis where possible in order to help bracket the potential margin of error around key variables. For example, we have conducted an uncertainty analysis around the classification errors that may arise from the interpretation of satellite data and around the parameters used in the emission factor estimates.

For the final rulemaking analysis, a sensitivity analysis of higher projected yields of corn and soybeans was conducted in both the FASOM and FAPRI models. Data from the base analysis, as well as for the sensitivity analysis, runs can be found on the docket. A discussion of these results is included in the RIA and the technical reports written for each model on the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) supports the need for periodic assessment of the LCA methodology and the acknowledged high level of uncertainty warrants an initial review as early as 3 years. [[docket number 2384.1, p. 6]]

Our Response:

EPA recognizes that the state of scientific knowledge continues to evolve in this area and is committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new

assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
Regarding the validation of models used, the commenter (2387) states that for predictions to be trusted, the ME models need to be validated, by demonstrating that their predictions of past perturbations in crop land areas, trade flows etc satisfactorily match those observed. It is not clear whether the ME models have been validated in this way. Docket number 2387.1, p. 4]] [[See docket number 2387.1, pp. 12-13 for further discussion of this issue.]]

Our Response:

While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

However, it is important to note that while many factors impact the certainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops, etc. in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

The main factors impacting the economic modeling and land use results due to biofuels are overall crop / commodity demand and yields (and the responsiveness of these parameters to price changes). To examine the impact of changes in yield on the overall biofuel lifecycle GHG results, we have made two main changes in the economic modeling used for the proposal. In order to update our analysis and reduce uncertainty we have included a price induced yield impact, as discussed in the RIA Chapter 5. Furthermore we also include a sensitivity analysis of a high yield scenario to test the impact of higher yields on the results, as discussed in the RIA Section 2.6.2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
1. The commenter (2393) notes that EPA does not consider the impact of multiple, simultaneous parameter perturbations in its approach to evaluate the uncertainty in biofuels LCA assessments. Rather, EPA uses a one-at-a-time (OAT) analysis, which fails to account for the many interactions between model parameters in non-linear models. [[Docket number 2393.1, p. 49]]

The commenter believes EPA should perform two key distinct, though related, uncertainty analyses on each of the individual model components of its LCA modeling system: 1) uncertainty importance analysis, and 2) Uncertainty propagation. [[Docket number 2393.1, p. 50]]

Our Response:

1. Through technical outreach, the peer review process, and the public comment period, EPA received and reviewed a significant amount of data, studies, and information on our proposed lifecycle analysis approach. Through this process we were able to identify the factors that have the largest impact on lifecycle GHG emissions estimates. Crop yields, the length of the time period for analysis, and the types of land affected by agricultural expansion were identified as being among the most important factors in our analysis.

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in preamble Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change - the types of land converted and the GHG emission associated with different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. These sources of uncertainty were quantified with Monte Carlo following IPCC Tier 2 guidelines for propagation of errors.

We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408) suggests that EPA utilize flexible ranges so as to afford the opportunity for newer technologies to demonstrate and comply with the greenhouse gas ("GHG") reduction requirements under the rule. (2408.1, pp.1-2)

Our Response:

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies. We believe this should address the commenter's concerns.

7.2.5 Components of the Lifecycle GHG Emissions Analysis

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:
The commenter (1036.1) proposes the addition of Sweet Sorghum Ethanol to Section II.A.3 of the Preamble. Sweet sorghum much like switchgrass can be grown on marginal lands that do not compete with domestic or international commodity crop production as food or feed crops. More importantly, it can be grown year round as a true "energy crop" in areas of central and southern Florida. The processing of sweet sorghum into ethanol utilizes the exact same techniques that have been in practice for the last thirty five years in Brazil. This gives the sweet sorghum model a solid advantage over cellulosic ethanol because the processing of the ethanol has been commercially pushed through the learning curve due to the experience of Brazilian operations. This is a crop with the potential to create roughly 2 billion gallons of advanced biofuel, and has lifecycle GHG emission reductions far greater than 60% compared to the 2005 petroleum baseline. (1036.1, p.3)

The three charts (1036.1, pp.4-6) have been created by combining the GHG modeling information from documents EPA-HQ-OAR-2005-0161-0938.3, and 0938.6, modified to best represent a domestic sweet sorghum ethanol facility using standard technologies and standard yields. These charts are just recaps showing the expected GHG lifecycle reductions for a sweet sorghum ethanol project and the detailed documents can be found in Attachments 1036.3, 1036.4, and 1036.5. (1036.1, p.3)

Our Response:

For the final rule, EPA determined it did not have sufficient information on which to base a lifecycle GHG assessment for sweet sorghum. However, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and

feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources. We anticipate that as emerging pathways approach commercialization, sufficient information can be made available to allow EPA to conduct an appropriate LCA. While the data available today may be insufficient to allow LCA, such data for sweet sorghum should be able to be developed and thus this pathway included through these mechanisms.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that Bruce Dale, Professor, Chemical Engineering, Michigan State University, and pioneer in LCA analyses was concerned with many of the choices made in the RFS2 analyses. Some of his concerns are:
- High profile guessing is still guessing (referring to the Searchinger, et. al and Crutzen, et. al. papers).
- Lifecycle Analyses (LCA) must follow certain rules to be effective. The following rules were not followed:
  - Use the most recent/most accurate data possible.
  - Select the reference system: what exactly are we comparing?
  - Make it easy for others to check your data and methods' transparency
  - Set clear system boundaries (physical & temporal) must be equal or comparable for reference system and/or reference product of interest
  - Multi-product systems must allocate environmental costs among all products
  - Perform sensitivity analysis: how much do results vary if assumptions or data change?

(2112.1, pp.7-8)

Our Response:

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis and have performed sensitivity analyses. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

EPA has followed EPA and federal regulatory procedures. In addition, EPA has extensively coordinated the development of our methodology and selection of inputs and models with outside experts and across the federal government. After EISA's enactment in December

2007, we met frequently with the Departments of Agriculture and Energy to share our analytical plan, request feedback on our key assumptions, and provide preliminary results as they became available. In many cases, we adopted the models, inputs, and assumptions suggested by these Departments.

Lastly, EPA conducted a formal, external, independent peer review for the novel pieces developed for this lifecycle analysis following EPA and OMB guidance for third party, peer reviews. The names of the reviewers, charge questions, the original comments received from the reviewers as well as contractor summaries of the comments were made publically available in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2138
Organization: American Meat Institute, National Chicken Council, National Turkey Federation, Farm Econ LLC
Comment:
The commenter [[2138]] EPA makes a projection in the proposed rule by stating that the U.S. population is expected to be 318 million in 2017 and 330 million in 20229. This projection runs completely counter to the latest estimates from the Census Bureau, published in 2008, which project the 2017 resident population to be 331.8 million, rising to 347.8 million in 2022. Why EPA deviated so significantly from the Census Bureaus projections is not explained. [[2138 p.4]]

Our Response:

For the final rulemaking analysis, projection estimates have been updated with the latest population projections figures for 2017 and 2022 from the Census Bureau. These are the same estimates cited by the commenter, published in August, 2008, and based on the 2000 Census.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] supports EPA's proposal for the creation of an interactive, web-based mapping tool utilizing reported and satellite data for land determination. [[#2302 p.4]]

Our Response:

EPA did not create a web-based mapping tool as part of the analysis for this rulemaking. However, we have made our analysis as user-friendly as possible by making all of the data, inputs and documentation publicly available, and by holding numerous events and meetings to explain our analysis in detail to experts, stakeholders and the public. We will continue to

consider the value of creating a web-based mapping tool as part of ongoing updates to our lifecycle analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) suggests to not factor the effects of ILUC due to the reliability of the models used. However, if ILUC must be included, and the life cycle analysis results for soy biodiesel be extended to biodiesel from all vegetable oils including palm oil in the absence of any available specific analysis at the moment. This would mean that biodiesel from palm oil will be deemed to meet the 20% threshold for renewable fuel as for soy biodiesel. Also, renewable fuel pathway table should not be limited to ethanol from corn and/or corn starch, sugarcane and biodiesel from soy but also include biodiesel from other vegetable oils as shown in Table VI. E. 4.1 in when such data are available. (2361.1.pdf, p.2)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. EPA also initiated an independent peer review of specific areas of our work.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

EPA has extended its analyses to apply to additional pathways for which the necessary information was available. We did not extend our analysis of soy-based biodiesel to also cover biodiesel from palm oil as we had no information to support this as technically appropriate. However, we did include in the final rule a petition process whereby a producer of biofuel not cover by the final rule can provide necessary information to EPA to allow the Agency to conduct an appropriate LCA and determine compliance with GHG thresholds. Additionally, EPA indicated that as a matter of its ongoing assessment, it would work to expand coverage to other biofuels which it determined were likely to be used in the U.S. and for which sufficient information were available to allow a LCA GHG analysis. Such new assessments will be

periodically reflected in regulatory updates to this rule. Section V.C of the Preamble describes the details of the petition process.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) supports EPA working closely with California regarding the development of transportation fuels lifecycle GHG impacts and encourage future cooperation. Consistency of the RFS2 program with the California LCFS program will assist the Northeast in their efforts to develop a regional LCFS program. (2466.1.pdf, p.9)

Additional comments are from the State of New Jersey to the commenter: The commenter (2466) suggests that instead of using a single time horizon, it would be more accurate to estimate the project time horizon differently from the impact time horizon. The commenter (2466) agrees that the land use impacts would persist for a longer time period, such as 100 years. The commenter (2466) also agrees with the assumption of a gradual phase-out of corn starch ethanol production between 2022 and 2045. (2466.1.pdf, p.9)

Our Response:

We appreciate commenter's support for our ongoing work with the State of California in examining the impacts of renewable fuels.

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100-year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2514
Organization: Western Organization of Resource Councils
Comment:
The commenter [[2514]] continues to support lifecycle accounting for greenhouse gases from all fuels, including renewable fuels and the development of transparent and credible methods to calculate the carbon costs of indirect land use changes due to biofuel.

The commenter states that the modeling should fully and accurately account for the energy value of animal feed byproducts of renewable fuels, and that the rule may have the unintended effect of undermining advanced biofuels with more beneficial ecological footprints.

The commenter states that for example, small micro-processed biodiesel that uses oilseed crops grown in rotation with small grains in the Northern Great Plains, that utilizes expeller-pressed meal to supplement primarily grassfed livestock, and that uses both the fuel and the feed on site or locally, offers significant benefits in the lifecycle carbon footprint.

Also commenter states that very small processors must incur prohibitively exorbitant expense to establish that already certified CAA-compliant fuels do comply with the Clean Air Act, when periodic tests verifying the fuel meets an ASTM standard should suffice. [[See docket # 2514 p.1]]

Our Response:

We have not specifically modeled biodiesel from oilseed crops grown in rotation with small grains in the Northwest Great Plains. However, we do have provisions in our rulemaking to account for feedstocks and processes not specifically modeled. While we have not been able to model all possible feedstocks that can and are being used for renewable fuel production, there are a variety of feedstocks that should have similar enough characteristics to those already modeled to allow them to be grouped in with already modeled fuel pathways. This list includes secondary annual crops planted on existing crop land such as winter cover crops and providing cellulosic material, starch or oil for biofuel production.

Furthermore, EPA is establishing a process whereby a biofuel producer can petition the Agency to also consider their unique production or feedstock pathway if it is different from those specifically listed in the current regulations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2612
Organization: Citizen (*sample comment letter representing 478 comment letters from mass comment campaign sponsored by American Soybean Association*)
Comment:
The commenter (2612) identified 8 "vital flaws and concerns with the RFS2 proposed rule," including: "3) Nitrogen - The EPA methodology contains a major error pertaining to the direct emission calculations for nitrogen in soybean production." (2612 p. 2)

Our Response:

See response to Comment EPA-HQ-OAR-2005-0161-2612 in Section 7.2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment representing 400 comment letters from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2625) notes that, "EPA's GHG emissions methodology contains a major error regarding direct emission calculations for nitrogen. The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. This error reduces the GHG score for soy biodiesel by more than 20 percent." (2615 p. 2)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the

growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

7.2.5.1 Feedstock Production (Domestic & International Ag Sector Impacts)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter (0981) strongly supports the use of IPCC emission factors for N_2O emissions because they are the most consistent with direct field scale measurements. In addition the commenter states that there is no evidence to suggest that use of greater complexity and input data requirements of the DAYCENT model improves the estimation of N_2O emissions from cropping systems compared to use of IPCC default parameters. The commenter recommends that emission of N_2O from cropping systems be based on IPCC emission factors, such as in FASOM, GREET, and BESS, until it can be clearly documented that ecosystem models such as DAYCENT provide more accurate estimates. (P. 9)

Our Response:

The main difference between using IPCC factors directly as opposed to relying on DAYCENT modeling is that IPCC provides default factors by crop by country, while DAYCENT models N_2O emissions by crop but also by region within the U.S., accounting for different soil types and weather factors. For the final rule we still rely on the DAYCENT modeling results as we believe them to be more accurate. For example, the National Greenhouse Gas Inventory as reported annually by the U.S. to the Framework Convention on Climate Change uses the DAYCENT model to determine N_2O emissions from domestic fertilizer use as opposed to using default IPCC factors as the DAYCENT modeling is recognized to be a more accurate approach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012,

EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, EPA-HQ-OAR-2005-0161-1049, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, Prairie Pride, Inc., et al.
Comment:
The commenters believe that EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect the real world. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares.

The commenters noted that this shows the inaccuracy of EPA's hypothesis and modeling. EPA's analysis does not consider global market drivers for biodiesel feedstock, such as soybeans, that have substantial influence on U.S. exports and land use changes in other countries.

Document No.: EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2013, et al.
Organization: SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC, et al.
Comment:
EPA concludes with certainty that international land use change will occur and GHG emissions will result due to a direct relationship between shifts in the agricultural market as a consequence of the increased demand for biofuels in the U.S. However, EPA dismisses actual data on land usage in Brazil. For example data shows a decrease of soybean hectares under production from 2004 to 2008 by 1.5 million. While for the same period of time, U.S. biodiesel production increased from 25 million gallons to 690 million gallons. In addition, the forestry minister in Indonesia recently highlighted the cause of deforestation in his country as illegal logging—laying the entire burden of deforestation causation around the world at the feet of U.S. biofuels producers is a narrow approach to a significant and multifaceted global issue.

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
The commenter does not believe that increased U.S. soy based biodiesel production will lead to deforestation and land use conversion in South America. If this assumption is valid, Brazilian soybean acreage would have increased from 2004 through 2008, when biodiesel production in the United States increased from 25 million to 690 million gallons. In fact, Brazilian soybean crops actually decreased by 1.5 million hectares during this same period. Current production data suggests that soy based biodiesel volumes sufficient to meet EISA mandates will result in no measurable lend use changes either here in the United States or in South America. (2134.1, p.4)

Document No.: EPA-HQ-OAR-2005-0161-2435

Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect the real world. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares. Clearly, this shows the inaccuracy of EPA's hypothesis and modeling. Indeed, land use changes in other countries have numerous drivers wholly unrelated to U.S. biodiesel production. EPA's analysis does not consider global market drivers for biodiesel feedstock, such as soybeans, that have substantial influence on U.S. exports and land use changes in other countries. [[Docket number 2435.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2625) notes that "EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares." (2625 p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2415.1
Organization: Informa for Renewable Fuels Association, Illinois Corn Marketing Board and National Corn Growers Association
Comment:
Informa reviewed the Winrock analysis of land-use transitions. The Winrock findings about whether cropland increased or decreased between 2001 and 2004 were contradicted by data from the U.S. Department of Agriculture and FAO. For example, cropland in Brazil under the Winrock data decreased from 2001 to 2004, whereas USDA data showed an increase. The Winrock data arrived at a materially smaller amount of cropland in Brazil than either the USDA or FAO data would indicate. Thus, the conclusions drawn by Winrock using satellite data differ from the measurements "on the ground" that are reflected in USDA and FAO data. (2415.1, p2 Appendix H)

Our Response:

As explained in preamble Section V, to quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future renewable fuel volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop

growing conditions, exchange rates and government policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

The historical biodiesel and soybean statistics cited by the commenters are not comparable with our model predictions. During the time period discussed by the commenters (i.e., 2004 to 2008) many of the conditions that can affect the agricultural economy were changing. For example, oil prices spiked, soybean blight became more prevalent in Brazil, exchange rates were adjusted, and corn ethanol volumes also expanded substantially. In other words, the increase in soy-based biodiesel production was not the only important factor that changed during the period. Therefore, the fact that soybean acreage contracted in Brazil during this period does not refute model predictions about how Brazil responds to U.S. biodiesel production. If we could "re-run" history with a lower biodiesel volume, it may well be that Brazil soybean acreage would have been much smaller than it actually was, in which case the model predictions would be validated.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter (1015) states that the data sets used by FASOM did not use the latest guidance from Intergovernmental Panel on Climate Change (IPCC). EPA clearly notes (in Sec. VI.B.4.i. footnote 272) that IPCC guidelines have been considered, however, the table noted above fails to conform to 2006 IPCC guidelines. FASOM was calibrated with 2001 EPA emission data. Using the 2006 IPCC guidelines, the accurate calculation shows a decrease in CO2 emission by -244,560 tonnes and -5,504 g/MMBtu, therefore, the GHG emissions are a -20.9% decrease. [[Docket number 2123.1, p. 4]]

The commenter points out that according to the current energy use of their plants, the commenter's usage is approximately 18% lower than for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA. The commenter adds that Biodiesel has the highest energy balance of any transportation fuel produced in the U.S. The latest report from the University of Idaho shows energy used to produce soy biodiesel compared to petroleum is 4.56:1. This is due to increased efficiencies in biodiesel production, soy crushing, farming practices, and increases in soybean yields. In 1998, the energy balance was 3.2:1. By 2015, the balance is projected to reach 5.44:1. [[Docket number 2123.1, pp. 6-7]]

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC

Comment:
The commenter (2013) states that the data sets used by FASOM did not use the latest guidance from Intergovernmental Panel on Climate Change (IPCC). EPA clearly notes (in Sec. VI.B.4.i. footnote 272) that IPCC guidelines have been considered, however, the table noted above fails to conform to 2006 IPCC guidelines. FASOM was calibrated with 2001 EPA emission data. Using the 2006 IPCC guidelines, the accurate calculation shows a decrease in CO2 emission by -244,560 tonnes and -5,504 g/MMBtu, therefore, the GHG emissions are a -20.9% decrease. [[Docket number 2013.1, p. 6]]

The commenter points out that according to the current energy use of their plants, the commenter's usage is approximately 18% lower than for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA. The commenter adds that Biodiesel has the highest energy balance of any transportation fuel produced in the U.S. The latest report from the University of Idaho shows energy used to produce soy biodiesel compared to petroleum is 4.56:1. This is due to increased efficiencies in biodiesel production, soy crushing, farming practices, and increases in soybean yields. In 1998, the energy balance was 3.2:1. By 2015, the balance is projected to reach 5.44:1. [[Docket number 2013.1, pp. 6-7]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

In regards to the comment on energy use, EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel

pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1026
Organization: Gradek Energy
Comment:
The commenter (1026.1) believes that using agricultural production as the sole supplier to meeting the biofuels demands will have negative environmental consequences initially. It may well be the case that the adverse environmental effects of such an action plan will outweigh the benefits of biofuels in itself. There will be a significant increase in water usage to produce the biofuels, high levels of water and soil contamination through the use of fertilizers. The change in land use, which requires the removal of forests, will increase CO_2 emissions and will affect the natural habitat of many species. Furthermore, the lack of a fuel and transportation infrastructure would require massive efforts to refine and distribute the biofuels to the market. (1026.1, p.2)

The commenter does not condone the production of biofuels through agricultural production, but believes that solely using agricultural production to meet the EPA's environmental objectives is not a sustainable option. The commenter believes the best way to alleviate the environmental impact caused by fuel demand is to eliminate oil waste sources by transforming them into renewable fuel. (1026.1, p.2)

Our Response:

EPA notes that the majority of these comments are beyond the scope of this rulemaking. However, there are several aspects of the RFS2 program that relate to the commenter's statements. For one, EISA establishes lifecycle GHG emission thresholds for each type of renewable fuel mandated by the Act. EPA has developed a methodology to implement these thresholds, which includes an assessment of the GHG impacts associated with land use changes noted by the commenter. Secondly, EPA has finalized an approach to implementing the renewable biomass provisions in EISA—which limit the types of biomass as well as the types of land from which the biomass may be harvested. Lastly, we have conducted an analysis of the air and water quality impacts of this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:

The commenter (1404.1) noted that On July 20, 2009, CARB released version 2.2 of the "Detailed California-Modified GREET Pathways for Brazilian Sugarcane Ethanol: Average Brazilian Ethanol, With Mechanized Harvesting and Electricity Co-product Credit, With Co-product Credit." (See Docket Number 1404.3) The commenter recommends that the EPA considers the figures in the above attachment as inputs into the GHG lifecycle analysis for the final ruling as they will increase the GHG reduction percentage of the current sugarcane import model. These figures should be considered for domestic sugarcane ethanol and sweet sorghum ethanol processing facilities that are being planned for construction. (1404.1, p.3) (See Docket Number 1404.1, p.3 for more discussion on this issue)

Our Response:

We have included mechanized harvesting as well as electricity co-product credit (from bagasse and trash) in our analyses for the final rule based on recommendations from UNICA as well as Brazilian researchers. This has resulted in imported sugarcane ethanol meeting the advanced biofuel lifecycle threshold of 50%. At this time domestic sugarcane ethanol also qualifies for the advance biofuel category. EPA anticipates modeling grain sorghum ethanol after this final rule and including the determinations in a rulemaking within 6 months. EPA has established a petition process whereby additional fuel pathways can be evaluated for threshold compliance (See Preamble Section V.C).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
Although the EPA has demonstrated the use of co-products as the basis for GHG emissions from ethanol facilities, the commenter (1044) states that EPA failed to capture the data from co-product generation from renewable biomass based diesel (biodiesel) production facilities or the use of combined heat processes (CHP). This factor alone is a significant role player in the LCA and violates the tenants of ISO 14040 standards and this factor is not considered in any fashion or form unlike ethanol. In fact, in the preamble the discussion regarding co-products is centered wholly on ethanol which demonstrates the lack of understanding of Biomass Based Diesel refineries. The commenter therefore requests a review of this perspective and asks that the co-products from Biomass Based Diesel refineries to be included in the LCA and GHG profiles in accordance with the proposed language as written. The commenter believes the agency failed to fulfill its statutory requirement with this aspect of the proposal. The statements regarding crude glycerin and its side product effects (X)(C)(3) are not entirely accurate and again poorly reflect the misunderstandings of the agency. [[Docket number 1044.1, p. 10]]

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both

the U.S. and abroad and the glycerin would therefore be a waste product. We agree with the comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Therefore, we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1049
Organization: Prairie Pride, Inc.
Comment:
The commenter (1049) urges EPA to incorporate the IPCC's nitrogen findings and remove the attribution of excess nitrogen emissions from soybean cultivation. This change will reduce GHG score for soy biodiesel by more than 20 percent. [[Docket number 1049, p. 2]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O

emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) believes that EPA's GHG emissions methodology contains a major error regarding direct emission calculations for nitrogen. The 2006 Guidelines for National Greenhouse Gas Inventories by the IPCC's concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. This error reduces the GHG score for soy biodiesel by more than 20 percent. [[Docket number 1051.1, p. 2]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter adds that EPA's analysis, which looks at the incremental change in biodiesel production, establishes an artificially low production baseline and does not accurately account for increasing crop yields and production efficiencies. Also, the agency utilized a 2007 Energy Information Agency analysis that underestimates U.S. biodiesel production. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. The EPA penalizes the biodiesel industry by not considering new technology regarding fats and oils production. Sources such as camelina, winter canola, and algae are not taken into account. In addition, higher yielding oilseed technology has not been fully incorporated. Thus, the commenter believes that EPA overestimated potential indirect land use change associated with vegetable oil based biodiesel. [[Docket number 1051.1, p. 3]]

Our Response:

As was done for the proposal, to quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios in our economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. Rather than focus on the impacts associated with a specific gallon of fuel and tracking inputs and outputs across different lifecycle stages, we determined the overall aggregate impacts across sectors of the economy in response to a given volume change in the amount of biofuel produced.

The two future scenarios considered included a "business as usual" volume of a particular renewable fuel based on what would likely be in the fuel pool in 2022 without EISA, as predicted by the Energy Information Agency's Annual Energy Outlook (AEO) for 2007 (which took into account the economic and policy factors in existence in 2007 before EISA). The second scenario assumed a higher volume of renewable fuels as mandated by EISA for 2022. In this rulemaking analysis we only account for other policies that are currently in effect, we do not model any future potential regulations. However, we do consider in this analysis increasing crop yields and production efficiencies over time.

For the final rule analysis we have incorporated the LCA results for an algae oil pathway but not for other oilseed pathways. However, we do not extend our results from soybean modeling to other oilseed pathways. Those would be analyzed separately through future rulemaking analysis if necessary.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1669
Organization: Environmental Intelligence, Inc.

Comment:
The commenter (1669.1) is concerned with the unnecessary and unworkable feedstock certification requirements that EPA has proposed. EPA must understand that soybeans are produced primarily for the meal that is used in the feed and food market. Historically, there has been surplus soybean oil that has depressed prices for soybeans. EPA's proposed rule on RFS2 implementation is significantly flawed and would do unnecessary harm to the competitive position of the U.S. soy biodiesel industry. (1669.1, p.1)

The commenter noted that the EPA methodology contains a major error pertaining to the direct emission calculations for nitrogen in soybean production. EPA also did not account for glycerine as a co-product and inaccurately assesses the energy balance of biodiesel. The commenter also believes that the GHG calculations must account for improved agriculture yields and efficiency. The commenter believes that corrected values for nitrogen emissions, co-products, and energy balance from biodiesel production would result in soy biodiesel GHG emissions that are over 60% better than petroleum, easily exceeding the 50% GHG threshold called for under the RFS2 biomass-based diesel schedule. An appropriate indirect land use analysis would further enhance soy biodiesel's value relative to petroleum diesel. (1669.1, p.2)

Our Response:

As noted in response to other points raised by the commenter, EPA has substantially updated its analysis of soy-based biodiesel, reflecting many of the specific technical issues raised by the commenter. Regarding the overall driving forces for soy bean production, these are accounted in our assessment of both the baseline projections for demand and for the demand estimate due to biofuel production. EPA has appropriately considered market impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1719
Organization: MAIZAR, Argentine Corn and Sorghum Association
Comment:
The commenter (1719.1) believes that all data which is used by the mathematical and econometric models chosen by the EPA to evaluate and to qualify related to Argentina be verified, analyzed and adopted by mutual consent. (1719.1, p.6)

The commenter also believes that all data obtained from the models chosen by EPA that are used as a basis for Argentina's qualification by EISA, and any another current or future regulation that evaluates Argentina's agricultural production–relating to land use changes, GHG emissions as well as any other purpose be verified, analyzed and adopted by mutual consent. Only this way the EPA will be assured that the data and assumptions used reflect accurately what occurs today and what the future holds so that the norms applied in the qualification of biofuels in the United States will be the most reliable for the objectives sought. (1719.1, p.6)

Our Response:

Via the proposal process, EPA identified its sources of data and the mathematical and econometric models it was using. Benefitting from public comment and other sources of updated information, EPA used the most up to date and verifiable information available for updating analyses for the final rule. In particular for Argentina, we used data provided by respected international organizations, in particular data from the Food and Agricultural Organization of the United Nations and the International Energy Agency.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:
The commenter (2010) states that the data sets used by FASOM did not use the latest guidance from the Intergovernmental Panel on Climate Change (IPCC). EPA clearly notes (in Sec. VI.B.4.i. footnote 272) that IPCC guidelines have been considered, however, the table noted above fails to conform to 2006 IPCC guidelines. FASOM was calibrated with 2001 EPA emission data. Using the 2006 IPCC guidelines, the accurate calculation shows a decrease in CO2 emission by -244,560 tons and -5,504 g/MMBtu, therefore, the GHG emissions are a -20.9% decrease. [[Docket number 2010.2, p. 4]]

The commenter points out that according to the current energy use of their plants, the commenter's usage is approximately 18% lower than for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA. The commenter adds that Biodiesel has the highest energy balance of any transportation fuel produced in the U.S. The latest report from the University of Idaho shows energy used to produce soy biodiesel compared to petroleum is 4.56:1. This is due to increased efficiencies in biodiesel production, soy crushing, farming practices, and increases in soybean yields. In 1998, the energy balance was 3.2:1. By 2015, the balance is projected to reach 5.44:1. [[Docket number 2010.2, pp. 5-6]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the

growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. As part of the final rule we updated the energy use assumptions for biodiesel production to e in line with the latest energy balance reports including the University of Idaho Study. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) believes that the various models used to calculate effects of indirect land use change have not been scientifically proven to be accurate and reliable. The commenter believes that indirect land use change (ILUC) should not be factored in. If this is the case, Malaysian palm biodiesel can easily achieve more than 50% emission savings. (2016.1, p.2)

If ILUC must be included, the commenter agrees with the proposal that the life cycle analysis results for soy biodiesel be extended to biodiesel from all vegetable oils including palm oil in the absence of any available specific analysis at the moment. This would mean that biodiesel from palm oil will be deemed to meet the 20% threshold for renewable fuel as for soy biodiesel. The renewable fuel pathway table (Table VI E 2-1) should not be limited to ethanol from corn and biodiesel from soy but also include biodiesel from other vegetable oils as shown in Table VI. E. 4.1 when such data are available. (2016.1, p.2)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule

which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

EPA has recognized that there are uncertainties associated with these estimates--particularly with regard to indirect land use change--and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. The Agency has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

For the final rule, EPA has updated analyses using the most recent data and information available. It has extended its analyses to additional pathways for which the necessary information was available. We did not extend our analysis of soy-based biodiesel to also cover biodiesel from palm oil as we had no information to support this as technically appropriate. However, we did include in the final rule a petition process whereby a producer of biofuel not cover by the final rule can provide necessary information to EPA to allow the Agency to conduct an appropriate LCA and determine compliance with GHG thresholds. EPA indicated that as a matter of its ongoing assessment, it would work to expand coverage to other biofuels which it determined were likely to be used in the U.S. and for which sufficient information were available to allow a LCA GHG analysis. Such new assessments will be periodically reflected in regulatory updates to this rule. In addition, EPA anticipates modeling palm oil biodiesel and include the determination in a rulemaking in the next six months.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenters (2048.1) believes the goal of use of 35 billion gallons of biofuels by 2022 is very conservative and could be much greater given the volatility and cost risk associated with dependence on petroleum (as we saw in 2008) and the need to achieve carbon reductions of as much as 80% by 2020 to avoid the worst impacts of climate change. There are also numerous benefits in development of alternative fuels in terms of investment in the agricultural sector (which is likely to lead to greater food production not less), increased job benefits in the USA and globally, and other secondary benefits. The commenter notes that it is not the only way to

reduce carbon emissions in fuel and leaving out other alternatives (fuel additives) is a policy mistake that should not be overlooked. This is particularly relevant to the current rule adoption process because some fuel additives can overcome the problems associated with certain biofuel feedstocks because of dual benefits from additive use. (2048.1 p.7)

The commenter recommend that U.S. EPA staff work together to develop a specific guidance document for the oil seed industry that suggests best practices for co-planting of oil seed trees with food crops to optimize the production of both food and fuel and to minimize the life cycle carbon impacts of oil production. The commenter encourages U.S. EPA to make changes in the GREET model and any implementation of the RFS2 to consider an integrated approach to production of both food and fuel. This will optimize carbon benefits and help provide solutions to what is seen as a perceived barrier to investment in the biofuels sector and sustainability of biofuels. This guide would be used by the oil seed industry in looking at how to produce vegetable oil in a way that leads to the best possible food supply and carbon life cycle results. (2048.1, p.11)

Our Response:

Regarding the recommendations to consider higher fuel mandates or alternative means of reducing carbon from the transportation sector, EPA notes this rule is responding to the specific mandates of EISA.

Regarding recommendations for identifying best practices for the agricultural and biofuel production communities, the detailed documentation of how EPA has conducted its LCA for GHG in part addresses this recommendation as it highlights those parameters and practices which tend to make the greatest difference in GHG assessment. Also we have adopted a petition process whereby new, enhanced technologies for biofuel production can be identified and their benefits quantified. This process should tend to support the development and adoption of innovative technologies which improve GHG performance.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that EPA's GHG emissions methodology contains a major error pertaining to the direct emission calculations for nitrogen. The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. Notably, both the Argonne National Laboratory and the California Air Resources Board use the IPCC data in their models. This error reduces the GHG score for soy biodiesel by more than 20 percent. (2079.1, p.7)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that non-renewable fuels are not held to the same standards as the biofuels. The LCA analysis does not include the environmental impact of using Canadian tar sands for fuel (or other fossil fuels). The LCA also misallocates energy made from wastes. Food wastes and sewage should be included in food LCA models. The commenter also noted that the proposed rule fails to acknowledge the energy value of methane and the fertility value of carbon dioxide. Production of these greenhouse gases is not bad. What is undesirable is the release of these valuable fuel, fertilizer, and food ingredients. This proposed rule does not incentivize the channeling of these emissions into further production of valuable products. (2112.1, p.14)

Our Response:

As indentified in both the proposal and the final rule, EPA interprets EISA as requiring biofuel lifecycle GHG performance to be compared with a 2005 baseline average fuel it is replacing. To the extent specific fuel sources such as Canadian tar sands were represented in that 2005 baseline fuel pool; we have analyzed their lifecycle GHG impact. In the final rule we have also assessed fuels made from waste products. Regarding credit for possible uses of GHG emissions, we have provided credit for co-products produced in conjunction with biofuel production if such co-products were indentified and likely to be produced and marketed. We did not analyze potential uses for GHG emissions for which their currently appears to be no market value (such as excess CO2).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2116
Organization: The ProExporter Network
Comment:
The commenter (2116) noted that increases in yield per acre for corn have allowed the U.S. to meet all traditional uses for corn and to increase production of ethanol. USDA projections of historical trend corn yields for the next ten years indicate that production will increase to allow for five billion bushels of corn to be used for ethanol in 2018 and meet other domestic and export needs. If yields per acre increase more rapidly as major seed corn companies believe, the U.S. will have even more corn available for all uses. (2116, p.1)

The commenter also noted that a logical concern could be raised that the world corn market could be growing rapidly, but the U.S. not gain much of that market because corn is being bid away for domestic ethanol production. (2116.1, p.4) (See Docket Number 2116.1, pp.3-6 for a detailed discussion on U.S. corn exports)

The commenter noted that as ethanol production increases at a slower rate in the years ahead, the increase in production of DDGS will also slow and more corn will be needed if livestock and poultry production continues to increase as expected in the USDA long-term projections. (2116.1, p.6) (See Docket Number 2116.1, pp.6-7 for a detailed discussion of this issue)

The commenter believes that if there is a need for increased corn production outside the U.S. the quickest way to achieve that would be through increased yields on existing corn land. (2116.1, p.12) (See Docket Number 2116.1, pp.12-13 for more information regarding international corn yields)

Our Response:

The analysis for the final rulemaking includes a sensitivity run with corn and soybean yield projections that are higher than USDA projections. These higher yields occur both domestically and internationally in the sensitivity run. Results from the model sensitivity runs in FASOM and FAPRI are located in the docket, and are discussed in the RIA and the technical reports for each model, also found on the docket.

EPA agrees that net corn exports are projected to decrease as demand for renewable fuel increases. However, EPA's analysis also projects additional production of corn for ethanol production in the U.S. to satisfy this increase in demand. Additionally, as an indirect effect of biofuel production, corn used for other purposes, such as in animal feed, also decreases, allowing for more corn to be used for ethanol production. Effects on the use of corn as a result of an increase demand for renewable fuels are discussed in more detail in chapters 2 and 5 of the RIA.

EPA's analysis also projects international yields for crops such as corn to increase over time. In addition, the FAPRI model includes price-induced changes in yield. Thus, as demand for a commodity increases, raising the global price for that commodity, yields will increase as a result. Additional information on price-induced yields in the FAPRI can be found in the RIA and the technical documentation for the FAPRI model in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
With regards to distillers grains, the commenter believes that a facility that dries only a portion of its distiller's grains should only be producing different RINs (or no RINs) on that portion of biofuels that resulted in dried distiller's grains. If a facility estimates that it will dry 20% of its distiller's grains in a year, then 20% of the daily volume of ethanol should have a different RIN (or no RIN). An adjustment could then be made each quarter to account for the actual amount of dried distiller's grains produced. (21191, p.4)

The commenter noted that the inclusion of energy sorghum into the final rule will help spur investment into biorefineries that will process biomass into cellulosic ethanol. With feedstock currently available, the inclusion in the final rule will give confidence to investors that cellulosic ethanol can be a viable investment opportunity. (2119.1, p.6)

Our Response:

EPA has modeled that facilities that dry no more than 65% of their distillers grains and solubles in a calendar year and uses other advanced technologies then they may qualify to produce RINs. If the production facility pathways qualify as meeting the GHG threshold then that facility may generate RINs for all qualifying volumes.

EPA has not analyzed the lifecycle GHG performance of energy sorghum or sweet sorghum-based biofuel. As emerging fuel pathways, we expect the data and other information on which to base a LCA will improve as the pathway approaches commercialization. EPA has provided a petition process for fuel providers to provide information necessary for EPA to conduct a biofuel LCA. Additionally, EPA plans to routinely expand on the biofuels it has assessed and reflect these new assessments in periodic updates to this final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) supports EPA's approach to add direct and indirect N_2O emissions to domestic agriculture LCA. The commenter supports sound science and this is a component that should not be ignored or skipped. (2124.1, p.28)

Our Response:

We have included direct and indirect N_2O emissions from domestic and international agriculture in our analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter (2136) states that EPA relies on old data set that do not keep up with the dynamic innovation in the renewables sector. Accurate and up-to-date data sets for biofuels and coproducts production must be used. The commenter adds that most biodiesel refineries in Iowa report that current energy use is approximately 18% lower for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA. [[Docket number 2136.1, pp. 5-6]]

Our Response:

For the final rule analysis EPA has used up to date data sets for biofuels and co-products produced in the renewable sector. We have updated the corn ethanol energy use projections based on an update of the study used in the proposal. We have updated the corn ethanol and biodiesel co-product credit based on new research and data available since the proposal was released. We have also updated the biodiesel energy use values based on new studies that have been released since the proposal. For biodiesel production this has lowered the energy use in comparison to the values used in the proposal.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2463.2
Organization: National Farmers Union
Comment:
The commenter (2463) believes EPA is underestimating key data requirements in the analysis. One of the key requirements in attempting to determine indirect land use change is the amount of U.S. crop production. EPA assumes that U.S. corn yields will average 180 bushels per acre in 2022, increasing at an annual rate of 1.6 percent annually. In comparison, industry researchers believe that U.S. yields could increase much more significantly over the same period reaching

more than 250 bushels an acre in 2022. If yields more closely match industry estimates, any potential impact from international land use change would be further minimized. (2463.2 Pg. 4).

Our Response:

Our crop yield projections are based on USDA's most recent forecasts through 2018, and then extrapolated out through 2022. We believe these projections represent a feasible future scenario. However, we have also included a sensitivity analysis that increases corn and soybean yields by approximately 25% by 2022. The results of this analysis are included in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter is concerned about EPA's crop yield projections and urges the Agency to carefully consider comments from DuPont/Pioneer, Monsanto, Syngenta and other seed technology providers that make clear we are in the midst of a period of technology driven yield transformation. The commenter believes that the Agency must abandon its 30-year straight-line yield assumption when modeling ILUC and direct feedstock production efficiencies. [[Docket number 2136.1, pp. 6-7]]

Our Response:

EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter applauds the Agency for pledging to incorporate the updated 2006 Guidelines for National Greenhouse Gas Inventories from the Intergovernmental Panel on Climate Change into the final rule. Utilizing these guidelines for incorporating nitrogen values into the GHG emissions calculations would increase soybean oil-based biodiesel's GHG reduction percentage by an additional 20.9 percent. [[Docket number 2136.1, pp. 7-8]]

Our Response:

EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
1. The commenter (2140.1) noted that it is also critical to recognize that degraded and/or underutilized land in many countries could be used to meet increasing demand for new crop production, whether for production of food and feed or renewable fuels. (2140.1, pp.2-3)

The commenter also noted that it is critical to incorporate up-to-date information about yield increases and productivity gains. Simple extrapolation of long-term historic yield trends ignores the fact that yield gains have occurred at an accelerated rate following the advent of biotechnology and marker assisted breeding. It is also critically important to develop appropriate assumptions for increases in crop productivity in the rest of the world. There is currently a

considerable yield gap between yields in the developed countries and in the rest of the world; a gap that can be narrowed through adaptation of some current and future technologies. The impacts of increasing crop yields in the rest of the world relative to crop yields in the United States are critical. The commenter is confident that the historically demonstrated trend of increasing agricultural commodity production efficiency will continue. The highly-successful technologies and equipment currently utilized in the United States will enable even more dramatic positive impacts when deployed on a global scale. These technologies and practices can increase crop yields in the developing world dramatically, and result in improvements to human and environmental health. (2140.1, p.3) (See Docket Number 2140.1, pp.3-4 for a detailed discussion of this issue)

2. The commenter believes that EPA must also fully account for the utilization of all products from the biofuels production chain, as utilization of part of a crop for fuels production does not replace other uses of the crop, such as for feed, oils, and chemicals. The commenter also noted that the EPA proposed rule does not account for glycerin resulting from biodiesel production, a factor that can markedly improve the emissions assessment of biodiesel. (2140.1, p.4) *****

3. The commenter also believes that assumptions regarding international impacts in crop supplies of domestic renewable fuels policies must also take into account actual export and trade volumes. (2140.1, p.4)

4. The commenter also believes that it is appropriate for the EPA to seek greater accuracy in the estimation of nitrous oxide emissions from agriculture than what is currently attainable with existing estimates. (2140.1, p.5)

Our Response:

1. EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

2. In the LCA analysis performed for this rulemaking EPA has fully accounted for the utilization of all products from the biofuels production chain. For example we account for the use of corn ethanol co-product DGS use as animal feed displacing use of other crops for feed. The final rule analysis also accounts for the beneficial use of glycerin from biodiesel production which lowers the GHG impacts associated with biodiesel compared to the analysis in the proposal.

3. The domestic and international agricultural sector modeling done for this analysis takes into account actual export and trade volumes. However, the analysis is based on projected export and trade volumes for different fuel volume scenarios in the future. Furthermore, we are only interested in the difference between the two scenarios in a given year not absolute levels of exports or how absolute levels of exports change over time for a given case.

4. For the final rule analysis we have updated the N_2O emission estimates domestically to take into account new data and work performed by Colorado State University on soil and crop N_2O emissions.

EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2141
Organization: American Trucking Associations
Comment:
The commenter (2141.1) has monitored the debate over indirect carbon emissions and its potential impact upon the use of soy-based biodiesel under RFS2. The commenter strongly believes that EPA's decisions on this matter must be based upon sound science and that EPA cannot ignore indirect carbon emissions from fuels used to satisfy the various RFS2 mandates. The failure to include indirect carbon emissions could ultimately require the imposition of additional carbon offsets from other sources in order to meet any future government-mandated carbon reduction goals. (2141.1, p.5)

Our Response:

EPA agrees that the lifecycle methodology must be based on sound science. EPA has made every effort to craft a collaborative, transparent and science-based approach. We also agree that EISA requires us to consider indirect emissions in our lifecycle assessment. While EPA has gone to great lengths to measure these impacts, including the use of analytical tools in new ways, we also have sought to acknowledge and manage the uncertainties associated with these estimates, particularly with regard to indirect land use change.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) noted that it is critical that the assumptions used properly reflect the positive impacts of technology and yield improvement over time. The current EPA analysis appears to underestimate the efficiency gains in crop production, therefore overestimating both the amount and type of land use required going forward. (2146.1, p.5)

Our Response:

To quantify the impact of future yield projections raised by Dupont and others, we have estimated greenhouse gas emission estimates for corn ethanol and soybean biodiesel using our business as usual trends as well as a scenario in which future yields for corn and soybeans are approximately 25% higher by 2022. Results of both future yield scenarios are provided in Chapter 2 of the RIA and demonstrate the impact of this assumption on the modeling results.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
The commenter (2148) is concerned about the proposed EPA regulations that purport to measure the lifecycle benefits of soy-based biodiesel. EPA appears to be going beyond its statutory mandate. (2148, p.1)

The commenter noted that yield increases by U.S. soybean farmers will play a significant role in meeting biodiesel feedstock demand by producing more soybeans on the same amount of land. Historical data show that productivity gains and yield increases are the norm for U.S. agriculture. Over the 25-year period from 1981-2006, U.S. soybean farmers increased their acre-yield nearly 50 percent, from 30 bushels per acre to 43 bushels per acre. This equates to an average yield increase of one-half bushel per acre per year, and represents the minimum productivity increase that is likely to occur. Emerging technologies are expected to increase future yields that will surpass those achieved over the past 25 years. (2148, p.1)

Our Response:

The commenter in particular focused on EPA's inclusion of indirect land use changes in its LCA of soy-based biodiesel. We first note that EPA has significantly updated its LCA assessments since the proposal to reflect new and improved data and other information. However, as stated in the proposal and reaffirmed in this final rule, EPA believes including indirect land use impacts is technically appropriate, consistent with the mandates of EISA and can be down in a credible, science based manner. The models and data used for the final rule assessments are the best available and are of sufficient reliability to support and determination of compliance with the GHG performance threshold. Uncertainty analyses which in particular focused on indirect land use impacts were included in this final rule assessment.

EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2168
Organization: First United Ethanol, LLC
Comment:
The commenter (2168) noted that part of the flawed science lies within EPA's attempt to separate the elements of good and bad within a single corn plant. Corn-based ethanol produced from the kernel of the corn is reported to have a higher GHG emission than ethanol produced from corn stover. How can this science disproportionately assign GHG emissions to different parts of the same plant? The entire plant is being grown on American farms where our farmers are employing their best practices to achieve the highest yields possible with the least amount of inputs, including fertilizer and chemicals. The same cannot be said for the crops used to produce imported ethanol. Imported ethanol should be evaluated and if necessary, charged with additional GHG emissions based on its own set of circumstances. (2168, p.2)

Our Response:

The rationale used by EPA was that in the case of corn stover collected for cellulosic fuel production, the corn was planted for the corn kernels harvested; the remaining stover would then be considered agricultural excess with no land use impact (i.e., the corn was planted for the corn kernel, not for producing left over stover, some of which might be collected and turned into cellulosic biofuel). At this time, for example, farmers fertilize corn for optimum corn kernel production, not for optimum stover production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2174
Organization: Illinois Soybean Association
Comment:
The commenter (2174) noted that biodiesel is the cleanest burning biofuel currently used in commercial markets. Biodiesel is a renewable and sustainable energy source that can play a significant role in the national efforts to increase the energy security and improve the environmental footprint. Biodiesel has also provided a significant market opportunity for U.S. soybean farmers and jobs and economic development for rural communities. The commenter believes that yield increases by U.S. soybean farmers will play a significant role in meeting biofuel feedstock demand by producing more soybeans on the same amount of land. U.S. seed technology companies are projecting that current soybean yields will double by 2030. (2174, p.2)

Our Response:

The GHG benefits of biodiesel from soy oil have been evaluated by EPA and clearly recognized in determining this fuel pathway as comply with the advanced biofuel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2189
Organization: Technical Consultant for Enzyme Development Corporation and Genencor International
Comment:
The commenter (2189) noted that steady improvements in grain production per acre and increases in gallons of ethanol produced per bushel of corn are resulting in more ethanol being produced and more corn being available for export without planting more acres of corn. Improved agricultural techniques and improved corn genetics from scientists at companies such as Monsanto, Dupont and Syngenta will result in dramatic increases in corn production in the next ten years. The rate of improvement in accelerating, not slowing down. A good part of these improvements have been motivated by the production of fuel ethanol from corn and other grains. That provides the incremental market demand for corn and the financial incentives for farmers, process engineering companies, agricultural engineering firms, companies working in grain genetics, and grain processing plants to produce innovations year by year. (2189, p.2)

Our Response:

For the lifecycle threshold analysis, yields for corn are based on USDA projections. However, EPA did conduct a sensitivity analysis with higher domestic and international yields for corn and soybeans to account for possible increases in the rate of technological progress. Results from the model sensitivity runs in FASOM and FAPRI are located in the docket, and are discussed in the RIA and the technical reports for each model, also found on the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2234
Organization: Energy & Resources Group University of California
Comment:
The commenter [[2234]] states that the effects of changes in consumption of distillers grains on enteric methane emissions is promised to be added; this is currently not included in FASOM. [[2234.1 p.6]]

Our Response:

EPA agrees with the comment that changes in distillers grains in animal feed has an effect on enteric methane emissions; this impct is included in the final rulemaking analysis. For additional details, please refer to the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245

Organization: Illinois Corn Growers Association, et.al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA needs to update their expected yield projections and should take into account data quality and uncertainty associated with their projections. Accurate crop yield projections are extremely important to properly calculate indirect land use changes. Although most crops in most countries have a strong history of yield increases, there is considerable variability in individual yield predictions. Indirect land use change calculations must take into account the errors associated with forward predicting crop yields and must be based upon an established and agreed to time frame for trend line yields. (2245.1, p.2) (See Docket Number 2245.1, pp.2-21 for a detailed discussion on crop yield projections)

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments. We have also included uncertainty analyses which in particular focus on international indirect land use impacts. These uncertainty assessments were used in determining whether a biofuel pathway was likely to exceed its GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) states that EPA's analysis of the domestic agricultural sector also may overestimate domestic agricultural emissions. The domestic agricultural emissions are based on very high energy consumption rates—50 percent higher than those used in GREET and 300 percent higher than a recent survey of Iowa soybean producers. [[Docket number 2249.2, p. 106]]

In addition, the transportation emissions for feedstock and fuel are calculated from the GREET model using the model defaults. The commenter is concerned that the feedstock transportation emissions may also be included in the FASOM emission estimates because this energy is included in farm energy. These emissions would amount to 2,615 g CO_2eq/mm BTU and could be double counted. The commenter adds that this is another example of the lack of transparency

in the FASOM and FAPRI modeling, and the inability to reproduce EPA's results. [[Docket number 2249.2, p. 106]]

Our Response:

We disagree that the energy use for soybean production has been overestimated. Energy data (e.g., diesel fuel, gasoline, electricity, natural gas) included within the crop budgets in FASOM are based on USDA Agricultural Resource Management Survey (ARMS) data (http:www.ers.usda.gov/Data/ARMS/) and crop budgets developed by university extension offices. The differences with other sources of data are because the crop budgets included in the FASOM model include data on input use that varies by crop, management practices, and region. There is often considerable variation in the inputs used per acre, which implies that total input use and associated GHG emissions and other environmental impacts will be affected by changes in crop mix and management practices that result under the different scenarios considered.

Furthermore, the energy use for transportation is not double counted in the modeling. The energy use for crop production is separate from the energy used to transport feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2300
Organization: Dow AgroSciences
Comment:
The commenter (2300) believes that the analysis of nitrous oxide (N_2O) emissions is incorrect and does not provide opportunity for notice and comment on the studies EPA intends to use for the final rule. The commenter also noted that technologies like nitrapyrin and its propensity for reducing N_2O has not been considered in EPA calculations. The commenter requests that such products be included, particularly in light of a new and easy formulation being introduced this year to the marketplace. (2300, p.1)

Our Response:

EPA believes the analysis of N_2O emissions used for the final rule is correct and that we have provided for opportunity for notice and comment.

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal but the model and approach was identified in order to provide the opportunity for notice and comment.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
1. The commenter (2317) believes the proposal's approach to the LC analysis inappropriately attributes GHG emissions to corn ethanol and should be dropped or revised substantially. The commenter adds that the proposal's domestic corn yield projections are inconsistent with current trends and forecasts and must be increased substantially. [[Docket number 2317.1, p. 7]] [[See docket number 2317.1, pp. 7-15 for an extensive discussion of this issue.]]

2. The commenter states that like the proposal's domestic corn yield rate projections, the international corn yield projections are inconsistent with current trends in corn yields and must be increased substantially. [[Docket number 2317.1, p. 21]] [[See docket number 2317.1, pp. 21-22 for further discussion of this issue.]]

3. The commenter adds that the analysis of nitrous oxide emissions is flawed and fails to provide an opportunity for notice and comment on the studies upon which EPA sates it will base the final rule. [[Docket number 2317.1, p. 28]] [[See docket number 2317.1, pp. 28-34 for extensive discussion of this issue.]]

Our Response:

1. Regarding the comment on EPA's approach to LCA, EPA has clearly described its analytical techniques, the models used and the sources of data. We believe these represent the best tools and information available and there appropriate use for biofuel modeling was confirmed by peer review and other comments. These models (as well as other models evaluated for their projections of land use impact) confirm that indirect land use impacts are significant and cannot be ignored.

2. For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields

derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

3. EPA believes the analysis of N_2O emissions used for the final rule is correct and that we have provided for opportunity for notice and comment.

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal but the model and approach was identified in order to provide the opportunity for notice and comment.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) believes that EPA should assume that CRP land will be released in response to a long term change in demand for ethanol and soy biodiesel. EPA should also assume corn and soybean yield increases more in line with recent experience rather than long term trends. (2348, p.1)

Our Response:

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel production.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields

derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) recommends that the biofuels created from mixed feedstocks should NOT be assigned a single lifecycle emissions score based on the weighted average of the score that would be achieved by either feedstock. Allowing this type of averaging provides an incentive to combine feedstocks with high lifecycle emissions (e.g., virgin vegetable oils) with feedstocks with low lifecycle emissions (e.g., waste greases). The commenter (2354) recommends creating a system that favors feedstocks, such as waste grease, over feedstocks such as virgin vegetable oils. (2354.pdf, p.4)

Our Response:

The option of averaging soy and waste grease biodiesel performance was not adopted.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2355
Organization: New Generation Biofuels
Comment:
As confidential information, the commenter (2355) supports the use of corn oil extract, a byproduct from the ethanol process as a feedstock for biofuels. The commenter recommends that the indirect impacts for the corn oil extract be minimal compared to the indirect land use change impacts attributed to corn for the corn ethanol process. Corn oil is a small percentage of the syrup from the ethanol process and accounts for 3 to 4% of the total volume of the corn kernel. In addition, the commenter argues that the corn oil should be seen as a waste stream with little to no indirect land use change impacts. [[Docket number 2355, p. 2]]

Our Response:

Our final rulemaking includes a pathway for non-food grade corn oil to biodiesel production. This pathway qualifies for the biomass-based diesel category RINs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:

The commenter (2360.1) noted that EPA's GHG emissions methodology contains a significant error pertaining to the direct emission calculations for nitrogen. The commenter stated that the 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. This error reduced the GHG score for soy biodiesel by more than 20 percent and should be corrected. (2360.1, p.4)

Our Response:

The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) urges EPA to assume that corn and soybean yield increases more in line with recent experience rather than long term trends. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, p. 2 for further discussion of this issue.]]

Our Response:

While we believe it is most appropriate to use future yields that are consistent with USDA's agricultural projections, we have also conducted a sensitivity analysis in which we increase yields of corn and soybean by 25% by 2022. The results of this analysis are included in Chapter 2 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2365

Organization: Neste Oil Holding, Inc
Comment:
The commenter (2365.1) urges EPA to proceed with caution in adopting ILUC models , and more importantly, in using key assumptions which are inputs to the model and which are obviously critical in determining model results. (2365.1, p.3)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. EPA also initiated an independent peer review of specific areas of our work.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

We recognize the importance that key variables can have when calculating the indirect land use change impacts of an increase in renewable fuels. It is for this reason that we have included a summary of the key assumptions used in the agricultural sector modeling in Chapter 5 of the RIA. As part of the notice and comment process, we have received valuable input on these key assumptions as well as many other parameters included in our modeling analysis, and have incorporated the best available data as it becomes available.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:
The commenter (2369) states that they did not comment on the methods and details used to determine the GHG reductions from various fuels and feedstocks, because, in general, ILUC is not fully developed and many assumptions penalize the biofuel industry. The commenter asks that careful review and development of ILUC be conducted and that indirect effects of all other fuels are also included in the calculations. [[Docket number 2369.1, p. 5]]

Our Response:

EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. However, the Agency has clearly acknowledged that there are uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. In the final rule, EPA presents an approach that manages these uncertainties in three ways: (1) getting the best information possible, (2) performing sensitivity analysis around key factors, and (3) establishing reasonable ranges of uncertainty and using probability distributions within these ranges in our threshold assessment.

EPA disagrees that its analysis penalizes the biofuels industry. EPA is simply attempting to account for all GHG emissions related to the full fuel lifecycle. Domestic renewable fuel producers may have no direct control over land use changes that occur overseas as a result of renewable fuel production and use here, but their choice of feedstock can and does influence oversees activities, and EPA believes it is appropriate to consider the GHG emissions from those activities in its analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) believes a certification program covering both direct and indirect effects must be developed allowing prompt verification of improved practices for feedstock and biofuels production. The addition of a certification program for updating GHG values would promote best practices in existing biofuels and advanced technologies. [[Docket number 2374.1, p. 2]]

Our Response:

EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate. This petition process also extends to new feedstocks. Additionally, EPA has indicated in the preamble its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2390
Organization: Governors' Biofuels Coalition
Comment:

The commenter (2390.1) believes that EPA's view of net corn use thus land use change for ethanol production is wrong. Corn used in ethanol plants does not "disappear" as does exported corn. (2390.1, p.1) (See Docket Number 2390.1, pp.1-2 for more discussion on this issue)

Our Response:

In assessing the impact of increases mandated by EISA, EPA believes it is most reasonable to assume the impacts would be due to biofuel that would not already appear in the market (i.e., business as usual volumes). Thus the EISA mandated volume impact would only be associated with the incremental volume resulting from the mandate.

EPA disagrees with the commentor's interpretation that our analysis assumes corn from ethanol "disappears". Our agricultural sector modeling takes into account the fact that DGS, a byproduct of dry-mill corn ethanol, can be used as a feed substitute in place of corn and soybeans, thereby reducing the need to grow additional acres of corn or soybeans. Additional details on the DGS assumptions can be found in Chapter 5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that nitrogen fixing in soil was incorrectly included. The commenter also noted that the energy balance data is out of date, co-product allocations for glycerin were not incorporated, and global market drivers for feed stocks, are not considered. The commenter believes that EPA should analyze indirect emissions for all fuels or for none, and should compare biofuels to the more expensive and higher carbon sources of crude they will be replacing such as tar sands and heavy crude. The commenter also noted that EPA's production baseline does not properly account for increasing crop yields and production efficiencies. (2474, p.1)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was

removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We agree with the comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Therefore, we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

Overall with all the changes made to the modeling since the proposal, soybean biodiesel qualifies under the biomass based diesel standard with a 57% reduction in GHG emissions.

EPA disagrees with the comment on petroleum indirect emissions. The reason the system boundaries used for threshold assessment in the proposed rule did not include indirect emissions from petroleum production was to be consistent with the goals and scope of the analysis as defined by the Energy Independence and Security Act (EISA).

The text of EISA specifies that the lifecycle threshold analysis for the different renewable fuel categories be compared to baseline lifecycle greenhouse gas emissions. EISA defines baseline lifecycle GHG emissions as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2490
Organization: Sapphire Energy
Comment:
The commenter (2490) believes EPA should consider CO_2 as a feedstock in its lifecycle analysis. The commenter recommends that EPA's methodology for undertaking lifecycle analysis of biofuels most notably photosynthetic algae-base fuels - specifically account for the use of industrial-source CO_2 as a feedstock. [[Docket number 2490.1, pp. 5-6]] [[See docket number 2490.1, pp. 5-6 for further discussion of this recommendation.]]

Our Response:

EPA's lifeycle assessment does take into account the uptake of CO_2 that will occur as part of the production of biofuel feedstock.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2495
Organization: GROWMARK, Inc.
Comment:
The commenter (2495) noted that current corn production data and trends are very important to a model system. American agriculture is producing an increasing amount of corn. As agriculture continues its efficiency producing more corn per acre while maximizing the use of fertilizer and land, the commenter continues to see efficiency gains in ethanol production systems. Advancement within ethanol production plants are also occurring to assist companies with increasing their overall operational efficiency. Larger crop outputs on a similar amount of agricultural land in the U.S. allows for increased food, fiber and fuel resources for the U.S. and other countries. This approach helps to meet our national objectives for renewable products. (2495, p.2)

Our Response:

We do consider in our analysis the increasing crop yields and production efficiencies over time. In addition, we have also analyzed as part of this rulemaking a high yield case as a sensitivity analysis. This does not change the fact that any change in biofuel volumes for whatever reason compared to a case without them would still have impacts. As was done for the proposal, to quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios in our economic models (both of which take into account these advances). Simply assuming that increases in future yields and technology will be sufficient to meet U.S. food, fiber, and fuel requirements ignores the secondary impacts of diverting some of these domestic feedstocks from international markets. Our interpretation of EISA requires us to take into consideration these significant indirect impacts of increasing renewable fuel volumes.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) is concerned about EPA's current approach of using production of 12.4 billion gallons of corn-ethanol as the baseline for simulating the effect of increasing production to 15 billion gallons. The picture is much worse for corn-ethanol if the baseline assumes a lower level of corn-ethanol production as the baseline. (2508, p.3)

Our Response:

In assessing the impact of increases mandated by EISA, EPA believes it is most reasonable to assume the impacts would be due to biofuel that would not already appear in the market (i.e., business as usual volumes). Thus the EISA mandated volume impact would only be associated with the incremental volume resulting from the mandate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter is concerned that the current approach does not take into consideration variability in crop production. The commenter believes that EPA should employ a safety valve - cut back on mandates when indicators of market stress, such as the stocks-to-use ratios, season average price predictions, or futures prices of commodities used as biofuel feedstocks, point to reduced supplies, increased demands, or general tightness in markets that would exacerbate pressure to convert additional land. The commenter also recommends that EPA include a measure of variability when estimating life-cycle GHG emissions instead of relying on baselines that have no stochastic component. (2508, p.3)

Our Response:

EPA recognizes that under various circumstances there may be a variety of burdens that would make satisfying the renewable fuel requirements difficult. There are waiver provisions and methods in place as part of the program that organizations may utilize if this is the case. For details on these provisions, please refer to the Preamble and RIA.

EPA also recognizes that there may be some variability in the results of the analysis, and as such our analysis for the final rulemaking includes data validation and quantitative uncertainty assessment regarding the types of land affected, and the resulting GHG emissions impacts. For more details about the updates in our analysis see Section V of the preamble.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter is also concerned that EPA's current model allows consumption (of grain and meat) to decline in order to make room for corn-ethanol production, particularly in developing nations that are least able to cope with increased food prices. The commenter recommends that EPA consider estimating biofuel GHG emissions holding global food consumption levels constant, or even allowing for growth to meet projections of increased demand for food associated with projected population and/or income growth. (2508, p.3)

Our Response:

The FAPRI model estimates that world food consumption does, indeed, decrease due to commodity price increases that result from increased demand for renewable fuels. However, the analysis only analyzes reponses due to the increase demand for renewable fuel. The only factors held constant in the analysis are those that adhere to proper laws and regulations in place, and to scientifically-based assumptions. By allowing world food consumption to be affected by changes in demand for renewable fuel as determined by the FAPRI economic model, EPA is better able to analyze effects specifically due to increase biofuel production.

For a full discussion of world food consumption, as well as effects on major areas of food consumption (e.g., grains, oilseeds, etc.), please refer the RIA and the FAPRI model documentation on the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that according to the current energy use of their plants, their usage is approximately 18% lower than for soy biodiesel and approximately 13 to 14% lower for animal fats than the data used by EPA. [[Docket number 2510.1, p. 3]]

The commenter adds that biodiesel has the highest energy balance of any transportation fuel produced in the U.S. The latest report from the University of Idaho shows energy used to produce soy biodiesel compared to petroleum is 4.56:1. This is due to increased efficiencies in biodiesel production, soy crushing, farming practices, and increases in soybean yields. In 1998, the energy balance was 3.2:1. By 2015, the balance is projected to reach 5.44:1. [[Docket number 2510.1, p. 4]]

Our Response:

As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports including the University of Idaho Study. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis. The EISA mandates for assessing pathways for meeting GHG thresholds do not require the EPA to do site specific GHG analysis. EPA has established pathway compliance based on its assessments of nation-wide performance. However, in the final rule, EPA also established a petition process whereby biofuel producers can petition the Agency for a change in thereshold assessment (a change in D code) if its production process differs from those modeled.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:

The commenter noted that it is unclear whether the FASOM mode incorporates changes in emissions from possible changes in feed mixtures. The commenter believes that this should be clarified. (2512.1, pp.8-9)

The commenter questions if productivity increases in other countries are stratified by country/ groups of countries? (2512.1, p.9) (See Docket Number 2512.1, p.9 for more discussion on this issue)

Our Response:

The EPA modeling does take into account the changes in enteric fermentation emissions from livestock with increased amounts of DGS used as feed.

The technological rates of progress for crop yields in the FAPRI model are based on the best available data. The sources for this data include the F.O Lichts Online Database; the Food and Agricultural Organization (FAO) of the United Nations (FAOSTAT Online); and the Production, Supply and Distribution View (PS&D) of the USDA. For countries that do not have sufficient sources of historical data, FAPRI assumes that technological rates of progress are similar to those nations in similar geographic regions. Additional detail on the data sources for the FAPRI model, and how it operates can be found in RIA and the technical report on the FAPRI model that can be found in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2524
Organization: South Dakota State University
Comment:
The commenters (2524.1) noted that the impacts of ethanol production on food production in Iowa, Nebraska, Minnesota, and South Dakota is extremely complex and suggested that by

linking ethanol and livestock production systems: 1) ethanol production could have neutral impact on the region's ability to produce food; 2) the profitability and energy efficiency of agriculture could be improved and the release of greenhouse gases would likely be reduced; and 4) the linkages between food, ethanol, and land-use changes in the Africa and South America are tenuous at best. (2524.1, p.1)

Our Response:

The econometric models used by EPA consider the inter-relations between biofuel feedstock production and production of food and feed. They include projected improvements in agriculture practices nationwide in the U.S. as well as in other countries. Since the proposal, significant enhancements in modeling including improved data internationally have been included. These enhancements are detailed in the preamble and in the RIA. As noted by the commenters, EPA's LCA takes into account continued improvements in agricultural practices and account for co-product benefits (e.g., from DGS). While we did an impact assessment of the potential impact of biofuel production on farm income, this assessment did not necessarily consider all the farm profit potentials identified by the comments. However, this should not impact our primary analyses of GHG impacts. The factors impacting GHG performance as indentified by the comments (e.g., impact on soil carbon; crop yields per acre) were considered in our evaluation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2524
Organization: South Dakota State University
Comment:
The commenters noted that primary arguments used against biofuel production are that more energy is required to produce the product than it produces. This argument may have been true 30 years ago. However, just like other industries, agriculture has made huge improvements over the past decades. The commenters also noted that findings reported by the United States Department of Energy confirm that agriculture energy efficiency is improving and that even when corn grain is converted into ethanol, the amount of energy produced exceed input energy requirement. (2524.1, p.2)

Our Response:

Regarding energy required to produce corn ethanol, EPA has evaluated this as part of our lifecycle assessment, including all inputs for feedstock production, harvesting, collection, transport, conversion to biofuel (including co-product benefits) and transport to point of final use. These impacts are documented in the preamble and more extensively in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2532

Organization: BioEnergy Producers Association
Comment:
The commenter (2532) believes that for advanced biofuels, when produced from organic wastes, these offsets include reduced methane emissions from landfills, five times greater energy recovery than landfill biogas, reduced emissions from waste transport, zero impact on direct or indirect land use change, elimination of the need to utilize food derived resources as feedstocks, massively reducing the need to devote 55 million acres to the growing of cellulosic feedstocks, with the attendant environmental expenditure of manpower, water resources, harvesting and transport. And most importantly, the reduced 02 emissions from automobiles, estimated at 86% or more, when waste-derived biofuels are compared with an energy equivalent amount of gasoline. Such consideration would more appropriately align the EPA with other existing and emerging national policy, whose primary objectives are energy independence. [[Docket number 2532, p. 2]]

Our Response:

For the final rule, EPA has analyzed biofuel pathways for using waste material including organic waste material that would otherwise be placed in landfills. We have determined such organic waste to comply with the renewable fuel definition and to meet GHG performance thresholds. This determination and the associated analyses are documented in the preamble (Section II) and in additional detail in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:

The commenter believes that the EPA methodology contains a major error pertaining to the direct emission calculations for nitrogen in soybean production. EPA also did not account for glycerin as a co-product or for those that may use new advanced processes to convert this into finished goods product and not scrap the glycerin. (2549.1, p.2)

The commenter noted that that corrected values for nitrogen emissions, co-products, and the energy balance from biodiesel/renewable diesel production would result in soy biodiesel GHG emissions that are over 60% better than petroleum, easily exceeding the 50% GHG threshold called for under the RFS2 biomass-based diesel schedule. An appropriate indirect land use analysis would further enhance soy renewable diesel value relative to petroleum diesel. (2549.1, p.3)

The commenter believes that the GHG calculations must account for improved agriculture yields and efficiency. (2549.1, p.3)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We agree with the comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Therefore, we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

Overall with all the changes made to the modeling since the proposal, soybean biodiesel qualifies under the biomass based diesel standard with a 57% reduction in GHG emissions.

We do consider in our analysis the increasing crop yields and production efficiencies over time. In addition, we have also analyzed as part of this rulemaking a high yield case as a sensitivity analysis. Furthermore, for this final rulemaking analysis, we have also taken into account increases in yields that may occur as the price of that commodity increases (price-induced yields).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2614
Organization: Citizen (*sample letter representing 364 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2614) notes that, "EPA should assume the increased demand for ethanol and soy biodiesel will mean the release of more CRP land. Recognizing that recent corn and soybean yields are increasing at a greater rate than the long-term trend is important in your rulemaking process. Because what this means, is that U.S. producers will be able to meet the needs of the U.S. renewable fuels industry if not hampered by unnecessary regulation." (2614 p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2615
Organization: Citizen (*sample comment letter representing 9 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2615) notes that EPA should, "Assume that CRP land will be released in response to a long term change in demand for ethanol and soy biodiesel [, and that]... Corn and soybean yield increases more in line with recent experience rather than long term trends." (2615 p. 1)

Our Response:

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.

Comment:
The commenter (2363) argues that it is well known that removal of crop residue will reduce soil organic carbon and thus increase atmospheric CO_2 loading, yet EPA chose to ignore this basic element of soil and climate change science. [[Docket number 2363.1, p. 5]] [[See docket number 2363.1, pp. 5-7 for further discussion of this issue.]]

Our Response:

The modeling for this rule does not directly account for changes in organic soil carbon content due to residue removal and this impact on CO_2 loading. The modeling does account for changes in carbon due to tillage practices, which can modify the effect of residue removal on soil carbon content. EPA does, however, recognize that this is an area for further study.

7.2.5.2 Land Use Changes

What Commenters Said:
Document No.: EPA-HQ-OAR-2005-0161-1989
Organization: Iowa Farm Bureau Federation
Comment:
The uncertainty inherent in EPA's analysis is clearly illustrated with the review of a few basic facts. For example, those that support the concept of ILU changes claim that ethanol production in the United States affects the rate of deforestation. If that is the case, then why has Brazilian deforestation decreased by over 50 percent in the same period that U.S. ethanol production has increased by more than 90 percent. Furthermore, it has also been reported that the soybean price is negatively 53 percent correlated with the rate of Brazilian deforestation. (Since 2004, the negative correlation between U.S. soybean prices and Brazilian deforestation has increased to 70 percent). The argument that the rate of deforestation may have been even slower if there was no increase in U.S. ethanol production is only conjecture and not supported by the data. If anything, the correlation data strongly suggests that increases in U.S. ethanol production actually results in decreases in Brazilian deforestation.

(3) Currently, there is nearly no tested and validated science for quantification of ILU. The models in use rely on correlations that have been postulated rather than on validated causations. As such, these models are in an infant and unreliable stage. However, despite the short comings of the science, the proposed rule attempts to comply with EISA by including some adjustments to specific forms of ethanol for indirect land use changes.

Document No.: EPA-HQ-OAR-2005-0161-1989
Organization: Iowa Farm Bureau Federation
Comment:
Dr. Bruce Babcock at the Center for Agricultural and Rural Development (CARD), Iowa State University, in testimony on May 6, 2009, before the Subcommittee on Conservation, Credit, Energy, and Research, U.S. House Committee On Agriculture, concluded that while our ability to estimate changes in agricultural land use in the U.S. due to a change in biofuels policy may be reasonably good, our ability to estimate land use changes overseas is not. Our ability to

accurately measure the extent of land use changes outside the U.S. is limited because of a lack of reliable data and a lack of knowledge about what is actually going on in other countries.

Babcock testified that CARD is investing heavily in improving its understanding of Brazilian agriculture to better enable the EPA to conduct its analysis. They anticipate replicating this effort for other major producing countries, too. Without this kind of hard labor and data-intensive work, it is impossible to conclude with any certainty, Babcock said, the extent to which increased emissions from land conversion offset the decrease in emissions from using a renewable fuel in our transportation sector.

The recent EPA peer review panel also reaffirmed many of the concerns the IFBF has about the EPA's proposed rule and rulemaking process. The panel expressed concern about using these incomplete and unreliable models to measure ILU changes and indicated that they didn't have enough time to review this convoluted and complicated proposal. We are also concerned that there is no evidence that the U.S. Department of Agriculture or any other federal agencies with expertise on these issues were included in the peer review process. This is exactly why the House of Representatives voted in the climate change bill to limit EPA's ability to implement international ILU provisions in the RFS-2.

We respectively disagree with the EPA assessment "...that there were no direct and substantial [conflict of interest] or appearance of impartiality issues that would have prevented a peer reviewer's comments from being considered by EPA." Dr. Timothy Searchinger, for instance, has been an outspoken critic of biofuels and is clearly not impartial. His inclusion on the peer review panel casts serious doubt on the sincerity of EPA in wanting an unbiased, critical review of the issues associated with life-cycle analysis and the use of models to assess causality.

In addition, a glaring weakness of the approach used is the lack of linkage of the driving force of petroleum prices on input prices for agricultural products and the resulting causalities that exist between petroleum prices and food prices. Increasing petroleum prices result in increased prices for crops and food commodities, and thus, a significant portion of the land-use change is attributable to the underlying change in energy prices, not just the changes that occur because of linkages of biofuels production to energy policy.

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
1. The commenter (2329.1) believes that there is is insufficient science to include international indirect land use changes. EPA's methodology for assessing indirect land use changes is new and untested, and simply fails to rise to the level of scientific integrity necessary to support regulatory actions. There are currently no accepted scientific methods for estimating indirect land use change associated with biofuel production, and EPA's use of various models, in particular the FAPRI model, is not consistent with accepted standards for lifecycle analysis. The commenter believes that EPA should not include international indirect land use changes in its lifecycle analysis. Even though the statute requires EPA to consider significant indirect emissions when calculating a renewable fuel's emission profile, the statute does not require EPA

to rely on faulty data and to make unrealistic assumptions. (2329.1, p. 25) [[See Docket Number 2329.1, pp.25-27 for a detailed discussion of this issue]]

The commenter also believes that EPA's inclusion of indirect emissions from international land use changes in its lifecycle analysis goes beyond the statutory language and intent of Congress. (2329.1, p.35) [[See Docket Number 2329.1, pp.35-39 for a more detailed discussion of this issue]]

Our Response:

EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, through individual meetings, conferences and events. EPA also initiated an independent scientific peer review of specific areas of our work.

EPA has clearly acknowledged that there are uncertainties associated with these estimates--particularly with regard to indirect land use change--and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. EPA has chosen an approach that includes biofuels with a significant international land use impact in this program.

As to the comments about the statutory language and intent of Congress, EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from international land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel. The statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question. EPA has not ignored the term "life cycle." The entire approach used by EPA is directed to fully analyzing emissions related to the complete lifecycle of renewable and baseline fuels.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the US. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

Excluding international impacts means large percentages of GHG emissions would be ignored. This would take place in a context where the global warming impact of emissions is irrespective of where the emissions occur. If the purpose of thresholds is to achieve some reduction in GHG emissions in order to help address climate change, then ignoring emissions outside our borders interferes with the ability to achieve this objective. Such an approach would essentially undermine the purpose of the provision, and would be an arbitrary interpretation of the broadly phrased text used by Congress.

Lastly, EPA believes that including international indirect emissions in EPA's lifecycle analysis does not exercise regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
2. The commenter believes that EPA relies on questionable studies to claim "potential" impacts on international land use changes from U.S. biofuel production. The commenter noted that

EPA's assertion that U.S. biofuel production will have impacts on international land use changes are largely based on a paper by Timothy Searchinger, et al., entitled Use of U.S. croplands for biofuels increases greenhouse gases through emissions from land-use change, Science 319:1238-1240 (2008). The Searchinger paper is based on a theory that use of crops in the United States for biofuels causes reduced exports, leading other countries to expand their crop production, and resulting in the clearing of land that is currently unused for agricultural production. The Searchinger paper is not a lifecycle analysis and is based on flawed assumptions and inadequate data. (2329.1, p.39) [[See Docket Number 2329.1, pp.39-41 for a detailed discussion of this issue]]

No margins of error were reported by Searchinger, there was no discussion of the assumptions utilized and the degree of their validity, and the analysis could not be replicated due to a lack of transparency. The commenter noted the following flawed assumptions in Searcher et al.: (a) inclusion of high estimates of ethanol production by 2015 all assumed to be derived from corn (double that required by the EISA); (b) failure to incorporate technological advances in the industry; (c) questionable assumptions regarding types of land converted; (d) reliance on satellite data that has misclassification problems (on the order of 54.55% in identifying cropland) and that was based on a time period where land use changes were driven by rapid industrial growth and were subject to little or no regulatory control; (e) inclusion of flawed assumptions regarding crop yields and distiller grain displacement; and (f) reliance on commodity prices that were much lower than today. The Searchinger paper fails to properly account for increased corn yields, which reduce the need for land use changes.

Our Response:

EPA has made the GHG threshold determinations based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. Based on the Agency's analyses, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline.

EPA's analysis for this rulemaking is entirely independent of the Searchinger et al. study cited by the commenter. The most significant similarity between our analysis and the work done by Searchinger et al. is that we also used the FAPRI modeling framework to simulate international responses to biofuel policies. However, our modeling approach is substantively different and we have incorporated many modifications to our approach based on comments from the public and peer reviewers and developing science.

The updates we have incorporated address all of the specific criticisms of Searchinger et al. cited by the commenter. Searchinger et al. analyzed an arbitrary increase in biofuel production, while we specifically analyzed the impacts of the revisions to the RFS specified in EISA. Based the advice and input of a broad group of stakeholders we extensively updated the FAPRI model with the best available data and information about agricultural and food markets. For example, our modeling includes a more detailed representation of Brazil and price-induced yield responses. We also include many technological advances over time, such as corn and soybean yields and co-product efficiency. We use more recent and higher resolution satellite data, and we model the interactions between pasture and cropland. Furthermore, our analysis includes data validation and quantitative uncertainty assessment regarding the types of land affected, and the resulting GHG emissions impacts. For more details about the updates in our analysis see Section V of the preamble.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
3. The commenter also noted that EPA's analysis does not account for the fact that U.S. biofuel production actually promotes sustainable agriculture, which can reduce land use impacts. The commenter also believes that EPA's analysis fails to adequately account for the other, more likely causes of international land use changes. (2329.1, pp.41&42) [[See Docket Number 2329.1, pp.41-48 for a detailed discussion on this issue]]

Our Response:

To the maximum extent possible, our agricultural sector modeling does capture incentives for promoting certain farming practices that may be encouraged by the increase in demand for renewable fuels. For example, the FASOM model captures incentives for farmers to switch to reduced tilling practices as more stover is harvested for cellulosic ethanol production. In addition, the FAPRI model now takes into account price induced yield changes, which accounts for the fact that farmers will increase yields on existing lands rather than expand onto new lands as a result of higher commodity prices.

As described in the preamble and RIA, we recognize there are many social, economic, and political factors that contribute to land use change, such as urbanization and increasing populations. We have taken into account the impact of future projections of population, urbanization, income, and other macroeconomic conditions in our reference case. As a standard economic practice, we are assuming all of those other factors are held constant in both our reference case and our policy case. Our analysis therefore focuses only on the changes in land use that result from an increase in the renewable fuel volumes required by the RFS2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
With regards to the Winrock data, the commenter believes that EPA's reliance on Winrock satellite data from the 2001-2004 timeframe renders the entire analysis arbitrary in that EPA is suggesting that land use changes that occurred for any reason in the countries of interest serve as an appropriate proxy for land use changes resulting from U.S. biofuel expansion under the RFS. The Winrock data cannot provide any causal connection between the land use changes and U.S. biofuel production. The analysis of the Winrock data also shows a high error rate. The commenter believes that with no attempt to verify the land use changes reported in the Winrock report, and with very questionable changes reported over a three-year period, the Winrock data is not suitable for use in policy assessments. (2329.1, pp.48-51) [[See Docket Number 2329.1, pp.48-51 for a detailed discussion of this issue]]

Our Response:

The proposed rule included a detailed description of the FAPRI/Winrock approach used to determine the type of land affected internationally. This approach uses satellite data depicting recent land conversion trends in conjunction with economic projections from the FAPRI model (an economic model of global agricultural markets) to determine the type of land converted internationally. In the proposed rule we described areas of uncertainty in this approach, illustrated the uncertainty with sensitivity analyses, and discussed other potential approaches for this analysis. To encourage expert and stakeholder feedback, EPA specifically invited comment on this issue, held public hearings and workshops, and sponsored an independent peer-review, all of which specifically highlighted this part of our analysis for feedback. While there were a wide range of views expressed in these forums, the feedback received by the Agency generally supported the FAPRI/Winrock approach as appropriate for this analysis. For example, all five experts that peer reviewed EPA's use of satellite imagery agreed that it is scientifically justifiable to use historic remote sensing data in conjunction with agricultural sector models to evaluate and project land use change emissions associated with biofuel production. Additionally, the peer reviewers and public commenters highlighted problematic areas and suggested revisions to improve our analysis. In preamble Section V, we describe the key revisions that were implemented which have significantly improved our analysis based on the feedback received.

As discussed above, all five of the expert peer reviewers that reviewed our use of satellite imagery for this analysis agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data

validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter also believes that EPA's approach fails to adequately account for corn yields and role of DDG in maintaining or growing exports, resulting in less need for land use changes. (2329.1, p.51) [[See Docket Number 2329.1, pp.51-52 for a detailed discussion of this issue]]

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

Final rule analyses also have updated our assessment of the use of DDG and its impact on land use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes that EPA failed to consider emissions from direct land use changes associated with petroleum exploration and production. EPA also has failed to consider indirect emissions of baseline gasoline. (2329.1, pp.53-55) [[See Docket Number 2329.1, pp.53-55 for a detailed discussion of these issues]]

Our Response:

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and

did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes that the following corrections to its analysis:
-The assumptions used by EPA in its FASOM and FAPRI modeling regarding corn yields need to be increased substantially;
-The models used by EPA do not include correct U.S. land inventories, which forces the modeling framework to immediately "Look" overseas for land to convert;
-CRP land should not be limited to 32 million acres; and,
-EPA did not properly account for pasture intensification in Brazil. [[See Docket Number 2329.1, pp.57-60 for a detailed discussion of these issues]]

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

EPA's analysis for the proposal and for the final rulemaking shows changes in both domestic and international cropland production in response to the increased demand for renewable fuels. For the final rulemaking analysis, the FASOM model includes both the forestry and agriculture sector models, and dynamically interact with one another via price changes and competition for land (amongst other variables). In addition, the FASOM model has been updated to account for additional land classes in the United States, based on USDA NASS data. This includes cropland pasture, forest pasture, forestland, rangeland, developed land, and acres enrolled in the Conservation Reserve Program. Details on changes in land use in the U.S., and the updates to the FASOM model are discussed in the Preamble, the RIA, and the technical report for the FASOM model in the docket.

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

As explained in preamble Section V, one of the major changes made to the FAPRI model between the NPRM and FRM includes the more detailed representation of Brazil through a new integrated module. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA's assumptions regarding carbon sequestration are flawed. EPA should revise its 80-year assumption for the final rule. EPA should also be using the same average age for carbon sequestration and for developing the emission factors for forest conversion. (2329.1, p.60)

The commenter noted that ethanol facilities have taken great strides in addressing GHG emissions, including carbon capture and sequestration projects, which are not reflected in EPA's pathways. EPA should allow facilities to submit a facility specific analysis in order for the facility to take advantage of the measures they are taking to reduce their overall carbon footprint. (2329.1, p. 99)

Our Response:

In the proposed rule, to estimate annual forgone forest sequestration, we used IPCC default data for the growth rates of forests greater than 20 years old. The expert peer reviewers noted that these estimates could be refined with more detailed information from the scientific literature. Many of the public commenters were also concerned that EPA's approach overestimated foregone sequestration because it did not adequately account for natural disturbances, such as fires and disease. To address these comments, our analysis has been updated with peer reviewed studies of long-term growth rates for both tropical and temperate forests. These estimates are based on long-term records (i.e., monitoring stations in old-growth forests for the tropics and multi-decadal inventory comparisons for the temperate regions) and reflect all losses/gains over time. These studies show that the old-growth forests in the tropics that many once assumed to be in "steady state" (i.e., carbon gains equal losses) are in fact still gaining carbon. In summary, our analysis now includes more conservative foregone forest sequestration estimates that account for natural gains and losses over time.

For this final rule, EPA did not have sufficient information to model the likely impacts of carbon capture and sequestration used in combination with tranditional biofuel facilities. However, EPA has established a petition process whereby biofuel producers can petition the Agency for a change in threshold assessment (a different D code) based on differences in production processes compared to those modeled.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1015
Organization: Renewable Energy Group
Comment:
The commenter (1015) believes the biodiesel industry must be able to utilize every feedstock available. The EPA should not exclude soybean oil-based biodiesel from RINs eligibility, and thus RFS2 volume requirements, as a result of indirect land use change formulations for greenhouse gas emissions. (1015, p.1)

Our Response:

Based on the analysis and approach explained in the final rule, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) supports ILUC of the LCA from the perspective of confinement of use to the industries of the United States of America-only. The commenter states that EISA does not give any agency authorization to consider data from foreign countries. However, in the preamble of the proposed rule the EPA uses the language “interprets” (VI)(B)(2)(a) they must include that data. The commenter strongly disagrees, especially, when certain vegetable oil feedstocks are only grown in the United States. The commenter presents three main arguments that the EISA definition does not state nor imply that EPA has the jurisdictional authority to capture LCA data outside the boundaries of the U.S. [[Docket number 1044.1, p. 8]] [[See docket number 1044.1, pp 8-10 for further discussion of this issue.]]

Our Response:

With regard to the legal interpretation of the definition of lifecycle analysis, EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from international land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel. The statute specifically directs EPA to include in its analyses significant indirect

emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question. EPA has not ignored the term "life cycle." The entire approach used by EPA is directed to fully analyzing emissions related to the complete lifecycle of renewable and baseline fuels.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the intent of this section of the amended Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the aggregate emissions related to the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution." Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

Drawing a distinction between GHG emissions that occur inside the U.S. as compared to emissions that occur outside the U.S. would result in a lifecycle analysis that bears no apparent relationship to the purpose of this provision. The purpose of the thresholds in EISA is to require the use of renewable fuels that achieve reductions in GHG emissions compared to the baseline. Ignoring international emissions, a large part of the GHG emission associated with the different fuels, would result in a GHG analysis that bears no relationship to the real world emissions impact of transportation fuels. The baseline would be significantly understated, given the large amount of imported crude and imported finished gasoline and diesel used in 2005. Likewise, the emissions estimates for imported renewable fuel would be grossly reduced in comparison to the aggregate emissions estimates for fuels made domestically with domestically-grown feedstocks, simply because the impacts of domestically produced fuels occurred within the U.S. EPA does not believe that Congress intended such a result.

Relative and direct "global warming potentials" are in reference to technical methods of expressing quantities of greenhouse gases, irrespective of the source of the greenhouse gas.

Lastly, while some feedstocks may only be produced in the United State, their indirect market effects may impact global agricultural markets. Therefore, international indirect effects are considered for domestically produced feedstocks as well as foreign-produced feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1048
Organization: Macquarie University (Australia) Graduate School of Management (COPYRIGHT)
Comment:
Commenter[[1048]] finds that EPA shows a lack of transparency and scientific integrity in Searchinger et al. The commenter describes rules as more ideology than science and seeking to put biofuels in worst possible light; - Alternative approaches likely to be more fruitful in genuinely evaluating effects of biofuels grown around the world. A scholarly analysis of the

keystone of indirect land use study. Commenters feel the framework used was inappropriate in that it started with assumptions as to diversion of grain to ethanol production in the U.S. but then extrapolated these to parts of the world, such as sugarcane growing in Brazil, which are actually (much) more bio-efficient.

Commenters [[1048]] analysis concluded that Searchinger et al. Failed sound scientific standards on many fronts and that government agencies relying on Searchinger et al. Findings for evaluating biofuels would be better served by utilizing other controls. The commenter states "Indirect land use change effects are too diffuse and subject to too many arbitrary assumptions to be useful for rule-making," stated Professor Mathews. "The use of direct and controllable measures such as building statements of origin or biofuels into the contracts that regulate the sale of such commodities would secure better results." The issue is where to draw the boundary for life cycle analysis and how to address ILUC effects within the boundary. Non-industry experts are concerned that this is taking regulatory action too far, and the science underpinning such actions, including the ILUC calculations.

Our Response:

We have analyzed and reviewed the dozens of studies that have been published on indirect land use change in the last several years. We have been informed by previous work but our analysis goes beyond anything that has been done currently and improves on much of the existing work. Through our rulemaking process we have worked with numerous stakeholders including the scientists who have authored those studies to incorporate the best data and tools available into the lifecycle analysis.

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. EPA also initiated an independent peer review of specific areas of our work.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1049

Organization: Prairie Pride, Inc.
Comment:
The commenter (1049) believes that existing biodiesel facilities meeting the RFS2 requirements with existing feedstock sources should not be unfairly penalized for assumptions related to international land use changes. The commenter requests the EPA use its regulatory authority to exempt existing biodiesel facilities from land use changes. Existing feedstock sources are already available to meet this production level. As such, no land use changes, and therefore no significant emissions from those changes, should be with existing production. [[Docket number 1049, p. 1]]

The commenter states that EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect historical results and should be revised. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America; however, Brazilian soybean acreage has decreased 1.5 million hectares from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. [[Docket number 1049, p. 2]]

The commenter believes that co-product allocations for glycerin need to be incorporated in GHG calculations, which would dramatically increase biodiesel's GHG benefits compared to petroleum. [[Docket number 1049, p. 2]]

The commenter adds that EPA's approach should account for increasing soybean yields and improving farm efficiencies. Soybean hybrids and farming techniques have continuously improved over the past fifty years and this trend is expected to continue. [[Docket number 1049, p. 2]]

Our Response:

Based on the analysis and approach explained in the final rule, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline. This assessment includes the impacts from international land use changes, which EPA is required to consider and which EPA has found to be significant for biodiesel production.

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced

by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) noted that because of the selective enforcement of the controversial and untested theory of ILUC against biofuels by EPA, they cannot support the rule as written and instead recommend that EPA issue a final rule that does not apply an ILUC penalty for biofuels. The commenter recommends that EPA should insist upon greater scientific consensus and real-world data of so-called ILUC effects from biofuels before moving forward to apply them in the final rule. (2101.1, p.2)

The commenter noted that EISA does not direct EPA, not in statutory language nor in intent, to estimate the impact of international land use changes in its calculation of the greenhouse gas impact of biofuels. The law specifically compels EPA to examine significant direct and indirect land use changes, but EPA alone, with the strong backing of groups who do not want to see biofuels succeed, has loosely interpreted the law and unfortunately given credence to this controversial and untested theory of international ILUC. (2101.1, pp.3-4)

The commenter also noted that the EISA statute does not require EPA to apply ILUC outside the United States. Because of the selective enforcement of the controversial and untested theory of ILUC against biofuels by EPA, the commenter can not support the rule as written and instead recommends that EPA issue a final rule that does not apply an international ILUC penalty for biofuels, consistent with the law. (2101.1, p.16)

Our Response:

EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, through individual meetings, conferences and events. EPA also initiated an independent scientific peer review of specific areas of our work.

EPA has clearly acknowledged that there are significant uncertainties associated with these estimates--particularly with regard to indirect land use change--and has developed an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. In addition, if international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty as claimed by the commenter would not mean that we have absis to believe the emissions are small and can be ignored; rather it would mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. EPA has chosen an approach that takes the uncertainty of international land use impacts into account, does not ignore it, and provides a credible and reasonable estimate of the significant emissions associated with these land use impacts. Our approach quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the US. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

Excluding international impacts means large percentages of GHG emissions would be ignored. This would take place in a context where the global warming impact of emissions is irrespective of where the emissions occur. If the purpose of thresholds is to achieve some reduction in GHG emissions in order to help address climate change, then ignoring emissions outside our borders interferes with the ability to achieve this objective. Such an approach would essentially undermine the purpose of the provision, and would be an arbitrary interpretation of the broadly phrased text used by Congress.

Lastly, EPA believes that including international indirect emissions in EPA's lifecycle analysis does not exercise regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter also noted that ILUC models provide for interesting discussions, but they are not reliable enough to be used for determining policies with national and consequential ramifications. Computer models are entirely dependent on the assumptions that are employed by those who develop them. Ultimately the only meaningful test of whether a computer model is sound is whether its predictions can be corroborated by actual on-the-ground measurements. Without these real-world substantiations, models are more theory than science. In the case of ILUCs from biofuels, the measurements of on-the-ground land clearing do not corroborate the predictions of existing models. (2101.1, pp.4&5)

The commenter believes that computer models should not be used to ascribe GHG emissions to biofuels or any other energy source until those models have been shown through years of corroborative data to accurately predict real-world changes in emission rates. Some academics who developed the models used by EPA may not agree with the commenter about what the "score" or "penalty" for corn ethanol under the ILUC theory is (often they say the land use change effect of corn ethanol is not zero), but even they would admit their models need more work before they can be reliably used in a policy context. (2101.1, p.5)

The commenter is pleased that EPA sent a letter to Senator Tom Harkin (D-IA) in response to an amendment he filed to the Fiscal Year 2010 Interior Appropriations bill which would require more EPA study of ILUC before enforcing it in the RFS2 rule. The fact that EPA noted "that there are significant uncertainties associated with these estimates (ILUC) and in particular, with the estimate of indirect land use change" is an important acknowledgment. Thanks for asking EPA staff to quantify the uncertainty associated with specifically the ILUC emissions. They are working closely with USDA as well as incorporating feedback from experts who are commenting on the rule. It is important to understand the uncertainty surrounding the estimates before finalizing the RFS2 rule. (2101.1, p.7)

In an effort to better understand lifecycle analysis and indirect effects, the commenter commissioned a study by Global Insight entitled "Lifecycle Analysis of Greenhouse Gas Emissions Associated with Starch-based Ethanol." Key findings from that report include:

-Changes in land use have always occurred and are not new, nor are biofuels the primary driver of them. Global population growth cannot be ignored as a factor.

Our Response:

We agree that land use change has occurred in the past and will continue. We also agree that there are many drivers for land use change including global population growth. Our analysis is based on the difference between two future scenarios with different levels of biofuels production that both include population growth and other land use change factors. So we are only calculating the impact of the increase in biofuel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
-The scientific literature available to date shows a huge variation in estimates of carbon release from land clearing in general, on the order of 50 percent plus or minus - a huge margin of error that should not be relied upon to make policy.

Our Response:

For the final rule analysis we have included the uncertainty of carbon releases from land clearing. However, we disagree that we can not make threshold determinations because of this uncertainty. For this final rule, because of the inherent uncertainty and the state of the evolving science on this issue, EPA is basing its GHG threshold compliance determinations for this rule on an approach that considers the weight of evidence currently available. For fuel pathways with a significant land use impact, the evidence considered includes the best estimate as well as the range of possible lifecycle greenhouse gas emission results based on formal uncertainty and sensitivity analyses conducted by the Agency. In making the threshold determinations for this rule, EPA weighed all of the evidence available to it, while placing the greatest weight on the best estimate value for the base yield scenario. In those cases where the best estimate for the potentially conservative base yield scenario exceeds the reduction threshold, EPA judges that there is a good basis to be confident that the threshold will be achieved and is determining that the bio-fuel pathway complies with the applicable threshold. To the extent the midpoint of the scenarios analyzed lies further above a threshold for a particular biofuel pathway, we have increasingly greater confidence that the biofuel exceeds the threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:

-If some land use change is due to increased biofuels production, the overriding challenge is to quantify which changes can indeed be directly attributed to biofuels.

Our Response:

The way the analysis was conducted we specifically quantify changes that are attributable to biofuel production. We consider the emissions difference between two future scenarios where the only difference between the two scenarios is the amount of biofuels produced. By doing this scenario analysis we isolate the impacts due to biofuel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
-If the indirect GHG emissions of biofuels are counted toward the carbon footprint, so should be the indirect emissions associated with petroleum production. (2101.1, pp.7-8)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an

average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter believes that EPA needs to more carefully consider the value of ethanol co-products (distillers grains) that are returned to the feed supply and the fact that corn yields are not fixed but are constantly improving thanks to improved farming methods and biotechnology. If proper credit is provided to distillers grains co-products, which replace the need for corn and soybean meal in livestock feed, and if increased corn yields are considered, the 15 billion gallons of corn ethanol called for under RFS2 can be produced without any land use penalties. (2101.1, p.8)

The commenter noted that ascribing GHG emissions from land clearing in developing countries to biofuels production in the U.S. would hold the domestic ethanol industry to a uniquely

punitive standard, one that no other U.S. industry would face under any existing or proposed GHG control program. (2101.1, p.14)

Our Response:

For the final rulemaking analysis, both the FASOM and FAPRI models have incorporated updated distillers grains replacement rates for corn and soybean meal in animal feed. These updated assumptions are based on recent research conducted by Argonne National Laboratory. In addition, both the FASOM and FAPRI models expect crop yields to continue to increase over time, in accordance with USDA projections. These assumptions, however, are applied to all volume scenarios analyzed in the FASOM and FAPRI models for this rulemaking. Therefore, an increase in demand for renewable fuel under these circumstances still results in land use change stemming from increased crop production in the final rulemaking analysis. Another update to the FAPRI model related to improved crop yields includes price-induced yield changes, which results in increased yield for a crop as its price increases. Details on these assumptions in the final rulemaking can be found in the RIA, and the technical reports on the docket for the FASOM and FAPRI models.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) believes that existing biodiesel facilities, which are able to meet the RFS2 requirements with existing feedstock sources, should not be unfairly penalized for assumptions related to international land use changes. EPA has already indicated that obligated parties will be able to use 2009 biodiesel and renewable diesel to meet the RFS2 requirements. [[Docket number 1051.1, p. 1]]

The commenter urges EPA to use its regulatory authority to exempt biodiesel facilities that were placed in service prior to December 19, 2007, the date of enactment of EISA from being unfairly penalized for assumptions related to international land use changes that cannot be validated with credible science and are unrelated to U.S. biodiesel production. [[Docket number 1051.1, p. 2]]

Our Response:

EISA "grandfathers" production from existing facilities but only for compliance with the basic renewable fuel compliance threshold (i.e, 20% GHG improvement) not the advanced biofuel threshold (50% improvement) which is generally the target for biodiesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.

Comment:
The commenter believes that existing U.S. biodiesel production, which has been steadily growing, will have no land use changes and therefore no significant emissions can be associated with existing production. [[Docket number 1051.1, p. 2]]

The commenter states that EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect the real world. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares. [[Docket number 1051.1, p. 2]]

Our Response:

The commenter indicates that methodology for determining GHG impacts is flawed in that it is not a widely accepted methodology, includes indirect land use changes (including international land use impacts), out of date IPPC factors for nitrogen from soybean production, glycerine co-product benefits are under estimated, and the petroleum baseline does not take into account future petroleum trends. As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA. For the final rule we have updated our nitrogen data to use the latest IPPC guidance and have included co-product value for glycerine.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1338
Organization: Union for Concerned Scientists
Comment:
The commenter's (1338) recommend that the Renewable Fuel Standard (RFS) use the latest science to calculate the lifecycle analyses of heat-trapping emissions from biofuels. Doing this would ensure that indirect land use change, resulting from converting forests and grasslands to farmland for fuel crop production, is taken into account. (1338, p.1)

The commenter's note that recent peer-reviewed research indicates that the production of conventional biofuels can directly or indirectly result in substantial global warming emissions. Previous lifecycle analyses of biofuels did not adequately account for these emissions, giving these fuels credit for greater reductions in heat-trapping emissions than actually achieved. The data on land use change indicate that the emissions related to biofuels are significant and can be quite large. The commenter's note that even though it is currently difficult to assign a precise value to the effect of indirect land use, regulations based on the best available science need to be developed without ignoring this major source of global warming pollution. (1338, p.1)

Our Response:

EPA agrees with the commenter's suggestion to use the latest science. The methodology presented in the final rule includes significant enhancements to our approach, including the incorporation of new scientific data. In addition, as required by EISA, EPA has considered all aspects of a fuel's lifecycle emissions in order to determine compliance with the thresholds. EPA believes it has developed an approach that incorporates and measures full lifecycle emissions while also acknowledging that single point estimates of these impacts may not be possible given the uncertainties in certain areas.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1669
Organization: Environmental Intelligence, Inc.
Comment:
The commenter (1669.1) is concerned that the evidence demonstrates that U.S. biodiesel production is not the cause of significant land use change in Brazil or elsewhere. U.S. soybean farmers should not be penalized based on flawed and immature assumptions and theories. (1669.1, p.1)

Our Response:

As described in more detail and in Section V of the preamble, EPA has used the best available models to analyze the indirect impacts of U.S. biodiesel production, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. EPA has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations required for this rulemaking. As discussed in the preamble, EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1719
Organization: MAIZAR, Argentine Corn and Sorghum Association
Comment:
The commenter (1719.1) needs to make EPA aware that the theoretical bases on which the proposed rulemaking is founded, known as the international Land Use Change theory ("iLUC"), directly contradicts the commenter's experience and knowledge of the agricultural development in Argentina and of the care and sustainability of its ecosystems. Land use change is actually an

opportunity to improve ecosystems and, when desired, it is a method to accumulate organic matter and sequester in the soil the GHG emitted by other activities of mankind. (1719.1, p.1&5)

Our Response:

As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1722
Organization: Citizen
Comment:
The commenter (1722) believes that the greenhouse gas emissions resulting from the change in the use of the land (be they negative or positive) are not directly related to any of the enumerated direct emissions sources; they are, however, indirectly related. The commenter noted that in the proposed rule, EPA leaped from "indirect emissions such as significant emissions from land use changes" to "international indirect land use change," creating this phrase which is not in the legislation. EPA then proposed that when land is taken from one use in one part of the world, identifiable and quantifiable adjustments will be made in another part of the world in response. The commenter believes that such a broad re-interpretation of the phrase is unwarranted. (1722, p.3)

The commenter believes that indirect emissions could result from land use changes in other countries in the production of biofuels in those countries. It would seem reasonable to include those emissions in the lifecycle calculation, should those biofuels be imported to the U.S. However, it is an unwarranted stretch to suggest that any change in the use of land from one purpose to another in one country has a predictable, measurable, emission-creating counterpart in another country, in another part of the world. The commenter believes that there is no justification in the legislation to include international indirect land use change analysis in calculating the required lifecycle greenhouse gas emissions either baseline or comparative. (1722, p.3)

The commenter believes that EPA should not incorporate any evaluation of any international indirect land use change - or any indirect land use change - into its analysis of greenhouse gas emissions for the purpose of determining if a biofuel meets the Renewable Fuel Standard. Indirect land use changes-related analysis should only be incorporated after the appropriate tools are developed and meet independent peer-reviewed approval such as that which might be provided by the National Academies of Sciences. (1722, p.4)

Our Response:

EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from international land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel. The statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question. EPA has not ignored the term "life cycle." The entire approach used by EPA is directed to fully analyzing emissions related to the complete lifecycle of renewable and baseline fuels.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the US. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also

committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1975
Organization: Canadian Bioenergy Corporation
Comment:
The commenter (1975) believes that indirect Land Use Change should not be used to calculate greenhouse gas emissions. The biodiesel industry must be able to utilize every feedstock available. The EPA should not exclude soybean oil-based biodiesel from RINs eligibility, and thus RFS2 volume requirements, as a result of indirect land use change formulations for greenhouse gas emissions. The EPA concludes, with certainty, that international land use change will occur and GHG emissions will result due to a direct relationship between shifts in the agricultural market as a consequence of the increased demand for biofuels in the U.S. However, the EPA dismisses actual data. For example, on land usage in Brazil, data shows a decrease of soybean hectares under production from 2004 to 2008 by 1.5 million. While for the same period of time, U.S. biodiesel production increased from 25 million gallons to 690 million gallons. The commenter believes it is wrong to lay deforestation across globe at the feet of the U.S. biofuels industry. [[Docket number 1975, p. 1]]

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate. Based on this analysis and approach, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats, and greases will exceed the 50% GHG threshold for biomass-based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1987
Organization: Cornell University
Comment:
The commenter [[1987]] states that applying their methodology to Brazilian and U.S. data, they find that in Brazil conversion to biofuel production of two land types is genuinely sustainable, i.e., satisfies our sustainability standard, whereas in the United States no land type satisfies their criterion. [[1987.1 p.3]]

Our Response:

The commenter's statement that corn ethanol production in the U.S. does not satisfy their defined "sustainability criteria" is based on the authors' conclusion that corn ethanol produced in the U.S. requires a payback period of at least 61 years. This conclusion is based on a simple analysis using data from Searchinger et al. (2008). EPA disagrees, because, as described in preamble Section V, EPA's analysis finds that many U.S. corn ethanol pathways require a payback period of less than 30 years. As described in the preamble, we have made number of very important updates as compared to the Searchinger et al. (2008) analysis. Furthermore, the analysis conducted by the commenter makes several assumptions that EPA does not support, such as the assumption that crop yields will not increase over time. For the same reasons, EPA also disagrees with the commenter's calculated payback periods for ethanol produced in Brazil.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2000
Organization: Galva Holstein Ag, LLC.
Comment:
The commenter [[2000]] states that EPA should Drop consideration of "international" land use change and focus on domestic land use change only, assume that CRP land will be released in response to a long-term change in demand for ethanol and soy biodiesel, and assume corn and soybean yield increases more in line with recent experience rather than long-term trends. [[see docket#2000 p. 1]]

Our Response:

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2002
Organization: Novozymes North America, Inc. (Novozymes)
Comment:
The commenter (2002) states that the economic models being used for ILUC modeling were not developed for this purpose (a point also made in the peer review) and are in themselves a significant source of uncertainty. The same also goes for the input parameters of the models such as price elasticities, which have significant influence on the ILUC results produced by the models. [[Docket number 2002.1, p. 2]]

The commenter points out that on page 353 in the DRIA, the EPA states that price-induced yield changes are assumed to be counteracted by lower productivity on marginal lands taken into production due to increased biofuels production. Meanwhile, the EPA does nothing to give a quantitative substantiation of this assumption. The commenter recommends that the EPA explores the aspect of price-induced yield changes in more detail and would also mentions that new land taken into production internationally does not necessarily have a lower fertility than existing agricultural land. The EPA may consider using the GTAP Model to quantify price-induced yield changes. [[Docket number 2002.1, p. 5]]

Our Response:

In the NPRM we requested comment on whether the higher prices caused by an increased in demand for biofuels would increase future yield projections in the policy case beyond the yield trends in the reference case (sometimes referred to as "price induced yields"), or whether these price induced yields would be offset by the reduction in yields associated with expanding production onto new marginal acres (sometimes referred to as extensification). Based on the comments we received, along with additional historical trend analysis conducted by FAPRI, the FAPRI model was updated to include elasticity factors for yields to respond to changes in prices over time both in the U.S. and internationally.

As the price of corn increase, farmers, seed producers, and others involved in crop production have an additional incentive to improve yields. The price induced yield phenomenon is partially offset by the reduced yields that result from expanding on to new crop acres, which is often referred to as extensification. However, the price-induced yield impact is projected to be larger than the extensification effect. For example, in 2022 the price of corn increases by $0.10 (3.3 percent) in the U.S. In response, the average corn yield in 2022 increases by 0.4 bushels per acre (0.4 percent). In another example, in 2022, world corn prices increase by $0.12 per bushel (3.1 percent). As a result, corn yields in China increased from 101.9 bushels per acre in the Reference Case to 102.3 bushels per acre in the Control Case in 2022, a 0.3 percent improvement. Additional details on the methodology behind the estimation of price-induced yields can be found RIA Chapter 5.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2002

Organization: Novozymes North America, Inc. (Novozymes)
Comment:
The commenter notes EPA's assumption that new land brought into production is cleared by burning in most of the countries considered in the GHG analysis. Meanwhile, EPA recognizes that timber and other valuable products are removed from forests before conversion to cropland, at least in the United States (DRIA page 354). EPA states that accounting for timber removal would only reduce GHG emissions from forests converted to cropland by 2% (DRIA page 385). The commenter believes that this is very low and is difficult for the reader to verify since a breakdown of the emissions from forest conversion is not provided. The commenter recommends that the EPA provides a more transparent substantiation of its assessment for the clearing of land in the documentation for the final rule. [[Docket number 2002.1, p. 5]]

Our Response:

As the commenter states, some wood felled during timber harvest and deforestation is used in wooden products (e.g., furniture) that retain biogenic carbon for a long period of time. Emissions from forest products can also occur over several years or decades.

With the addition of the forestry module to the FASOM domestic modeling, FASOM takes into account both the carbon stored in harvested wood products (HWP) and the emission streams associated with them over time for domestic forests. Thus, wood products are accounted for in the domestic modeling for the final rulemaking. For details on these domestic HWP calculations, see the RIA 2.4.4.1.

Some commenters argued that consideration of the use of harvested wood in products would decrease land use change emissions and reduce the impacts of biofuel production. For the international land use analysis in the proposed rule, we investigated the share of cleared forest biomass that is typically used in HWP. However, we did not account for this factor in the proposed rule after it was determined that HWP would have a very small impact on the magnitude of international land use change emissions.

A number of commenters expressed concern that we did not account for HWP, and they argued that HWP would be more significant than we had determined. However, in response to specific questions on this topic, all of the expert peer reviewers agreed that EPA had properly accounted for HWP and other factors (e.g., land filling) that could prevent or delay emissions from land clearing. One of the peer reviewers noted that forests converted to croplands are generally driven by interests unrelated to timber, and thus the trees are simply burned and exceptions are probably of minor importance.

To study this issue further, we looked at FAO timber volume estimates for 111 developing countries, and published literature on the share of harvested timber used in wood products and the oxidation period for wood products, such as wood-based panels and other industrial roundwood. Consistent with the peer reviewers' statements, our analysis concluded that even in countries with high rates of harvested timber utilization, such as Indonesia, a very small share of harvested forest biomass would be sequestered in HWP for longer than 30 years. The details of our HWP analysis are discussed further in RIA Chapter 2.

This is an area for further work, but based on our analysis, and the feedback from expert commenters, we do not expect that consideration of HWP would have a significant impact on the magnitude of GHG emissions from international deforestation in our analysis. Furthermore, the range of outcomes from consideration of HWP is indirectly captured in our assessment of forest carbon stock uncertainty.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2008
Organization: Midwestern Legislative Conference of the Council of State Governments
Comment:
The commenter (2008.1) urges that biofuels be provided a level playing field by federal or state authorities in the calculation of the effects of indirect land use. (2008.1, p.1)

Our Response:

For this rule, EPA has applied the same methodology in analyzing the LCA of all biofuels. We believe our methodology represents the best currently available and should be used for this national rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2010
Organization: SoyMor Biodiesel, LLC
Comment:
The commenter (2010) notes that EPA insists that indirect emissions due to land use change, as directed by statute, includes international land use change and attempts to use data derived from intricate corollary-models and dated satellite imaging. Rather than applying the indirect emissions assumption to all fuels as directed by statue, EPA choose to apply this assumption only to biofuels. The baseline for petroleum is static and does not include indirect emissions. This action violates a true comparative LCA analysis and ISO standards. The commenter adds that using faulty data and assumptions to drive a regulatory polity after billions of dollars of federal, state, and private investments in renewable biofuels is unconscionable. [[Docket number 2010.1, p. 9]]

It's apparent that there is no consensus on how indirect emissions should be accounted for in an LCA for soy biodiesel. If transparency cannot be readily attained, analysis of indirect effects for biofuels should be deferred until all factors and petroleum fuels are considered. [[Docket number 2010.1, p. 9]]

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2152.1
Organization: Minnesota Coalition for Ethanol
Comment:
The commenter (2152) has great concern with the inclusion of indirect land use change in lifecycle GHG analysis. The recent debate about indirect land use change in the U.S. House of Representatives demonstrates that his concept is very controversial. Even by utilizing the best research techniques available, there is little or no consensus among the scientific community as to how indirect effects can be measured. The language included in the amendment sponsored by Rep. Collin Peterson prohibited the EPA from considering international indirect land use change while this concept is still being studied. (2152.1 Pg. 1).

Our Response:

EPA believes there is a great deal of scientific consensus on the need to account for indirect emissions in assessing the lifecycle impacts of biofuels. EPA's goal in developing this methodology was to use a scientifically sound approach and to appropriately characterize uncertainty. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2011
Organization: Western Dubuque Biodiesel LLC
Document No.: EPA-HQ-OAR-2005-0161-2013
Organization: Central Iowa Energy, LLC
Comment:

The commenter (2013) notes that EPA insists that indirect emissions due to land use change, as directed by statute, includes international land use change and attempts to use data derived from intricate corollary-models and dated satellite imaging. Rather than applying the indirect emissions assumption to all fuels as directed by statue, EPA choose to apply this assumption only to biofuels. The baseline for petroleum is static and does not include indirect emissions. This action violates a true comparative LCA analysis and ISO standards. The commenter adds that using faulty data and assumptions to drive a regulatory polity after billions of dollars of federal, state, and private investments in renewable biofuels is unconscionable. [[Docket number 2013.1, p. 9]]

It's apparent that there is no consensus on how indirect emissions should be accounted for in an LCA for soy biodiesel. If transparency cannot be readily attained, analysis of indirect effects for biofuels should be deferred until all factors and petroleum fuels are considered. [[Docket number 2013.1, p. 10]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

With regard to the lifecycle analysis more generally, the Agency believes it has developed a scientifically sound, state-of-the-art, methodology. In an independent peer review of EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule. We focused our uncertainty analysis on the international indirect land use change emissions and worked to manage the uncertainty around those impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
The commenter [[2071]] states the statute's current heavy reliance on crop-based feedstocks creates incentives to shift the entire burden of feedstock production onto lands, which promotes intense production and increases the odds of economically unsustainable land management processes. [[#2071.1 p.4]]

Our Response:

EISA and EPA's rule acknowledge the expected high levels of biofuels likely to come from crops. However, provisions are made for including non-crop feedstock sources including waste fats and greases as well as agricultural wastes.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) believes that the science behind indirect land use assumptions is weak and open to criticism. Clearly there is room for questioning the assumptions being made in including indirect land use in the regulations and this is perhaps the area where U.S. EPA is likely to obtain the greatest criticism (as evidenced by the recent hearing on indirect land use in Congress). (2048.1, p.3)

With regards to the GREET model, the commenter is not in favor of any of the recommendations in the GREET model associated with indirect land use change, staff recommendations to include indirect land use change in carbon calculations and adoption of a rule that includes Indirect Land Use Change (ILUC). The commenter agrees with comments from stakeholders including the letter by 111 Ph.D. Scientists stating that the science used in determining these market mediated, indirect impacts is quite limited and highly uncertain. In addition, the selective enforcement of indirect land use impacts for biofuels over other fuels included in the LCFS violates the most basic principles of regulatory fairness. (2048.1, p.11)

Our Response:

EPA has clearly acknowledged that our lifecycle methodology required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, through individual meetings, conferences and events. EPA also initiated an independent scientific peer review of specific areas of our work.

EPA has recognized that there are uncertainties associated with these estimates--particularly with regard to indirect land use change--and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change

emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. The Agency has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect the real world. EPA's analysis does not consider global market drivers for biodiesel feedstock, such as soybeans, that have substantial influence on U.S. exports and land use changes in other countries. (2079.1, p.7)

Our Response:

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop growing conditions, exchange rates and government policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

The historical biodiesel and soybean statistics cited by the commenter are not comparable with our model predictions. During the time period discussed by the commenter (i.e., 2004 to 2008) many of the conditions that can affect the agricultural economy were changing. For example, oil prices spiked, soybean blight became more prevalent in Brazil, exchange rates were adjusted, and corn ethanol volumes also expanded substantially. In other words, the increase in soy-based biodiesel production was not the only important factor that changed during the period. Therefore, the fact that soybean acreage contracted in Brazil during this period does not refute model predictions about how Brazil responds to U.S. biodiesel production. If we could "re-run" history with a lower biodiesel volume, it may well be that Brazil soybean acreage would have been much larger than it actually was, in which case the model predictions would be validated.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2087
Organization: Ag Partners
Comment:
The commenter [[2087]] states that EPA should drop consideration of "international" land use change and focus on domestic land use change only, assume that CRP land will be released in response to a long-term change in demand for ethanol and soy biodiesel, and assume corn and soybean yield increases more in line with recent experience rather than long-term trends. [[see docket#2087 p. 1]]

Our Response:

As required by EISA, EPA has included in its lifecycle GHG assessment all significant impacts on GHG emissions including those resulting from international land use change. EPA bleives its assessments are technically appropriate and defensible and consistent with the mandates of law.

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter [[2104]] state that they are concerned that EPA has attributed an undue degree of land use causation to U.S. biofuels production and do not adequately consider other market factors that have driven international land use decisions historically and currently. These myriad other factors include, population growth, food and feed demand, timber prices, Brazilian agricultural policies and subsidies, Argentina's Differential Export Taxes, and the European Union's ban on U.S. soybean imports due to biotechnology barriers. [[#2104.1 p.3]]

Our Response:

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop growing conditions, exchange rates and government

policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter states that Iowa State University Professor, Dr. Robert Brown has conducted a statistical analysis of indirect land use change for Brazil in which the linear regressions typically showed correlations of about 0.01. In fact, acreage in Brazil dedicated to soybean cultivation actually decreased from 2004 through 2008. In 2004, soybean production in Brazil covered 22.917 million hectares. In 2008, soybean production accounted for 21.400 million hectares. EPA has proposed to conduct their lifecycle GHG analysis for all vegetable oil based biodiesel using flawed and immature assumptions regarding international indirect land use that result in a significant and unprecedented penalty being applied to biodiesel produced from virgin vegetable oils. Additionally, yield increases by U.S. farmers will play a significant role in meeting biofuel feedstock demand by producing more feedstock on the same amount of land, and that the statute does not require EPA to include international indirect emissions in their life-cycle analysis for biofuels. [[#2104.1 p.3-4]]

Our Response:

The historical biodiesel and soybean statistics cited by the commenter are not comparable with our model predictions. During the time period discussed by the commenter (i.e., 2004 to 2008) many of the conditions that can affect the agricultural economy were changing. For example, oil prices spiked, soybean blight became more prevalent in Brazil, exchange rates were adjusted, and corn ethanol volumes also expanded substantially. In other words, the increase in soy-based biodiesel production was not the only important factor that changed during the period. Therefore, the fact that soybean acreage contracted in Brazil during this period does not refute model predictions about how Brazil responds to U.S. biodiesel production.

To constitute a meaningful analysis of the correlation between U.S. biofuel production and soybean acreage in Brazil, the linear regressions cited by the commenter would have to statistically control for the many other variables that changed during the time period analyzed. Such an analysis would require extensive economic, climatic and agricultural data collection and validation. EPA has not received documentation showing that the linear regressions cited include these necessary statistical procedures.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:

The commenter (2110.1) agrees that impacts from indirect land use change (ILUC) should be included based on the best science available. That science says that ILUC is a real, significant effect; only its magnitude is uncertain. Failure to include ILUC initially only to add it later will lead to bad investment decisions, stranded capital and possible harm to the environment. (2110.1, p.4)

Our Response:

EPA agrees with commenter that impacts from indirect land use change must be included in our lifecycle analysis. Further, we have taken steps in the final rule to account for uncertainties.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.2) believes that arbitrary restrictions imposed by imposing indirect land use analyses interfere with the challenge of participation in the RFS2 program. After months of debate, no defensible causality has been established between U.S. biofuel policy influence and global land use decisions. EPA made a gallant effort, but gaping holes remain in the level of data required to develop a representative relationship. The result is that a forced effort to guess about indirect land use creates significant barriers to energy security without providing effective greenhouse gas safeguards. (2112.1, p.1)

The commenter believes that the statutory language for indirect land use is fatally flawed. EPA does a disservice to the Congress by forcing through a law that can not be measured (See discussion on limitation of the Lifecycle Assessments below). There is insufficient data to conduct the level of analysis that EPA has attempted to deliver. The commenter believes that indirect land use effects must be balanced with 1) the GHG emission impact of developing the Canadian tar sands as well as 2) coping with U.S. cropland losses due to urban development. The land use issues (direct and indirect) do not deal with urban expansion. (2112.1, p.4) (See Docket Number 2212.1, p.4 for more information on this issue)

Regarding modeling indirection land use change, the commenter listed some findings from Stephen Kaffka, Director of the California Biomass Collaborative. These findings include:
1. There is an uneasy relationship between methods and outputs.
2. Models should be seen as learning tools, not truth machines.
3. There is no single policy that can control the response of complex systems. Attempting to do so will reduce sustainability.
4. It is not food (or feed) vs. fuels, but a question of how to create more sustainable agro-ecosystems (more diverse, more profitable). In many cases, crops grown for biomass may facilitate that process, not only in CA but also in many locations in the developing world were human need is great.

5. The distinction between first generation biofuels and second generation biofuels is partially arbitrary and misleading & If the entire crop plant were used (corn, sugarbeets), then energy yields could be similar to or even greater compared to so-called 2nd generation crops like switch grass. An integrated bio-refinery may change the production of energy to a by-product or waste management process rather than the primary activity.
6. The decision to impose an ILUC handicap on agricultural biofuels was premature and occurred without sufficient understanding of the nature of agricultural systems. This violates the principle of a performance standard by excluding potentially viable biofuel sources and methods, and shuts off the human talent for agriculture as part of the solution.
7. CA should encourage indigenous biofuel production to do its share to reduce GHG without exporting all the consequences of doing so to other locations. This is partly a matter of ethics, but it will also have the best estimates of GHG effects for local systems.
8. The key to a successful transition to a low carbon future will be entrepreneurial innovation. The state should err on the side of encouraging such innovation.
9. The economic, social and ecological effects of regulation of the energy sector are so fundamental, far-reaching and complex, that prudence and time are needed to achieve the greatest net environmental and social benefits. (2112.1, p.9) (See Docket Number 2112.1, pp.9-10 for more discussion on this issue)

Our Response:

As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted the EPA carbon emissions over time are fatally tied to the assumption that their numbers reflect what is actually happening in real life. The coefficients used by EPA to forecast carbon emissions and sequestration out 30 and 100 years may reflect a few situations, but they do not come close to approximating field conditions in the US. If real life emission values differ by only a small amount from the EPA estimates the forecasted results change significantly. (2112.1, p.12)

Our Response:

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in preamble Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change - the types of land converted and the GHG emission associated with

different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2116
Organization: The ProExporter Network
Comment:
The commenter (2116) noted that international land use change has been occurring since 1975 and will continue to occur with or without U.S. corn ethanol production. While total world acres harvested of coarse grains (corn, barley and sorghum) and food grains (wheat and rice) have been relatively stable since 1975 at about 611 million acres and 919 million acres, respectively, annual world oilseeds acreage (soybeans, peanuts, rapeseed and sunflowers) increased from 173 million in 1975/76 to 423 million acres in 2008/09 (2116, p.2)

The commenter noted that the EISA of 2007 mandates that land use change factors be included in life cycle analyses of renewable fuels made from biomass, including corn ethanol. That has resulted in the use of several econometric models that purport to measure the impact of land use change in other countries resulting from corn ethanol production in the U.S. The results of these analyses are at odds with the realities of production and use of corn in the U.S. for the last 35 years and USDA's projections for the next ten years. (2116.1, p.3)

Our Response:

As described in the proposal, to estimate lifecycle indirect impacts of biofuel production requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The use of economic models and the uncertainty of those models to accurately predict future agricultural sector scenarios was one of the main comments we received on our analysis. While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production, they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

However, it is important to note that while there are many factors that impact the uncertainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about

economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops and other variables in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

Furthermore, one of the key uncertainties associated with our agricultural sector economic modeling that has the biggest impact on land use change results is the assumptions around crop yields. As discussed in Section V.A.2, we are conducting sensitivity analysis around different yield assumptions in our analysis.

Therefore, because of the fact that we are only using the economic models to determine the difference between two projected scenarios and the fact that we are conducting sensitivity analysis around the yield assumptions we feel it is appropriate and acceptable to use economic models in our analysis of determining GHG thresholds in our final rule analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2117
Organization: NYU School of Law
Comment:
The commenter [[2117]] believes that EPA's decision to include international impacts is required by legal standards and by best economic practices. [[2117.1 p.2]]

The commenter also states a court will find an agency action to be illegally arbitrary and capricious if an agency entirely failed to consider an important aspect of the problem. 12 International GHG emissions from land use changes are clearly an important aspect of the lifecycle GHG calculation. As EPA notes, a large variety of different activities outside the U.S. play a major part of the full fuel lifecycle of baseline and renewable fuels. 13 Excluding international land use changes would arbitrarily ignore an important aspect of the regulatory issues put before EPA by Congress. Indeed, because a key goal of EISA is to reduce GHG emissions, 14 it would be arbitrary and in contravention of congressional intent to ignore any significant source of GHG emissions, such as international land use changes. [[2117.1 p.3]]

Our Response:

EPA believes the preamble for the final rule addresses each of the points raised by the commenter.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers

Comment:
The commenter (2119.1) does not support the use of indirect land use change penalties. Although the commenter recognizes the work that EPA has put into the modeling of indirect land use change, they believe that too much is unknown and the modeling too theoretical to be used in a final rule. (2119.1, p.7)

Our Response:

EPA has clearly acknowledged that there are uncertainties associated with these estimates—particularly with regard to indirect land use change—and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. EPA has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) strongly supports EPA's inclusion of indirect land-use change (ILUC) in biofuel GHG LCA. Including ILUC in the assessment of greenhouse gas (GHG) emissions from biofuels is critical if GHG reduction goals are to be achieved. The projected magnitude of ILUC emissions are large and therefore, notwithstanding the technical uncertainty, should be part of both near and long term quantification of biofuel GHG emissions. The commenter also supports:
-Assessment of global ILUC emissions using the best available science, and continued refinement of this assessment as science and experience progress.
-Incorporation of ILUC emissions in regulations pertaining to biofuel GHG emissions by practical methodologies that can be applied in the near term. (2124.1, p.46)

The commenter also endorses the use of FASOM and FAPRI to model ILUC. These models are detailed tools with a high level of detail and data validation. FASOM has been used to model U.S. agricultural GHG for many years. Linking the models is appropriate and allows the analytical strengths of both models to be utilized. The commenter supports the examination of

GTAP as an alternative modeling platform with global scope. The commenter also agrees with use of satellite (MODIS) data to estimate type of land converted internationally but recommend use of a larger dataset than just three years. (2124.1, pp.46-47)

Our Response:

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. EPA also initiated an independent peer review of specific areas of our work.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

We appreciate comments provided by NPRA supporting our use of FASOM and FAPRI to determine indirect land use change. As recommended by NRPA and others, we have also explored the option of also incorporating the GTAP model into our modeling framework, and have included the results of this analysis in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenter (2129.1) believes that it is legally necessary for EPA to include ILUC in its lifecycle assessment and supports EPA. (2129.1, p.6)

Our Response:

EPA agrees with commenter that the language in EISA requires EPA to include significant indirect emissions, which includes significant emissions from land use impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) agrees with EPA's interpretation that EISA requires that EPA consider both direct and indirect land use change impacts and strongly supports the inclusion of indirect land-use change in biofuel GHG LCA. Additionally, the commenter believes that collaborative work is needed at the international level to develop a common and appropriate methodology to account for ILUC [[Docket number 2130.1, pp. 3 and 18-19]

Our Response:

EPA agrees with commenter that impacts from indirect land use change must be included in our lifecycle analysis.

EPA has and continues to pursue technical cooperation and exchange with our international partners with regard to analysis of lifecycle greenhouse gases from biofuels, including those due to land use change.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) believes that EPA should remain cautious when estimating these impacts and use a strong, science-based analysis to the extent possible. EPA may want to consider regulating or prohibiting certain practices as an alternative approach to implementing this part of EISA, unless or until it receives further guidance from Congress. (2132.1, p.8)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136

Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter (2136) questions if a ILUC assessment is required. The combination of the CAA's legal scope, Congressional intent and overwhelming scientific uncertainty strongly argue for the EPA to not attempt to assess the international ILUC of biofuels. The commenter urges the EPA to reconsider its position that international ILUC must be included in the final rule. [[Docket number 2136.1, p. 2]]

Our Response:

EPA has clearly acknowledged that there are uncertainties associated with indirect land use change estimates and has sought to develop an approach that manages these uncertainties. However, EPA rejects the view that the modeling relied upon in the final rule is too uncertain or untested to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, this does not mean EPA could assume the international land use change emissions are zero. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program. EPA has chosen an approach that includes biofuels with a significant international land use impact in this program. We also have chosen an approach that quantifies uncertainty and presents the weight of currently available evidence in making our threshold determinations.

Further, the statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter states that the current EPA model, which assumes that distillers grains replaces conventional feed on a pound-for-pound basis, is incorrect. With the starch gone, distillers grains is a high protein feed ration. Due to the high protein content per pound, one pound of distiller grains displaces more than a pound of corn and soybean meal. Factoring in the higher displacement rate and taking into account that soybean meal is also displaced from the feed

ration, not just corn, there is a significant positive impact on the ILUC models. [[Docket number 2136.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) noted that current EPA analysis undervalues Dgs by only displacing 1 lb of corn grain per lb of Dgs, which results in an overestimate of land use change. (2146.1, p.6)

Our Response:

For the final rulemaking analysis, distillers grains replacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both the FASOM and FAPRI models. These replacement rates are higher and more efficient than those used in the proposal's analysis. Details on these assumptions can be found in the RIA and the technical reports for each respective model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter is concerned that the draft rule seriously underestimates, even ignores, the value of glycerin from biodiesel producers. Utilizing glycerin as a valuable coproduct and petroleum replacement in the GHG emissions calculations would increase soybean oil-based biodiesel's GHG reduction percentage by roughly 17 percent. The commenter urges EPA to take into account valuable future markets as it quantifies the energy efficiency of biodiesel production. [[Docket number 2136.1, p. 7 and Docket number 2321.1]] [[See copyrighted materials at docket numbers 2247.1 and 2321.1 for additional information on glycerin.]]

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced

by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) states that EPA should apply the same standard for assessing international land use change to both domestic and internationally sourced feedstocks. Referring to HR 2454, the commenter strenuously cautions EPA again applying different standards for calculating emissions for domestically vs. foreign produced fuels. Such an approach would undercut EPA's ability to establish the 2010 RFS2, increase fuels market uncertainty at a time of economic stress, and likely undermine the ongoing work of EPA and stakeholders aimed at reducing the level of uncertainty associated with these calculations and models. [[Docket number 2137.1, p. 16]]

Our Response:

The regulations finalized for RFS2 determine GHG threshold compliance on the basis of fuel pathways, irrespective of the country where the feedstock or the fuel was produced.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
The commenter (2140.1) recommends EPA and other federal agencies undertake greater study of indirect land use impacts and not assign any international indirect land use impact values to biofuels at this time. Attempting to assign an indirect land use value prematurely can result in significant impacts on innovation, delays in reducing greenhouse gas emissions, and thwart progress towards more environmental and economically sustainable production of food, fiber, and fuel for the world's growing population. (2140.1, p.1)

The commenter noted that the proposed rule assumes land use patterns related to renewable fuels are reflective of total global land use change patterns. This assumption ignores the reality that decisions related to conversion of non-cropland to cropland are based on completely different criteria than decisions of what crop to grow on a given parcel of cropland in a given year. (2140.1, p.2) (See Docket Number 2140.1, p.2 for a more detailed discussion of this issue)

Our Response:

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change.

Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

To estimate lifecycle indirect impacts of biofuel production requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The use of economic models and the uncertainty of those models to accurately predict future agricultural sector scenarios was one of the main comments we received on our analysis. While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production, they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:

The commenter (2143) strongly recommends that evaluation of the full lifecycle emission impacts of fuel production should include both direct and significant indirect emissions from land use changes.

The commenter (2143) suggests that the uncertainty in the quantitative magnitude of emissions is not a sufficient reason for ignoring the statutory mandate to include land use change emissions. (2143.2, p.3)

The commenter (2143) suggests that the proposed rulemaking should use a 30 year time frame and 0 percent discount rate instead of 100 years and 2 percent discount rate when estimating the emissions related to indirect land usage change.(2143.2, p,4)

Our Response:

EPA agrees with commenter on the need to include full lifecycle emissions and that uncertainty does not mean that EPA can ignore impacts. Further, EPA has finalized its assessments based on an analysis assuming 30 years of continued emission impacts with a 0 discount rate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
The commenter (2148) believes that EPA is relying on unproven techniques in an attempt to measure international indirect land use changes (ILUC) associated with soy biodiesel production. EPA has proposed regulations that are overreaching, deeply flawed, and counterproductive. Even if a "climate bill" does not pass in Congress this session, the commenter believes there is logic in the House version passed this summer that would call upon the National Academy of Sciences to study the potential international impact for five years to avoid the adoption of any short-sighted regulations. (2148, p.1)

Below are several points that offer a rationale for the EPA not to apply the proposed rules based on assumptions of ILUC.

1. The commenter believes that EPA is going beyond Congressional mandate. The EISA statute does not direct EPA to include international indirect emissions in its lifecycle analysis of biofuels. An EPA lifecycle analysis that attempts to measure international ILUC is unnecessary and inappropriate, given that Congress did not choose to require such analysis.
2. The commenter noted that EPA used a new and untested method in its attempt to measure international ILUC. There is no generally accepted scientific methodology for measuring indirect land use change, and the International Standards Organization (ISO) has not published standards for analyzing indirect effects.
3. The commenter noted that global land use change has occurred for many years, long before biodiesel was produced in the U.S. Many factors including urbanization, world population growth and dietary changes, timber and hardwood prices, etc., impact and drive land use change. However, EPA analysis measures the conversion of Brazilian forestland to cropland during 2001-2004, extrapolates that trend into the future, and attributes the possible future change to U.S. production of soy biodiesel. Soy biodiesel production is not driving land use change in the Amazon region, and any land use change that is occurring certainly cannot be solely attributed to U.S. biodiesel.

Our Response:

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and

diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the U.S. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above.

However, EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop growing conditions, exchange rates and government policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

The proposed rule included a detailed description of the FAPRI/Winrock approach used to determine the type of land affected internationally. This approach uses satellite data depicting recent land conversion trends in conjunction with economic projections from the FAPRI model (an economic model of global agricultural markets) to determine the type of land converted internationally. In the proposed rule we described areas of uncertainty in this approach, illustrated the uncertainty with sensitivity analyses, and discussed other potential approaches for this analysis. To encourage expert and stakeholder feedback, EPA specifically invited comment on this issue, held public hearings and workshops, and sponsored an independent peer-review, all of which specifically highlighted this part of our analysis for feedback. While there were a wide range of views expressed in these forums, the feedback received by the Agency generally supported the FAPRI/Winrock approach as appropriate for this analysis. For example, all five experts that peer reviewed EPA's use of satellite imagery agreed that it is scientifically justifiable to use historic remote sensing data in conjunction with agricultural sector models to evaluate and project land use change emissions associated with biofuel production. Additionally, the peer reviewers and public commenters highlighted problematic areas and suggested revisions to improve our analysis. In preamble Section V, we describe the key revisions that were implemented which have significantly improved our analysis based on the feedback received.

As discussed above, all five of the expert peer reviewers that reviewed our use of satellite imagery for this analysis agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. For example, we have updated our analysis to consider satellite data from 2001-2007. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
4. The commenter believes that other market factors, including input and transportation costs, determine how farmers will put their lands to use.

Our Response:

We agree that factors such as input and transportation costs influence how farmers will use their land, however these factors are primarily captured in our reference case. Our greenhouse gas emissions analysis focuses on the incremental impact of increasing renewable fuel volumes to meet the RFS2 requirements. Since the increase in renewable fuel volumes will increase the world price of commodities and decrease exports from the U.S., it will make agricultural production on some new acres of land profitable in other countries. Our analysis captures this incremental increase in new acres that results from the change in renewable fuel volumes from our reference case to our control case.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
5. The commenter believes that an increase of 300 million gallons of biodiesel (from 700 million to 1.0 billion gallons annually) as called for under the RFS2 should not result in the substantial land use "penalty" ascribed to U.S. soy biodiesel by EPA. Any reasonable land use penalty that might be justifiably attributed to U.S. soy biodiesel should certainly not result in pushing soy biodiesel below the 50% GHG reduction threshold required under the statute.

Our Response:

With regard to their relationship between land use and soybean biodiesel lifecycle GHG emissions, EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. As described in more detail below and in Section V of this preamble, EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. As discussed below, EPA has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. As discussed below, EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

The revised lifecycle assessment for soybean biodiesel predicts less overall indirect land use change (less land needed) and less impact from the land use changed that does occur (due to updates in types of converted land assumed). In addition, the latest IPCC guidance indicates reduced domestic soybean N_2O emissions, and updated USDA and industry data show reductions in biodiesel processing energy use and a higher co-product credit, all of which further reduced the modeled soybean biodiesel lifecycle GHG emissions. This has resulted in a

significant improvement in our assessment of the lifecycle performance of soybean biodiesel as compared to the estimate in the proposal.

EPA's final analysis indicates that, based on currently available information and our current analysis over the range of scenarios considered, the performance of soy oil-based biodiesel exceeds the 50% threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
6. The commenter noted that other measures are being implemented to address land use change for certain sensitive areas such as Brazils Amazon region. (2148, p.1)

Our Response:

One of the major changes made to our modeling between the NPRM and FRM includes the more detailed representation of Brazil through a new module integrated into the global FAPRI modeling framework. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. Furthermore, it includes information that helps to address the points raised by the commenter. For example, when the model determines the area of crop and pasture expansion/reversion in each region in Brazil it considers the cost of deforestation in each region. The deforestation costs are based on the various policies put in place in Brazil to limit the amount of future deforestation. In developing the model we worked with Iowa State and Brazilian experts to be realistic about how we modeled these policies, because based on past experience, it would be unreasonable to assume full compliance in all regions of Brazil. More information about the new Brazil model is included in preamble Section V.

Furthermore, we quantified major sources of uncertainty in our evaluation of the types of land that would be affected by land conversion. Our central estimates are based on recent land use change patterns from 2001-2007, so to the extent that the Soy Moratorium was affecting land use changes during this period, we have captured some of those effects in our analysis. Furthermore, our 95% confidence ranges include scenarios with less deforestation, which could be the result of efforts like the Soy Moratorium mentioned by the commenter.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2150
Organization: American Farm Bureau Federation
Comment:
The commenter (2150.1) strongly objects to the agency’s proposal related to indirect land use changes. There is no reliable way to measure or accurately predict how the production of

biofuels will affect land use change in other countries. Improved plant varieties, new technologies and more efficient agricultural practices have produced greater crop yields of higher quality. It is unrealistic to think that anyone can predict how agriculture will evolve in the future based on the single variable of biofuels utilization. (Page 3)

Our Response:

EPA's lifecycle methodology required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, through individual meetings, conferences and events. EPA also initiated an independent scientific peer review of specific areas of our work.

As to the comment about changes in crop yields, for this analysis we ran a base yield case and a high yield case. This will provide two distinct model results for key parameters like total amount of land converted by crop by country.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) noted that EPA has determined through their current analysis that the indirect land use change (LUC) impacts are significant for certain fuels and have included these impacts in the total life cycle assessment. The commenter is supportive of including these factors, based on the best scientific data currently available. The commenter also encourages EPA to conduct periodic evaluations to be able to capture any improvements in the modeling and assessment technologies as they evolve. (2154.1, p.8)

Our Response:

The Agency will further reassess our determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) recommends that EPA utilize a greenhouse gas (GHG) emission methodology for rulemaking purposes that is based on sound economics and science and the most updated information, is valid for regulatory purposes, and does not unfairly penalize U.S. biofuel production for unrelated land use shifts in foreign nations. The commenter also recommends that EPA implement a workable program that is simple and efficient while not imposing undue burdens on the renewable fuel industry. Based on the issues above, the commenter believes EPA's proposed approach for addressing emissions from international indirect land use should be excluded. (2157 p. i-ii and 48-50)

Our Response:

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. The Agency has updated and refined its modeling approach since proposal in several important ways, including a number of updates made in direct response comments from the public and peer reviewers. EPA is confident that its modeling of GHG emissions is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. Lastly, EPA has strove to create a workable program that builds off the current RFS1 program.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) makes specific suggestions for corrections to EPA's lifecycle analysis for biodiesel:
(1) nitrogen fixing in soil was incorrectly included and if corrected would decrease GHG lifecycle emissions by an additional 20.9 percent,

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(2) The energy balance data is out of date, co-product allocations for glycerin were not incorporated, and global market drivers for feedstocks are not considered when updated and included these factors would further decrease GHG lifecycle emissions by an additional 19.1 percent.

Our Response:

To the maximum extent possible, we have continued to review and update the data and assumptions underlying our modeling tools. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports including

the University of Idaho Study. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis. In addition, we have revised our analysis to assume that glycerin will displace residual oil as an energy source for this final rulemaking. We disagree, however, that global market drivers for feedstocks are not included in our models. For example, our partial equilibrium agricultural sector models FASOM and FAPRI both take into account that approximately 80% of the soybean is meal, whereas approximately 20% of the soybean is oil. Profit maximization that takes into account both streams of ree is included in the projected planting decisions of farmers. In addition, both agricultural sector models take into account changes in macroeconomic conditions over time, such as increases in income and population that also affect world markets for feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(3) EPA should analyze indirect emissions for all fuels or for none, and should compare biofuels to the more expensive and higher carbon sources of crude they will be replacing such as tar sands and heavy crude.

Our Response:

As required by EISA, GHG performance of biofuels is to be compared to the average lifecycle GHG emissions of the 2005 baseline fuel pool for the type of fuel, gasoline or diesel, being replaced to determine threshold compliance. EPA did, however, also analyze the likely GHG benefits of the rule considering the petroleum fuel pool in 2022 including projected sources.

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel

sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157

Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(4) EPA's reference case underestimates the volume of biodiesel production in absence of an RFS, and therefore overestimates the land use change resulting from RFS implementation.

Our Response:

EPA disagrees with this comment, any change in biofuel volumes for whatever reason compared to a case without them would still have impacts. Even if biodiesel volumes would have reached the mandated volumes in 2022 there is still an impact with producing these volumes compared to a case without them. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

For this rulemaking analysis we are only considering the policy for which this analysis was done, namely EISA. Where there are other polices on the books that would impact our analysis, they have been accounted for but we do not project future polices that are not in place.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(5) the commenter agrees that EPA should use a 100-year time frame, but EPA should eliminate the arbitrary 2 percent discount rate.

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions.

Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

After considering the comments on discounting from the peer review and the public, EPA decided not to discount (i.e., use a 0% discount rate) GHG emissions due to the many issues associated with applying an economic concept to a physical parameter. First, it is unclear whether EISA intended lifecycle GHG emissions to be converted into a metric whose underpinnings rest on principals of economic valuation. A more literal interpretation of EISA is that EPA should consider only physical GHG emissions. Second, even if the principle of tying GHG emissions to economic valuation approaches were to be accepted, there would still be the problem that there is a lack of consensus in the scientific community about the best way to translate GHG emissions into a proxy for economic damages. Some of the issues that arise are: how to factor in the atmospheric residence times of GHG emissions in the atmosphere, and the evolution of atmospheric concentrations of GHG emissions through time both with and without renewable fuels. As mentioned previously, there is also a lack of consensus as to the appropriate discount rate to apply to GHG lifecycle emissions streams through time. Also, since EPA has decided to base threshold assessments of lifecycle GHG emissions on a 30 year time frame, the issue of whether to discount GHG emissions is not as significant as if the EPA had chosen the 100 year time frame to assess GHG emissions impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:

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Comment:

(6) EPA has relied upon questionable data and assumptions relating to international indirect land use change, which disproportionally penalize U.S. biodiesel producers for unrelated land use changes outside the United States.

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate.

Based on this analysis and approach, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats, and greases will exceed the 50% GHG threshold for biomass-based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:

The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.

Comment:

(7) The Winrock satellite data has a 70% accuracy rate.

Our Response:

All five of the expert peer reviewers that reviewed our use of satellite imagery agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the

many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

One benefit of the MODIS satellite data set that we used in our analysis is that it is routinely and extensively validated by NASA's MODIS land validation team. NASA uses several validation techniques for quality assurance and to develop uncertainty information for its products. NASA's primary validation technique includes comparing the satellite classifications to data collected through field and aircraft surveys, and other satellite data sensors. The accuracy of the version 5 MODIS land cover product was assessed over a significant set of international locations, including roughly 1,900 sample site clusters covering close to 150 million square kilometers. The results of these validation efforts are summarized in a "confusion matrix" which compares the satellite's land classifications with the actual land types observed on the ground. We used this information to assess the accuracy and systematic biases in the published MODIS data. In general, the validation process found that MODIS version 5 was quite accurate at distinguishing forest from cropland or grassland. However, the satellite was more likely; for example, to confuse savanna and shrubland because these land types can look quite similar from space. Using the data validation information from NASA about which types of land MODIS tends to confuse which each other, our Monte Carlo analysis was able to account for systematic misclassifications in the MODIS data set. More information about our data validation and uncertainty assessment procedures is available in RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(8) EPA calculations attribute all forest harvesting emissions to indirect land use emissions to agriculture.

Our Response:

EPA disagrees with this comment. We do not attribute all forest harvesting emissions to indirect land use emissions, we first start with modeling how much indirect land use change there would be based on economic analysis that isolates the impacts and land use required for the specific biofuel in question. So the amount of land impacted is very specific to only biofuel production. In terms of what types of land would be converted into the new land required we rely on the satellite data for recent trends for types of land converted to agriculture. We only consider the trends of what types of land are converted to agriculture for our analysis. Our use of satellite data is only for trends not for calculating total acres of land use change, that is based on our economic models.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
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Comment:
(9) Emissions resulting from natural deforestation, forest fires, disease, and climate damage were also charged to agriculture (yet events or land use changes that resulted in the land having more carbon was excluded from the calculations.

Our Response:

As mentioned in our answer to #10 below, our emissions factors reflect the net carbon changes over time, which account for both natural disturbances as well as factors increasing carbon. Furthermore, to the extent natural disturbances lowers carbon in a forest, the emissions from forest conversion are decreased. The soil sequestration by crops is also factored in, and if a crop results in more soil carbon then the ecosystem converted than that is included in the analysis and would be a benefit for the biofuel.

What Commenters Said:

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Organization: World Energy Alternatives, LLC.
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Comment:
(10) EPA's assumption that trees live forever is incorrect and contrary to established United Nations Intergovernmental Panel on Climate Change (IPCC) guidelines. Carbon losses associated with natural disturbances and mortality should be included in the calculation. These

factors have a far greater impact on GHG emissions than lost sequestration and can have a huge impact on emission calculations.
(10a) Accurately accounting for natural disturbances in soy-based biodiesel's GHG emission profile would decrease GHG emissions by an additional 25 percent compared to baseline petroleum.
(10b) The inclusion of accurate assumptions regarding both natural disturbances and mortality could decrease GHG emissions by an additional 55 percent compared to baseline petroleum.

Our Response:

In the proposed rule, to estimate annual forgone forest sequestration, we used IPCC default data for the growth rates of forests greater than 20 years old. The expert peer reviewers noted that these estimates could be refined with more detailed information from the scientific literature. Many of the public commenters were also concerned that EPA's approach overestimated foregone sequestration because it did not adequately account for natural disturbances, such as fires and disease. To address these comments, our analysis has been updated with peer reviewed studies of long-term growth rates for both tropical and temperate forests. These estimates are based on long-term records (i.e., monitoring stations in old-growth forests for the tropics and multi-decadal inventory comparisons for the temperate regions) and reflect all losses/gains over time. These studies show that the old-growth forests in the tropics that many once assumed to be in "steady state" (i.e., carbon gains equal losses) are in fact still gaining carbon. In summary, our analysis now includes more conservative foregone forest sequestration estimates that account for natural gains and losses over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
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Comment:
(11) EPA's methodology assumes that 20 percent of the new land dedicated to soybean cultivation comes from Paraguay. In the absence of credible land use data for Paraguay, EPA relied upon a world average based on 10 countries. Properly accounting for this would reduce the GHG score for soy-based biodiesel by 20 percent in relation to petroleum.

Our Response:

In the proposed rule analysis we had only developed satellite data analysis and land conversion emissions factors for 10 of the most important regions (including 35 countries), with a weighted average applied to the rest of the world. Paraguay was not one of the 35 countries covered in our proposed rule analysis. We have since completed a global satellite data and land conversion emissions factor analysis covering over 750 distinct regions across 160 countries.

This was an analytical improvement that we committed to do in the proposed rule. Our updated analysis includes the evaluation of Paraguay recommended by the commenter.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(12) EPA's international indirect land use calculations assume that 10 percent of new land comes from India. India currently has over 61 million acres of fallow land, of which approximately 60% is currently fallow. Emissions associated with international indirect land use changes in India will be zero under any reasonable assumptions relating to increased production demand.

Our Response:

As discussed in preamble Section V, we used well-established economic models to project the amount and location of international cropland and pasture land conversions. In some of the scenarios analyzed, we project biofuel-induced cropland expansion in India. This crop expansion in India would require soil to be plowed on land that would otherwise not be used for crop production. Based on numerous studies synthesized in the IPCC guidelines, we know that this would cause positive carbon releases to the atmosphere. To the extent that biomass is also cleared as part, the net emissions impact would be greater. In some of our scenarios, however, we do project crop and/or pasture abandonment in India. In this case we follow IPCC guidelines to account for carbon uptake on land previously used for agriculture.

What Commenters Said:

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Comment:
(13) EPA inaccurately assumes that significant amounts of pastureland would be converted to cropland. Appropriately allocating grassland would decrease GHG emissions by an additional 25 percent compared to baseline diesel fuel.

Our Response:

As explained in preamble Section V, one of the major changes made to the FAPRI model between the NPRM and FRM includes the more detailed representation of Brazil through a new integrated module. The Brazil module was developed by Iowa State University with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

In addition to modifying how pasture acres are treated in Brazil, we also improved the methodology for calculating pasture acreage changes in other countries. We received several comments through the public comment period and peer reviewers supporting a better analysis of the interaction between crops, pasture, and livestock. In the NPRM, although we accounted for GHG emissions from livestock production (e.g., manure management), we did not explicitly account for GHG emissions from changes in pasture demand. In response to comments received, our new methodology accounts for changes in pasture area resulting from livestock fluctuations and therefore captures the link between livestock and land used for grazing. Based on regional pasture stocking rates (livestock per acre), we now calculate the amount of land used for livestock grazing. The regional stocking rates were determined with data on livestock populations from the UN Food and Agricultural Organization (FAO) and data on pasture area measured with agricultural inventory and satellite-derived land cover data. As a result of this change, in countries where livestock numbers decrease, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes, especially in regions where livestock populations are changing significantly. For additional information on the pasture replacement methodology, see RIA Chapter 2.

What Commenters Said:

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Organization: World Energy Alternatives, LLC.
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The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
(14) EPA's assumptions regarding the rate of wood harvesting is inconsistent with actual harvesting practices and other assumptions with respect to biomass inventory. Correcting these assumptions could reduce GHG emissions associated with indirect land use emissions by as much as 10 percent. (2157 p. ii-iii)

Our Response:

As the commenter states, some wood felled during timber harvest and deforestation is used in wooden products (e.g., furniture) that retain biogenic carbon for a long period of time. Emissions from forest products can also occur over several years or decades.

With the addition of the forestry module to the FASOM domestic modeling, FASOM takes into account both the carbon stored in harvested wood products (HWP) and the emission streams associated with them over time for domestic forests. Thus, wood products are accounted for in the domestic modeling for the final rulemaking. For details on these domestic HWP calculations, see the RIA 2.4.4.1.

Some commenters argued that consideration of the use of harvested wood in products would decrease land use change emissions and reduce the impacts of biofuel production. For the international land use analysis in the proposed rule, we investigated the share of cleared forest biomass that is typically used in harvested wood products (HWP). However, we did not account for this factor in the proposed rule after it was determined that HWP would have a very small impact on the magnitude of international land use change emissions.

A number of commenters expressed concern that we did not account for HWP, and they argued that HWP would be more significant than we had determined. However, in response to specific questions on this topic, all of the expert peer reviewers agreed that EPA had properly accounted for HWP and other factors (e.g., land filling) that could prevent or delay emissions from land clearing. One of the peer reviewers noted that forests converted to croplands are generally driven by interests unrelated to timber, and thus the trees are simply burned and exceptions are probably of minor importance.

To study this issue further, we looked at FAO timber volume estimates for 111 developing countries, and published literature on the share of harvested timber used in wood products and the oxidation period for wood products, such as wood-based panels and other industrial roundwood. Consistent with the peer reviewers' statements, our analysis concluded that even in countries with high rates of harvested timber utilization, such as Indonesia, a very small share of harvested forest biomass would be sequestered in HWP for longer than 30 years. The details of our HWP analysis are discussed further in RIA Chapter 2.

This is an area for further work, but based on our analysis, and the feedback from expert commenters, we do not expect that consideration of HWP would have a significant impact on the magnitude of GHG emissions from international deforestation in our analysis. Furthermore, the range of outcomes from consideration of HWP is indirectly captured in our assessment of forest carbon stock uncertainty.

What Commenters Said:

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Organization: World Energy Alternatives, LLC.
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Comment:

The commenter (2157) notes that EPA's analysis of indirect land use changes are not based on the "best available science" or international standards. Extensive comments are offered on various criteria, but the commenter identifies 7 main issues (each discussed in-depth): (1) inconsistent system boundaries, (2) lack of reliable data, (3) failure to adequately address allocation issues, (4) lack of transparency and reproducibility, (5) inadequate analysis and explanation of uncertainty, (6) insufficient sensitivity analysis, and (7) lack of validation. (2175 p. 51-58)

Our Response:

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. The Agency has updated and refined its modeling approach since proposal in several important ways, including a number of updates made in direct response comments from the public and peer reviewers. EPA is confident that its modeling of GHG emissions is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change.

Further, to ensure the Agency made its decisions for this final rule on the best science available, EPA conducted a formal, independent peer review of key components of the analysis. The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science. They were asked to evaluate four key components of EPA's methodology: (1) land use modeling, specifically the use of satellite data and EPA's proposed land conversion GHG emission factors; (2) methods to account for the variable timing of GHG emissions; (3) GHG emissions from foreign crop production (both the modeling and data used); and (4) how the models EPA relied upon are used together to provide overall lifecycle estimates.

One of the main comments we received on the NPRM on our choice of models was the issue of transparency. Several comments were concerned that the results of EPA's modeling efforts can not be duplicated outside the experts who developed the models and conducted the analysis used by EPA in the proposal. Upon the release of the proposal, EPA requested comment on the use of these various models. EPA conducted a number of measures to gather

comments, including the public comment period upon release of the NPRM analysis, holding a public workshop on the lifecycle methodology, and conducting a peer review of the lifecycle methodology. Specifically, one of the major tasks of the peer review of EPA's lifecycle GHG methodology was to review and comment on the use of the various models and their linkages. The response we received through the peer review is supportive of our use of the FASOM and FAPRI models, affirming that they are the strong and appropriate tools for the task of estimating land use changes stemming from agricultural economic impacts due to changes in biofuel policy.

In addition, in an effort to garner as useful comments as possible and to be as transparent as possible about the modeling process, EPA supplied in the docket technical documents for the FASOM and FAPRI models, the output received by EPA from each model, and the models themselves such that the public and commenters could learn and examine how each model operates.

Building upon the support for the use of the FASOM and FAPRI models, a number of important enhancements were made to both models in response to comments received through the public comment system and through the peer review, and in consultation with various experts on domestic and international agronomics. These enhancements include updated substitution rates of corn and soybean meal for distillers grains (DG) based on recent scientific research by Argonne National Laboratory, the addition of a corn oil from the dry mill ethanol extraction process as a source of biodiesel, the full incorporation of FASOM's forestry model that dynamically interacts with the agriculture sector model in the U.S., as well as the addition of a Brazil regional model to the FAPRI modeling system. All of these enhancements are discussed in more detail in the rule's preamble and RIA. In addition to the model enhancements we also conducted a sensitivity analysis on yields as part of our final rule analysis. These updates to our modeling and the sensitivity analysis were done in response to public comments specifically asking for this to add transparency to the modeling and modeling results.

What Commenters Said:

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Organization: World Energy Alternatives, LLC.
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Comment:
The commenter (2157) is concerned that EPA has included indirect land use changes that occur outside of the U.S., given that nothing in the definition of "significant indirect" emissions indicates that it must consider these and they are highly speculative at this time. Significant discussion follows on pages (2175 p. 61-68).

Our Response:

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the U.S. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

EPA understands that including international indirect land use change is a key decision and that there is significant uncertainty associated with it. That is why we have taken an approach that quantifies that uncertainty and presents the weight of currently available evidence in making our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
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Comment:
The commenter (2157) notes that EPA's approach to address indirect emissions from international land use is further flaws in 3 ways: (1) EPA's focus on two scenarios is inappropriate and substantially overestimates the potential impacts of biofuel production in the United States on land use changes outside the United States, (2) EPA's use of satellite data from 2001-2004 is inappropriate, and (3) EPA's lifecycle analysis relating to the global consequences of indirect emissions is inaccurate and must incorporate a number of factors omitted from the original analysis. Each point is discussed in more detail on (2175 p. 76-86).

Our Response:

Comments (1), and (3) are addressed in the previous responses. Comment (2) concerning the use of 2001 – 2004 satellite data, we have updated our analysis for the final rulemaking and are now using 2001 – 2007 satellite data in our analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
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Comment:
The commenter (2157) notes that a lifecycle analysis must not include disproportionate treatment of crop-based biofuels. They cite two main criticisms: EPA must consider direct land use changes associated with petroleum and indirect emissions of baseline gasoline, and adequately explain why it seems them not to be "significant." Detailed discussion of both points is presented in (2157 p. 86-89).

Document No.: EPA-HQ-OAR-2005-0161-2168
Organization: First United Ethanol, LLC
Comment:
The commenter (2168) noted that land use change is not applied to the GHG emissions calculation for gasoline which results in an unfair comparison of biofuels to gasoline or other fuels. The commenter questions if not all of the energy requirements to locate oil reserves, extraction of the oil, transportation of the oil, refining of the oil and transportation of the refined products should be included? These energy requirements all vary widely depending on the source and type of the oil being refined. Gasoline is gasoline but the GHG emissions vary widely depending on the "feedstock" of the oil. The commenter also questioned what is the GHG calculation for the energy requirements to protect the world's oil supplies and shipping lanes? The commenter believes that that value should be calculated all the way down to the steel used for armor plating to protect our American soldiers from IEDs. (2168, pp.2-3)

The commenter noted that EPA reported in the RFS2 that it is compelled to include significant indirect emission impacts including those due to land use changes in other countries. The data indicate that excluding the international land use change would result in corn ethanol having an approximately 60% reduction in lifecycle GHG emissions compared to petroleum gasoline regardless of timing or discount rate used. The commenter believes that this theory leads one to believe that if that same impact were applied to gasoline, corn-based ethanol would have a much larger reduction capacity on emissions. (2168, p.3)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the

definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

We also performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

We also do not believe that emissions arising from military activities can be readily attributed to the protection of oil imports. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than merely protecting oil supplies. In the peer review of the energy security analysis that EPA commissioned, a majority of peer reviewers believed that U.S. military costs should be excluded absent a widely agreed methodology for estimating this component of U.S. energy security. Since military impacts were not considered for the energy security analysis in this final rule, they were also excluded from any lifecycle GHG analyses

Furthermore, increased domestic consumption of renewable fuels is expected to decrease oil demand and thus reduce oil imports. However, an incremental reduction in oil imports is not expected to cause an analogous reduction in U.S. military expenditures and activities. Hence, even if we were able to attribute GHG emissions to the protection of oil imports, it is unlikely that there would be a decrease in military-related GHG emissions as a result of this rule. More detail on this topic can be found in the Energy Security Analysis in Chapter 5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2174
Organization: Illinois Soybean Association
Comment:
The commenter (2174) feels strongly that EPA does not recognize the evidence that soy biodiesel use in the United States does not drive international land use change. The commenter noted that the EPA analysis uses worldwide land converted to cropland from 20012004 and extrapolates that into the future. Since there was very little U.S. soy biodiesel produced from 20012004, it is illogical how EPA justifies attributing future land conversion to soy biodiesel. If Brazilian land use change is a key factor then past and recent trends in Brazilian soy planted area should be a telling data point. In fact, Brazilian soy area increased most significantly in years prior to the existence of U.S. biodiesel production. In the last five years, when U.S. biodiesel

production has increased exponentially, Brazilian soy area has remained relatively flat. U.S. biodiesel use does not drive international land use decisions and certainly cannot be singled out for responsibility for all land use changes. The commenter believes that if soy biodiesel is excluded, the biomass-based diesel schedule under RFS2 cannot be achieved. (2174, p.1)

Our Response:

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop growing conditions, exchange rates and government policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

The historical biodiesel and soybean statistics cited by the commenter are not comparable with our model predictions. During the time period discussed by the commenter (i.e., 2004 to 2008) many of the conditions that can affect the agricultural economy were changing. For example, oil prices spiked, soybean blight became more prevalent in Brazil, exchange rates were adjusted, and corn ethanol volumes also expanded substantially. In other words, the increase in soy-based biodiesel production was not the only important factor that changed during the period. Therefore, the fact that soybean acreage contracted in Brazil during this period does not refute model predictions about how Brazil responds to U.S. biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2190
Organization: Illinois River Energy, LLC.
Comment:
The commenter [[2190]] state the international land use penalties are based on complicated models that are strongly influenced by independent model variables whose assumed values are just not backed by verifiable evidence.[[#2190 p.1]]

Our Response:

As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2203
Organization: University of Illinois at Chicago
Comment:
The commenter [[2003]] states that their studies show that there are significant differences regarding the accuracy with which international land use change can be determined compared to the accuracies achievable for domestic land use change assessments. [[#2003 p.1]]

The commenter [[2003]] finds that EPA's reliance on MODIS imagery to determine prior land use of international crop acres (1km and 500m spatial resolution, respectively) produces results with high inaccuracies. In fact, the combined error range may exceed the predicted land use change between important ecosystem transitions for biofuels analyses such as the conversion of tropical rainforest to cropland in Brazil. [[#2003 p.3]]

The commenter [[2003]] recommends that land cover products based on high resolution satellite imagery be combined with existing cropping pattern information for international transition regions associated with indirect land use change are created. [[#2003 p.3]]

The commenter cites extensive studies and data presented on pages 4-30.

Our Response:

All five of the expert peer reviewers that reviewed our use of satellite imagery agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. In preamble Section V, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

One benefit of the MODIS satellite data set that we used in our analysis is that it is routinely and extensively validated by NASA's MODIS land validation team. NASA uses several validation techniques for quality assurance and to develop uncertainty information for its products. NASA's primary validation technique includes comparing the satellite classifications to data collected through field and aircraft surveys, and other satellite data sensors. The accuracy of the version 5 MODIS land cover product was assessed over a significant set of international locations, including roughly 1,900 sample site clusters covering close to 150 million square

kilometers. The results of these validation efforts are summarized in a "confusion matrix" which compares the satellite's land classifications with the actual land types observed on the ground. We used this information to assess the accuracy and systematic biases in the published MODIS data. In general, the validation process found that MODIS version 5 was quite accurate at distinguishing forest from cropland or grassland. However, the satellite was more likely; for example, to confuse savanna and shrubland because these land types can look quite similar from space. Using the data validation information from NASA about which types of land MODIS tends to confuse which each other, our Monte Carlo analysis was able to account for systematic misclassifications in the MODIS data set. More information about our data validation and uncertainty assessment procedures is available in RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) notes the unresolved issues, uncertainty and lack of scientific consensus on the LC GHG emission impact of biofuels related to land use change. Regarding the contribution of indirect or market-mediated GHG emissions effects from land-use changes attributable to expanded biofuels production, the commenter supports EPA's inclusion of these effects in its assessment of the GHG impacts of the RFS2. Since the science, methods and data is rapidly evolving, the commenter urges EPA to revisit this topic as part of a formal periodic technical review process. [[Docket number 2233.2, pp. 45-46]]

Our Response:

EPA is basing its GHG threshold compliance determinations for this rule on an approach that considers the uncertainty in our assessments and other information available to the Agency. For fuel pathways with a significant land use impact, the evidence considered includes the best estimate as well as the range of possible lifecycle greenhouse gas emission results based on formal uncertainty and sensitivity analyses conducted by the Agency.

The Agency will further reassess our determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2234

Organization: Energy & Resources Group University of California
Comment:
The commenter [[2234]] states that the treatment of emissions using the net present value of emission flows over 100-years is a poor choice for several reasons. The commenter recommends using a shorter time period or including the increasingly low probability that these systems will remain in place decades into the future. The commenter also recommends discounting damages, (or a reasonable proxy) rather than discounting physical emission flows. [[2234.1 p.1]]

The commenter also states that inadequate time was provided to review the large number of models used in this rulemaking. [[2234.1 p.4]]

Our Response:

In the proposal, we considered several options for the timeframe over which to measure lifecycle GHG impacts and the possibility of discounting those impacts. Based on peer review recommendations and other comments received, EPA is finalizing its assessments based on an analysis assuming 30 years of continued emission impacts after the program is fully phased in by 2022 and without discounting those impacts.

In order to maximize the opportunity for stakeholders to review and comment upon EPA's approach, the comment period for this rulemaking was extended by an additional 60 days.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) noted that land use change in the context of global demand for agricultural land needs to be incorporated when making predictions of emissions due to indirect land use change. (2245.1, p.23) (See Docket Number 2245.1, pp.23-24 for a discussion on this issue)

Our Response:

EPA believes that its analysis properly takes into account the growth in global population and food demand over time in the FAPRI modeling analysis. However, to correctly model the impact of increased demand for renewable fuels, one must observe the difference that results

from a change in only the demand for renewable fuel in a given time period. Thus, although an increase crop production for renewable fuel in a given period may indeed have occurred due to increasing demand for food over time in a future time period, this ignores the increased demand for renewable fuel in that future time period.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Comment:
The commenters believe that EPA needs to correct its land use requirements for corn based ethanol with accurate corn and soybean meal coproduct displacement values. EPA has inaccurately credited the displacement of soybean meal and corn across species from distillers" dried grain with soluble (DDGS) as a 1 for 1 displacement resulting in inaccurately higher corn and soybean acreage requirements for biofuels. Peer reviewed scientific literature consistently indicates that 1 kg of DDGS can replace between 0.50 and 0.70 kg of corn and between 0.40 and 0.60 kg of soybean meal. (2245.1 p.24)

Our Response:

For the final rulemaking analysis, distillers grains replacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both the FASOM and FAPRI models. These replacement rates are higher and more efficient than those used in the proposal's analysis. In addition, co-product credits are attributed to distillers grains in EPA's analysis. Details on these assumptions can be found in the RIA and the technical reports for each respective model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Comment:
The commenters also believe that EPA should correct their later year DDGS yield assumptions; reducing DDGS yield from 17 lbs/bu across all dry grind plants to 17 lbs/bu from the 78% of the plants not incorporating backend oil extraction and 16.4 lbs/bu for the 22% of plants the EPA is assuming will adopt backend oil extraction technology. On average, this results in a yield of 16.7 lbs/bu. (2245.1, p.24)

Our Response:

For the final rulemaking analysis, EPA estimates that by 2022, 70% of dry mill ethanol plants will adopt corn oil extraction technology, 20% will adopt fractionation technology, and 10% will not adopt either technology. Details on the assumptions used in the final rulemaking analysis in regards to corn oil extraction, fractionation, and DG production can be found in the

RIA. Scientific assumptions that are more up to date than those used in this analysis will be considered in future updates to the analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Comment:
The commenters believe that EPA needs to credit corn based ethanol with the additional coproducts resulting from backend oil extraction for biodiesel, corn stover utilized as an alternative to coal for electricity generation, and the reduction in gasoline emissions resulting from the utilization of ethanol. GHG reduction considerations for new coproducts were not considered in the proposed rule. If the EPA is going to include the mass reduction from backend oil extraction, it needs to include the coproduct credit from the utilization of backend oil as a feedstock for biodiesel production which reduces the dry grind corn ethanol carbon footprint by an estimated 3.11 gCO2e/MJ. (2245.1, pp.24-25)

Our Response:

For the final rulemaking analysis, coproducts from corn ethanol, such as corn oil from extraction and fractionation, have been attributed credits. For more information on credits for coproducts attributed to various renewable fuels, please refer to the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Comment:
The commenters concur with the determination by the 2009/28/EC of the European Parliament and of the Council on the Promotion of the Use of Energy From Renewable Fuel Sources to delay the incorporation of an indirect land use change determination value for any renewable fuels until a methodology and the best available scientific evidence can be brought to bear (Directive 2009/28/EC, 2009). The commenters believe the efforts initiated by the Department of Energy at Oak Ridge National Laboratories provide the most promising approach to creating a common agreed upon approach and an understanding of the data needs for quality indirect land use determinations. (2245.1, p.29)

Our Response:

EPA believes that compliance with the EISA mandate — determining "the aggregate GHG emissions related to the full fuel lifecycle, including both direct emissions and significant indirect emissions such as land use changes" — makes it necessary to assess those direct and significant indirect impacts that occur not just within the United States, but also those that occur in other countries.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that the inclusion of international indirect land use changes in its lifecycle analysis for biodiesel is arbitrary and capricious. The commenter bases their position on the following points:

A. EPA assumptions that biofuel production in the U.S. will lead to "significant" land use changes do not accurately reflect the real world and thus are arbitrary. EPA assumes that indirect emission related to international land use changes are "significant," relying on highly criticized and questionable data. GHG calculations from land use must appropriately account for improved agriculture yields and efficiencies. Real world evidence shows that biodiesel production has little, if any, impacts on land use changes. The demand for oils for biofuel production in the U.S. will not result in significant indirect land use changes internationally. [[Docket number 2249.2, pp. 66-79]]

B. EPA's approach to addressing indirect emission from international land use changes is arbitrary. EPA's focus on two scenarios is inappropriate and substantially overestimates the potential impacts of biofuel production in the United States on land use changes outside the United States. EPA's use of satellite data from 2001-2004 is inappropriate. EPA's lifecycle analysis relating to the global consequences of indirect emissions are inaccurate and must incorporate a number of factors omitted from the original analysis. [[Docket number 2249.2, pp. 79-88]]

[[See docket number 2249.2, pp. 66-88 for comprehensive discussion of the commenter's points listed above.]]

Our Response:

The EISA statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question.

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels.

However, the complexity and uncertainty inherent in this work made it extremely important that we seek the advice and input of a broad group of stakeholders. In order to maximize stakeholder outreach opportunities, the comment period for the proposed rule was extended to 120 days. In addition to this formal comment period, EPA made multiple efforts to solicit public and expert feedback on our approach. Beginning early in the NPRM process and continuing throughout the development of this final rule, EPA held multiple meetings with stakeholders, including government, academia, industry, and non-profit organizations, to gather expert technical input. Our work was also informed heavily by consultation with other federal agencies. For example, we have relied on the expert advice of USDA and DOE, as well as incorporating the most recent inputs and models provided by these Agencies. Dialogue with the State of California and the European Union on their parallel, on-going efforts in GHG lifecycle analysis also helped inform EPA's methodology. As described below, formal technical exchanges and an independent, formal peer review of the methodology were also significant components of the Agency's outreach. A key result of our outreach effort has been awareness of new studies and data that have been incorporated into our final rule analysis.

EPA has made a number of significant enhancements to our approach in conducting the lifecycle analysis for the final rule, including the incorporation new scientific data that has become available since the proposal, including new improved satellite data, as well as the approach to recognize and quantify, where appropriate, the uncertainty inherent in this analysis. Our updated analysis is well grounded in the science and responds fully to the concerns raised by commenter.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2300
Organization: Dow AgroSciences
Comment:
The commenter (2300) believes that the calculations on crops yields must be revisited and based on current trends, not those from 2005. (2300, p.1) The commenter believes that evidence is

clear that U.S. biofuel production does not result in significant, if any, land use change in Brazil or elsewhere and that this applies to any of the crops used for biofuel production, including corn, soybeans, or canola. The commenter requests that EPA review the potential penalties that could be applied to U.S. farmers based on flawed and immature assumptions and theories that are applied to all vegetable oils.

The commenter also noted that nowhere in the statutory language do they find the legal basis for including international indirect emissions in the lifecycle emissions definition. This suggests that applying the Energy Independence and Security Act beyond U.S. borders may be inappropriate. (2300, p.1)

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

Although the definition of lifecycle greenhouse gas emissions in Section 211(o) does not specifically mention international emissions, it would be inconsistent with the text and the intent of this section of the Act to exclude them. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the "aggregate" emissions "related to" the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution". EPA is directed to include both direct emissions and significant indirect emissions, such as significant emissions from land use changes. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both the baseline fuel (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. Whether the direct or indirect emissions occur in the U.S. or overseas does not change that they are related to the full fuel lifecycle. There is no basis in the definition to treat direct or indirect emissions that occur overseas different from direct or indirect emissions that occur in the US. Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

Drawing a distinction between GHG emissions that occur inside the U.S. as compared to emissions that occur outside the U.S. would result in a lifecycle analysis that bears no apparent relationship to the purpose of this provision. The purpose of the thresholds in EISA is to require the use of renewable fuels that achieve reductions in GHG emissions compared to the baseline.

Ignoring international emissions, a large part of the GHG emission associated with the different fuels, would result in a GHG analysis that bears no relationship to the real world emissions impact of transportation fuels. The baseline would be significantly understated, given the large amount of imported crude and imported finished gasoline and diesel used in 2005. Likewise, the emissions estimates for imported renewable fuel would be grossly reduced in comparison to the aggregate emissions estimates for fuels made domestically with domestically-grown feedstocks, simply because the impacts of domestically produced fuels occurred within the U.S. EPA does not believe that Congress intended such a result.

Lastly, EPA believes that including international indirect emissions in EPA's lifecycle analysis does not exercise regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] states that they caution EPA on extrapolation of land use changes from recent trends. Land use change typically occurs in phases as a result of complex triggers and should not be viewed as a linear function of time [[#2302 p.4]]

The commenter [[2302]] strongly suggests that EPA provide mechanisms for evaluating the appropriateness of incorporating these emerging techniques, including broader peer-review and additional workshops, and include a mechanism for re-evaluation at regular (e.g., every 12-18 months) intervals. [[#2302 p.5]]

Document No.: EPA-HQ-OAR-2005-0161-2304
Organization: Gevo Inc.
Comment:
The commenter (2304) believes that limitations of the current science underlying land use change, including assumptions about future crops yield and land constraint, causality, and the role of global land policies, impose a large range of uncertainty on lifecycle GHG calculations for biofuels. The commenter urges EPA to fully acknowledge the extent of the uncertainty in estimation of emissions from land use change, and ensure that emerging biofuels technologies are not disqualified from participation in the RFS2 program unless clearly demonstrated to be out of compliance with the program's GHG performance requirements. Technology innovation in the biofuels space is occurring at a rapid rate. In its final rule, EPA should allow biotechnology to aid the future biofuels industry in continuing to increase crop yields, decrease fertilizer inputs,

increase drought tolerance and lower their carbon footprint. EPA should increase the transparency of the carbon intensity processes and reduce the time needed to certify pathways. Biofuels should be credited for reducing future gasoline and diesel production emissions by curbing demand for more GHG-intensive sources of petroleum-based fuels. [[Docket number 2304.1, p. 2]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

We have also included uncertainty analyses which in particular focus on international indirect land use impacts. These uncertainty assessments were used in determining whether a biofuel pathway was likely to exceed its GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2314
Organization: The New England Fuel Institute
Comment:
The commenter (2134.1) fully supports EPA's efforts to discourage global deforestation which contributes to greenhouse gas emissions worldwide. A steady, reliable and cost effective supply of biodiesel is absolutely essential if the heating oil industry is to reach its long term goal of marketing a home heating oil with a 20% renewable fuel content. The reality is that this goal requires a robust supply of biodiesel derived from soy beans. (2314.1, p.4)

The commenter believes that any lifecycle analysis used by the EPA to measure the effect of biodiesel production on greenhouse gas emissions and land use changes should more accurately reflect current soy crop and biodiesel production data. The commentor asserts that EPA mistakenly assumes that soybeans are planted for the oil. The commenter also believes that until alternative sources of biodiesel are perfected, soy based biodiesel is absolutely vital to achieving the renewable fuel mandates required under EISA. (2314.1, p.5)

Our Response:

The commentor has misinterpreted EPA's characterization of the soybean markets. Our analysis does take into account the fact that soybeans are 80% meal and 20% oil. However, our modeling framework assumes that farmers choose to plant an additional acre of soybeans based on the expected net returns associated with the sum of both the oil and the meal streams,

compared to the returns associated with other crops. We believe this optimization approach accurately represents the soybean and biodiesel production markets.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2316
Organization: University of Minnesota
Comment:
The commenter [[2316]] states: I would note that it is also appropriate to account for the significant uncertainty associated with whether land converted as a result of biofuel production will remain in biofuel production throughout the entire analytical time horizon, or whether it may be converted to other uses. Land conversion results in an more certain release of carbon occurring primarily within a few years of conversion compared to a less certain offset of petroleum projected to occur up to thirty or even a hundred years out. As such it is appropriate to discount future carbon savings from biofuel production to reflect this uncertainty. In sum, accounting for uncertainty in ILUC will likely decrease the apparent lifecycle greenhouse gas (GHG) emissions of biofuels, but accounting for uncertainty in future biofuel production will likely increase such estimates. [[2316.1 p.2]]

Our Response:

It is true that the GHG emissions from land use change are uncertain, which is why EPA specifically built in an uncertainty analysis around the land use change component of our analysis for this final rule.

As the commenter points out there are several aspects of the land use change modeling that impact the overall lresults, the time frame for analysis, how and if to discount future emissions and reductions, and whether to account for land reversion or not.

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while “there is no unassailable basis for choosing a very specific timeframe” the expected average lifetime of a biofuel production facility is the “most sensible anchor” for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG

lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

EPA received numerous of comments on whether lifecycle GHG emissions should be discounted through time. For example, as part of the EPA-sponsored peer review, while many of peer reviewers thought that current GHG emissions reductions should be more strongly weighted than future reductions, the peer reviewers were in general agreement that a discount rate should only be applied to a monetary unit, rather than a physical unit, such as an GHG emission. One peer reviewer suggested that it is scientifically justifiable to use discounting procedures for GHG emissions if the procedure is broadened to capture more than the "time value of money" and includes biophysical relationships such as the changing value of damages produced by atmospheric GHG stocks, the persistence of GHGs in the atmosphere and the initial GHG stock levels. Alternatively, another peer reviewer argued that the provision of EISA that deals with lifecycle GHG emissions didn't call for an economic assessment, therefore discounting of GHG emissions would not be appropriate. A majority of peer reviewers said that a 0% discount rate would be appropriate if EPA uses a short time horizon (13-30 years) to assess GHG impacts. The reasoning for not using discounting with shorter time periods is that for purposes of meeting the EISA GHG thresholds, a GHG emission now is not significantly different than a GHG emission 30 years from now.

In addition to the comments received in the peer review, EPA also received many comments in the public comment period. Commenters suggested that discounting is an essential part of long term cost benefit analysis but it is not necessary in the context of the physical aggregation of lifecycle GHG emissions called for in the EISA. Also, commenters expressed concerns that any discount rate chosen by the Agency would be based upon relatively arbitrary criteria.

After considering the comments on discounting from the peer review and the public, EPA decided not to discount (i.e., use a 0% discount rate) GHG emissions due to the many issues associated with applying an economic concept to a physical parameter. First, it is unclear whether EISA intended lifecycle GHG emissions to be converted into a metric whose underpinnings rest on principals of economic valuation. A more literal interpretation of EISA is that EPA should consider only physical GHG emissions. Second, even if the principle of tying GHG emissions to economic valuation approaches were to be accepted, there would still be the problem that there is a lack of consensus in the scientific community about the best way to translate GHG emissions into a proxy for economic damages. Some of the issues that arise are: how to factor in the atmospheric residence times of GHG emissions in the atmosphere, and the evolution of atmospheric concentrations of GHG emissions through time both with and without renewable fuels. As mentioned previously, there is also a lack of consensus as to the appropriate

discount rate to apply to GHG lifecycle emissions streams through time. Also, since EPA has decided to base threshold assessments of lifecycle GHG emissions on a 30 year time frame, the issue of whether to discount GHG emissions is not as significant as if the EPA had chosen the 100 year time frame to assess GHG emissions impacts.

In the proposed rule EPA sought comment on whether sequestration from land reversion following the end of production of a particular biofuel should be considered in our analysis. A majority (3) of the expert peer reviewers responded that reversion should not be counted. Two of the peer reviewers offered conditional support: one advised EPA to consider land reversion impacts only if it had reason to believe that croplands dedicated to biofuels would be reverted; the other suggested that EPA try different scenarios to test if land reversion has a significant effect.

The reviewers that objected to counting post-production land reversion offered a number of justifications to support their position. All of them said that there is no reason to assume that land would in fact revert following biofuel production. Instead, it is more likely that land would be kept in crop production for food or that the land would be developed. One of the reviewers recommended that EPA consider post-project salvaged carbon as part of a second independent land use change that occurs once the biofuel project terminates. Another reviewer noted that even if land were reverted, the benefits of sequestration would be attributed to the grazing, forestry, or conservation payment activities associated with the new land use, not to biofuel production.

Dr. Fargione expaneded on his lack of support for counting post-project reversion. He interpreted EISA to mandate reduced emissions during the project time frame, and therefore concluded that emission reduction calculations should be based only on land use change and foregone sequestration that occur during the project time frame. Indeed, EISA specifies that lifecycle GHG emissions shall include the "full fuel lifeycle, including all stages of fuel and feedstock production and distribution," but the Act does not specifically mention post-project activities as part of the lifecycle. Thus, Dr. Fargione argued, the only accounting required following the project time horizon is based on fate of the emissions already released (and their radiative forcing and residence time in the atmosphere). According to Dr. Fargione, one potential exception to this would be if EPA were to include long-lived forest products, as these emissions are not dependent on assumptions about future land use change. (As discussed in preamble Section V, EPA has determined that long-lived wood products from international land conversion are not a significant factor).

Based on comments from the expert reviewers and the public, and for the reasons discussed above, EPA decided that 30 years is a reasonable time frame over which to evaluate lifecycle GHG emissions. As part of this determination, EPA decided that the most reasonable approach is to expect that a particular biofuel pathway should achieve GHG reductions commensurate with the required reduction thresholds, as specified in EISA, during a 30 year time period, and not to give credit for potential post-project sequestrations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter (2317) believes that much of the controversy over EPA's international indirect land use change (ILUC) analysis can be resolved by simply calculating the existing domestic capability to meet fuel, food, and feed demand properly. If EPA did so, the calculation would show that no additional land conversion is needed as a result of the RFS2 and therefore that no significant emissions will result from the RFS2 mandates. The commenter urges EPA to revisit these aspects of the program and to make revisions to the regulations consistent with their comments. [[Docket number 2317.1, p. 3]]

Our Response:

While the existing domestic capacity may exist to meet U.S. fuel, food, and fuel demand, this calculation ignores the impact the U.S. has on world agricultural markets. Since the U.S. is the world's largest exporter of corn and a significant exporter of soybeans, a significant decrease in U.S. exports would have ripple effects throughout the world. If increasing demand for renewable fuels in the U.S. increases commodity prices and reduces U.S. exports of corn and soybeans, international agricultural markets will respond by increasing supply. As described below, we believe our interpretation of the term "significant indirect impacts" to include international land use change is consistent with the statutory intent of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter believes the legal basis offered in the proposal for including international indirect emission in the LC emissions definition is not supported by the statutory language and EPA seeks to extend the application of the Energy Independence and Security Act beyond the U.S. borders. [[Docket number 2317.1, p. 3]] [[See docket number 2317.1, pp. 3-6 for extensive discussion of this issue.]]

The commenter notes that the statute requires that LC emissions be related to the fuel LC and that EPA's analysis must accurately determine the quantity of such emissions and whether they are significant. In light of the inability to estimate accurately indirect emissions attributable to international land use changes and because the statute does not indicate that emissions based on international land use changes are required to be included in the lifecycle analysis, the commenter believe that EPA should adopt an interpretation that is limited to domestic significant indirect emissions. [[Docket number 2317.1, p. 3]] [[See docket number 2317.1, pp. 3-6 for extensive discussion of this issue.]]

The commenter adds that because the increased supplies of domestic corn that result from increased yields will provide the corn necessary for future exports and other uses, there is no

significant International land use change as a result of RFS2. [[Docket number 2317.1, p. 15]] [[See docket number 2317.1, pp. 15-17 for extensive discussion of this issue.]]

Our Response:

See responses to prior comments for EPA's interpretation of the definition of lifecycle greenhouse gas emissions, and why it is appropriate for EPA to include significant indirect emissions from land use change that occurs overseas

With respect to the impact of the RFS program on future exports of corn, EPA estimated the changes in the domestic agricultural sector (e.g., changes in crop acres resulting from increased demand for biofuel feedstock or changes in the number of livestock due to higher corn prices) and their associated emissions, using the Forestry and Agricultural Sector Optimization Model (FASOM), developed by Texas A&M University and others. This model and our analysis clearly found an impact on U.S. corn exports due to the RFS, which is explained in detail in the rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter disagrees with EPA's assumption that increased biofuels production is the causative factor for increased GHG emissions. [[Docket number 2317.1, p. 22]] [[See docket number 2317.1, pp. 22-24 for extensive discussion of this issue.]]

The commenter believes that EPA fails to give proper credit for distillers grains as co-product. [[Docket number 2317.1, p. 26]] [[See docket number 2317.1, pp. 26-28 for extensive discussion of this issue.]]

Our Response:

For the final rulemaking analysis, distillers grains replacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both the FASOM and FAPRI models. These replacement rates are higher and more efficient than those used in the proposal's analysis. In addition, co-product credits are attributed to distillers grains in EPA's analysis. Details on these assumptions can be found in the RIA and the technical reports for each respective model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2339
Organization: Illinois Com Growers Association
Comment:

The commenter [[#2339]] states that EPA has admitted that its proposal is based on many uncertainties, it argues that to fail to consider indirect international land use change would be worse in that it would ignore any contribution by U.S. renewable fuels policy to these foreign development decisions. EPA has mistakenly read into EISA Title II a requirement that renewable fuels produced in the United States must take responsibility for the carbon footprint associated with unassociated future land use changes in other countries. [[#2339 p.4,7]]

Our Response:

EPA is making the GHG threshold determinations based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate.

EPA does not believe it has misread or otherwise mistakenly read the requirements in EISA. A large variety of activities outside the U.S. play a major part in the full fuel lifecycle of both baseline (gasoline and diesel fuel used as transportation fuel in 2005) and renewable fuels. For example, several stages of the lifecycle process for gasoline and diesel can occur overseas, including extraction and delivery of imported crude oil, and for imported gasoline and diesel products, emissions associated with refining and distribution of the finished product to the U.S. For imported renewable fuel, all of the emissions associated with feedstock production and distribution, fuel processing, and delivery of the finished renewable fuel to the U.S. occur overseas. The definition of lifecycle GHG emissions makes it clear that EPA is to determine the aggregate emissions related to the "full" fuel lifecycle, including "all stages of fuel and feedstock production and distribution." Thus, EPA could not, as a legal matter, ignore those parts of a fuel lifecycle that occur overseas.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2347
Organization: Illinois Farm Bureau
Comment:
The commenter [[2347]] states he uncertainty level and the possibility of error in the proposals assumptions are high, it is therefore ludicrous to try to analyze how international indirect land use will affect GHG impacts. The proposal also appears to go far beyond the intent of the law when it incorrectly gives U.S. renewable fuel producers the carbon footprint of others that are beyond the control of U.S producers. [[#2347.1 p.1]]

Our Response:

EPA continues to believe that compliance with the EISA mandate — determining "the aggregate GHG emissions related to the full fuel lifecycle, including both direct emissions and significant indirect emissions such as land use changes" — makes it necessary to assess those direct and significant indirect impacts that occur not just within the United States, but also those that occur in other countries.

Although considering international emissions in its analyses could result in different implications under the statute for various fuels and fuel pathways as compared to ignoring these emissions, EPA believes that this is precisely the outcome that Congress intended. Implementation of EISA will undoubtedly benefit the domestic agricultural sector as a whole, with some components benefiting more than others depending in part on the lifecycle GHG emissions associated with the products to be made from individual feedstocks. If Congress had sought to promote all biofuel production without regard to GHG emissions related to the full lifecycle of those fuels, it would not have specified GHG reduction thresholds for each category of renewable fuel for which volume targets are specified in the Act.

It is also important to note that including international indirect emissions in EPA's lifecycle analysis does not exercise regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

Excluding international impacts means large percentages of GHG emissions would be ignored. This would take place in a context where the global warming impact of emissions is irrespective of where the emissions occur. If the purpose of thresholds is to achieve some reduction in GHG emissions in order to help address climate change, then ignoring emissions outside our borders interferes with the ability to achieve this objective. Such an approach would essentially undermine the purpose of the provision, and would be an arbitrary interpretation of the broadly phrased text used by Congress.

EPA disagrees that it is seeking to penalize domestic renewable fuel producers for impacts over which they have no control. EPA is simply attempting to account for all GHG emissions related to the full fuel lifecycle. Domestic renewable fuel producers may have no direct control over land use changes that occur overseas as a result of renewable fuel production and use here, but their choice of feedstock can and does influence oversees activities, and EPA believes it is appropriate to consider the GHG emissions from those activities in its analyses.

Furthermore, as described in this rulemaking, EPA has used the best available models and substantially modified key inputs to those models to reflect comments by peer reviewers, the public, and emerging science. EPA has also modeled additional scenarios from those described

in the NPRM. EPA recognizes that uncertainty exists with respect to the results, and has attempted to quantify the range of uncertainty. While EPA agrees that application of the models it has used in the context of assessing GHG emissions represents changes from previous biofuel lifecycle modeling, EPA disagrees that it has used faulty data, modeled unrealistic scenarios, or that its approach is otherwise scientifically indefensible. Although the results of modeling GHG emissions associated with international land use change are uncertain, EPA has attempted to quantify that uncertainty and is now in a better position to consider the uncertainty inherent in its approach.

EPA understands that including international indirect land use change is a key decision and that there is significant uncertainty associated with it. That is why we have taken an approach that quantifies that uncertainty and presents the weight of currently available evidence in making our threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) believes that EPA should drop consideration of "international" land use change and focus on domestic land use change only.

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2350
Organization: BioEnergy Producers Association
Comment:
The commenter (2350) submits that as EPA considers regulations relating to Indirect Land Use Change, any such regulations should stipulate that there are no such impacts involved in the production of advanced biofuels from organic wastes. As non-food derived resources, carbon-

based wastes represent the nation's most promising and virtually untapped renewable energy source. [[Docket number 2350, p. 1]]

Our Response:

EPA has analyzed biofuels from biogenic waste feedstocks and assessed their potential indirect land use impacts, determining that such impacts are negligible or nonexistent.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2353
Organization: Iowa Soybean Association
Comment:
The commenter [[2353]] states that soybeans are raised in a rotation with corn. Since soybeans fix nitrogen from the air, the nitrogen nodules on their roots help fertilize the next crop, reducing both fertilizer use and tillage. Nitrogen fertilizer is not used on soybeans. [[#2353 p.2]]

Our Response:

EPA's analysis takes into account the fact that soybeans fix nitrogen. The crop budgets included in the FASOM model include data on input use that varies by crop, management practices, and region. There is often considerable variation in the inputs used per acre. Crop budgets are based on USDA Agricultural Resource Management Survey (ARMS) data and crop budgets developed by university extension offices. More information on this can be found in the FASOM documentation in the Docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) strongly agrees with the proposal to fully account for indirect land use change (ILUC) when determining lifecycle greenhouse gas emissions from biofuels. (2354.pdf, p.3)

Our Response:

EPA's final rule includes a full assessment of indirect land use change impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board

Comment:
The commenter [[2357]] states that underestimating biodiesel volumes results in an overestimate of indirect land use changes, penalizing the biodiesel industry. Also EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons [[2357.1 p.4-5]]

Our Response:

We disagree with the comment that underestimating biodiesel volumes result in an overstatement of indirect land use change, even if biodiesel volumes would have reached the mandated volumes in 2022 there is still an impact with producing these volumes compared to a case without them. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

The historical biodiesel and soybean statistics cited by the commenter are not comparable with our model predictions. During the time period discussed by the commenter (i.e., 2004 to 2008) many of the conditions that can affect the agricultural economy were changing. For example, oil prices spiked, soybean blight became more prevalent in Brazil, exchange rates were adjusted, and corn ethanol volumes also expanded substantially. In other words, the increase in soy-based biodiesel production was not the only important factor that changed during the period. Therefore, the fact that soybean acreage contracted in Brazil during this period does not refute model predictions about how Brazil responds to U.S. biodiesel production. If we could "re-run" history with a lower biodiesel volume, it may well be that Brazil soybean acreage would have been much smaller than it actually was, in which case the model predictions would be validated.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:
The commenter also states that EPA's GHG emissions methodology contains a major error pertaining to the direct emission calculations for nitrogen. The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA, however, does not incorporate the IPCC's updated nitrogen findings, this error reduces the GHG score for soy biodiesel by more than 20 percent. [[2357.1 p.5]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter's (2360.1) greatest concern is with the calculation of indirect land use change values under the rule. The commenter believes the modeling used to evaluate these impacts has not been fully developed and may greatly overestimate the impact of biofuels on land use. Biofuels hold great promise as part of this country's energy future, and corn-based ethanol and biomass-based biodiesel are already delivering on those promises across the country. Moreover, first-generation biofuels are the bridge that will speed the development of the next generation cellulosic solutions. However, the proposed land use values place a major obstacle to future development of the domestic biofuels industry. (2360.1, p.1)

The commenter believes that questionable modeling of indirect land use changes should not be used to undermine the commitment to today's biofuels, nor should it be allowed to imperil tomorrow's cellulosic solutions. The commenter believes that modeling should not be allowed

to dictate major decisions regarding our energy future until we can be confident it adequately captures the indirect impact of any fuel. (2360.1, p.2)

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) urges EPA to drop consideration of "international" land use change and focus on domestic land use change only. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, pp. 1-2 for further discussion of this issue.]]

The commenter also urges EPA to assume that CRP land will be released in response to long term change in demand for ethanol and soy biodiesel. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, pp. 2-4 for further discussion of this issue.]]

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate.

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2367
Organization: New Fuels Alliance (NFA)
Comment:
The commenter (2367) expresses widespread concerns about EPA's methodology, boundaries, uncertainty, and unintended consequences related to predicting indirect land use change. Two primary objectives to enforcing indirect land use change penalties against biofuels are lack of parity and the scientific uncertainty. The commenter refers to the unanswered questions raised by the analysis performed by Dr. Wang from the Argonne National Laboratory. The commenter believes that enforcing overly uncertain carbon scoring metric could have the perverse result of promoting more carbon intensive fuels. With all of the uncertainties associated with EPA's approach to modeling indirect land use change, the commenter questions how EPA is prepared to declare that biofuels are responsible for "significant indirect emission."

The commenter believes that EPA must re-balance the RFS2 LCA to avoid destabilizing the program by differentiating direct and indirect carbon effects and assessing petroleum in a more comprehensive and responsible way. The commenter strongly recommends that EPA reconsider the principles contained in ISO 14040, establish common system boundaries for all fuels, and re-balance the LCA analysis for RFS2. [[Docket number 2367.1, pp. 10-16]] [[See docket number 2367.1, pp. 4-18 for a detailed discussion of the commenter's concerns related to indirect land use change.]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an

analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2369
Organization: New Generation Biofuels (NGBF)
Comment:

The commenter (2369) agrees with many commenters that the science of ILUC needs further developing before finalizing on a specific method of determining the cradle to grave greenhouse gas emissions of most biofuels. [[Docket number 2369.1, p. 1]]

Our Response:

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) states that the science behind indirect land use models is young and subject to much interpretation and debate within the scientific community. If the RFS2 is implemented with indirect effects, the commenter believes that EPA should allow maximum flexibility, cost-effective farming practices, while providing an incentive structure promoting best practices. The commenter also believes that the 100 year pay-back period should be utilized for calculations. Once lands are transformed into agricultural use, historically the land remains agricultural for many generations–thus a 100 year pay-back period is appropriate. More broadly, the commenter believes that EPA should: 1) provide or allow verifiable mechanisms for producers to proactively reduce their indirect impacts of biofuels production and 2) allow regular updates to the model calculating the magnitude of the indirect effects, especially in light of the nascence of the science behind the calculation. [[Docket number 2374.1, p. 2]]

Our Response:

In the proposal, we considered several options for the timeframe over which to measure lifecycle GHG impacts and the possibility of discounting those impacts. Based on peer review recommendations and other comments received, EPA is finalizing its assessments based on an analysis assuming 30 years of continued emission impacts after the program is fully phased in by 2022 and without discounting those impacts.

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

While commenter's suggestion to incentivize best practices is beyond the scope of this rulemaking, EPA will take this suggestion under consideration for future voluntary programs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
Informa developed independent forecasts of U.S. and global crop acreage and supply/demand balances and compared the forecasts to those agricultural economic models used by EPA. Total world corn area in FAPRI is larger in 2022 in the control case relative to the reference case compared to Informa forecasts. Informa shows a decrease in total world soybean area whereas FAPRI shows an increase when the control case is compared to the reference case in 2022. Informa's corn export forecast is moderately below FASOM's forecast and significantly below FAPRI's (2415.1, p1 & p18 Appendix H)

To provide appropriate bounds on the land use change predicted by EPA's modeling suite, the commenter (2383) asked Informa to use Informa's world agricultural and economic data bases and predictive methodology in order to show what the impact of specified increases in U.S. corn ethanol usage would be on cropland conversion in the United States and overseas. A key assumption in this effort and an assumption which Growth Energy asked Informa to assume for purposes of this exercise was that the level and rate of land conversion overseas could in fact be attributed to the RFS2 program. The results are shown in Table 1 of the Informa Report. On the assumptions supplied, Informa predicted a net increase in world corn and soybean acreage of 2.2 million acres. By contrast, FAPRI's estimate is a net increase of 7.4 million acres. The commenter concludes that the data set and methodology that are actually used in the business world to plan investments and to predict commodity prices the Informa data set and methodology demonstrate that the results generated for EPA by FAPRI's "black box" are more than 300

percent overstated. If EPA is not prepared to accept Informa's analysis as part of the LCA analysis, it must explain why. [[Docket number 2383.1, pp. 51-52]] [[See docket number 2383.1, pp. 51-52 and docket number 2415.1-2, which are electronic files associate with the Informa Economics report.]]

Our Response:

Although the Informa model provides a useful estimate of their interpretation of the impacts of a change in corn ethanol and soybean based biodiesel, we do not believe that their analysis can be used at this time to replace our FAPRI and FASOM analysis of the indirect land use change associated with an increase in renewable fuel volumes. As described in other sections, we disagree with Informa's assertion that the projected yields used in our modeling are too low. Informa projects corn yields of 201.7 bushels per acre and soybean yields of 51.7 bushels/acre by 2022 which are within the range of the reasonable yields we considered for oour sensitivity analyses. These higher yield sensitivity analyses did not change our threshold assessments.

Furthermore, the Informa model lacks much of the detail that the use of the FASOM and FAPRI models provide. For example, the Informa model does not appear to include cellulosic feedstocks, therefore it cannot be used to assess the competition between energy crops and conventional crops in the U.S. In addition, the Informa model does not appear to take into account the domestic land use competition between agricultural and forestry sectors. Since the Informa "Control Case" does not appear to take into account cellulosic or imported ethanol volumes, it is not appropriate to compare the Informa control case with the FASOM or FAPRI control case.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) does not believe that the science and methodology underlying the LCA, including significant emission from land use changes, has progress sufficiently to provide a rigorous differentiation between fuels. Until a more reliable land use data set is available, the commenter recommends that EPA rely on the feedstock requirements described in EISA to differentiate fuels. [[docket number 2384.1, p. 6]]

Our Response:

As legally required by EISA, EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
The commenter (2387) believes that increased global production of crop-derived biofuel feedstock creates a significant risk of indirect land use change and it is inevitable that GHG emissions from ILUC will need to be quantified for different biofuels and feed-stocks. However, they are concerned about the accuracy of the modeling of indirect land use change in the FAPRI and FASOM models especially the methods and factors used in the following parts of the models: Accounting for biofuel co-products, Modeling land area changes as a result of demand growth, Modeling of oilseeds market, type of land changes, and land use change for meat production. The commenter believes that with all of these issues, the models overestimate the level of GHG emissions from indirect land use change. [[Docket number 2387.1, p. 1]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA. The models indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA. We have also included uncertainty analyses which in particular focus on international indirect land use impacts. These uncertainty assessments were used in determining whether a biofuel pathway was likely to exceed its GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
More specifically, the commenter states:
-The lack of proper accounting for high protein biofuel co-products causes an overestimation of the GHG emissions from ILUG. [[See docket number 2387.1, p. 5 for further discussion of the issue.]]

Our Response:

For the final rulemaking analysis, distillers grains replacement rates of corn and soybean meal in animal feed have been updated based on the latest research by Argonne National Laboratory in both the FASOM and FAPRI models. These replacement rates are higher and more efficient than those used in the proposal's analysis. Details on these assumptions can be found in the RIA and the technical reports for each respective model.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
-The EPA ME models determine the land area growth indirectly by subtracting a yield growth estimate from the demand growth. The yield growth estimate is an exogenous value that does not properly account for changes in yield growth as a result of demand growth. The models therefore assume that all the increase in demand above the estimated yield growth is met by land area change. The lack of modeling of the proportion of demand growth from yield growth and area growth will cause an error in the estimation of the GHG emissions from ILUC. [[See docket number 2387.1, pp. 5-7 for further discussion of the issue.]]

Our Response:

EPA agrees with the comment that there needs to be a demand response on crop yields. One of the updates to the FAPRI model for the final rulemaking analysis is the incorporation of price-induced yields. Thus, as demand for a commodity increases, raising the global price for that commodity, yields will increase as a result. Additional information on price-induced yields in the FAPRI can be found in the RIA and the technical documentation for the FAPRI model in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd

Comment:
-The EPA FASOM model appears to assume that the use of soy oil for biodiesel production will be met by growing soybeans and that the soy meal co-product will substitute for cereals and hay. However, soybean is primarily grown for the meal, not for the oil, so increased production of biodiesel from soy oil will lead to replacement of the soy oil on the global market by other vegetable oils, primarily palm oil. The assumption that soy is just grown primarily for its oil, rather than primarily for its meal will lead to an overestimation of the overall land used for the production of soy biodiesel and underestimate the land saved by soy meal replacement by DOGS co-product from corn bioethanol. These will both cause an overestimation of the GHG emissions from ILUG. [[See docket number 2387.1, pp. 8-9 for further discussion of the issue.]]

Our Response:

EPA's analysis shows that the total value for soybeans is a combination of the value of raw soybeans, soybean meal, and soybean oil combined. Soybean meal is an important and substantial component of soybeans, and is a major source of animal feed, among other uses. However, soybean oil is also a valued component of soybeans, both for the use in food products, as well as for biodiesel production. EPA's analysis shows that changes in demand for soybean oil biodiesel will affect not only the value of soybean oil, but the value of soybeans and soybean meal as well. The primary source of soybean oil for biodiesel production comes from a reduction in soybean oil exports from the U.S. to the global trade market. The FAPRI model also analyzes the effect this change in soybean oil exports from the U.S. has on the global vegetable oil market.

For additional detail of the assumptions and results of the final rulemaking analysis, please refer to the RIA, as well as the technical reports of the FASOM and FAPRI models in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
-There are enormous discrepancies in the changes in crop areas for the EU and Brazil given by the FAO data and the MODIS data used for EPA work. The reasons for this need to be resolved. [[See docket number 2387.1, pp. 9-10 and docket number 1990.1, pp.1-4 for extensive discussion of the issue.]]

Our Response:

Based on comments from the expert peer reviewers EPA updated its analysis with the new MODIS Version 5 satellite data set covering 2001-2007. Compared to the MODIS Version 4 data set used in the proposed rule, the new MODIS data is higher resolution, more recent, and covers a longer time period. Another benefit of using the MODIS data set is that it is routinely and extensively validated by NASA's MODIS land validation team. NASA uses several

validation techniques for quality assurance and to develop uncertainty information for its products. NASA's primary validation technique includes comparing the satellite classifications to data collected through field and aircraft surveys, and other satellite data sensors. The accuracy of the version 5 MODIS land cover product was assessed over a significant set of international locations, including roughly 1,900 sample site clusters covering close to 150 million square kilometers. The results of these validation efforts are summarized in a "confusion matrix" which compares the satellite's land classifications with the actual land types observed on the ground. We used this information to assess the accuracy and systematic biases in the published MODIS data.

Resolving discrepancies between our data and the FAO data is not necessary for our analysis. As discussed above, the MODIS Version 5 land cover data has been vetted with data validation efforts that are far more rigorous than simply comparing the MODIS and FAO data sets.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2387
Organization: Ensus Ltd
Comment:
-Regarding land use change for meat production, it is assumed in the EPA ME models that the conversion of grassland to cropland in one region will lead to the conversion of an equal area of shrub land or forest to grassland in another region. Work shows that this assumption cannot be justified. This assumption causes an overestimation of the land use change resulting from ILUC. [[See docket number 2387.1, pp. 10-12 for further discussion of the issue.]]

Our Response:

For the final rule we made several improvements in our analysis of land converted to pasture.

As explained in preamble Section V, one of the major changes made to the FAPRI model between the NPRM and FRM includes the more detailed representation of Brazil through a new integrated module. The Brazil module was developed by Iowa State with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in the proposal. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

In addition to modifying how pasture acres are treated in Brazil, we also improved the methodology for calculating pasture acreage changes in other countries. We received several comments through the public comment period and peer reviewers supporting a better analysis of the interaction between crops, pasture, and livestock. In the NPRM, although we accounted for GHG emissions from livestock production (e.g., manure management), we did not explicitly

account for GHG emissions from changes in pasture demand. In response to comments received, our new methodology account for changes in pasture area resulting from livestock fluctuations and therefore captures the link between livestock and land used for grazing. Based on regional pasture stocking rates (livestock per acre), we now calculate the amount of land used for livestock grazing. The regional stocking rates were determined with data on livestock populations from the UN Food and Agricultural Organization (FAO) and data on pasture area measured with agricultural inventory and satellite-derived land cover data. As a result of this change, in countries where livestock numbers decrease, less land is needed for pasture. Therefore, unneeded pasture acres are available for crop land or allowed to revert to their natural state. In countries where livestock numbers increase, more land is needed for pasture, which can be added on abandoned cropland or unused grassland, or it can result in deforestation. We believe this new methodology provides a more realistic assessment of land use changes, especially in regions where livestock populations are changing significantly. For additional information on the pasture replacement methodology, see RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2390
Organization: Governors‘ Biofuels Coalition
Comment:
The commenter (2390.1) noted that the information available to comment on the proposal pertaining to EPA’s ILUC lifecycle analysis is inadequate. The data and information presented do not permit replication of EPA’s ILUC findings. The ability to reproduce EPA”s findings is an essential part of ensuring the quality of the findings and the transparency citizens expect from their government. (2390.1, p.1)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA’s lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA’s lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) supports EPA’s inclusion of the effects of land use changes in its assessment of the GHG impacts of the RFS2 proposed rule. While EPA’s proposed approach is a

commendable first step, it is clear that the science, methods and data underlying the quantification of ILUC effects will continue to evolve even after the RFS2 final rule is published. The commenter notes that EPA recognizes this evolution of the science and supports EPA's "plan to establish formal update procedures that include further peer review of the lifecycle analysis framework and methodology." In fact, the commenter urges EPA to revisit this topic as part of a formal periodic technical review process. [[Docket number 2393.1, pp. 44-45 and 2523.1, p. 3]]

Our Response:

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2401
Organization: Clean Energy
Comment:
The commenter (2401) fully supports EPA's decision to apply indirect land use change analysis to all fuels to perform lifecycle GHG emission assessments. The commenter believes that EPA is applying the best science available and has been willing to subject their analysis to peer review and they feel confident that EPA will responsibly apply ILUC. [[Docket number 2401.1, p. 7]]

Our Response:

EPA agrees with the commenter that we have applied the best science available and has employed a collaborative and transparent approach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association

Comment:
The commenter (2408.1) encourages EPA to continue to study, develop and peer-review the vast amount of information which is currently being generated in this area. The commenter encourages EPA to consider the ability of technology to deliver efficiency gains in current crop production as well as the development of better farming practices and higher yielding crop varieties.

Our Response:

EPA has conducted a peer review of its LCA methodology and data sources; results are reflected in final rule. Additionally, as stated in Preamble, EPA intends to continue working to improve its LCA capability and as part of that effort plans to solicit support from the National Academy of Sciences. For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
In addition, the assumptions concerning the types of lands which are being converted and the resulting specific changes in foreign land use arc difficult and have many competing pressures, which-at a minimum-make it difficult to accurately calculate specific impacts resulting from biofuels. Over time, the understanding and accuracy of these types of modeling efforts should improve and become far more accurate. (2408.1, p.3)

Our Response:

EPA worked with Winrock International to evaluate the types of land that would be affected internationally. Winrock is a global nonprofit organization with years of experience in the development and application of the IPCC agricultural forestry and other land use (AFOLU) guidance. For the proposed rule, we used satellite data from 2001-2004 to provide a breakdown of the types of land converted to crop production. A key strength of this approach is that satellite information is based on empirical observations which can be verified and statistically tested for accuracy. Furthermore, it is reasonable to assume that recent land use change decisions have been driven largely by economics, and, as such, recent patterns will continue in the future, absent major economic or land use regime shifts caused, for example, by changes in government policies.

As discussed above, all five of the expert peer reviewers that reviewed our use of satellite imagery for this analysis agreed that our general approach was scientifically justifiable. However, all of the peer reviewers qualified that statement by describing relevant uncertainties and highlighting revisions that would improve our analysis. Some of the public commenters

supported EPA's use of satellite imagery, while other expressed concern. In general, both sets of public commenters—those in favor and opposed—outlined the same criticisms and suggestions as the expert peer reviewers. Among the many valuable suggestions for satellite data analysis provided in the expert peer reviews and public comments, several major recommendations emerged: EPA should use the most recent satellite data set that covers a period of at least 5 years; EPA should use higher resolution satellite imagery; EPA's analysis should consider a wider range of land categories; EPA should improve it's analysis of the interaction between cropland, pasture and unused or underutilized land; and EPA's analysis should include thorough data validation and a full assessment of uncertainty. Below, we describe these and other recommendations and how we addressed each of them to improve our analysis. Based on the peer reviewers agreement that our general approach is scientifically justifiable, and in light of the significant improvements made, we think that our approach represents the best available analysis of the types of land affected internationally.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2409
Organization: Tennessee Department of Agriculture
Comment:
The commenter [[2409]] states that the new methodology arbitrarily assigns greenhouse gas (GHG) emissions associated with land use changes in other countries to biofuels produced and used in this nation. This would, in effect, prevent all soy oil biodiesel producers from earning Renewable Identification Numbers (RINs). And that the methodology developed by EPA to determine the GHG emission profile of biofuels under the RFS2 program is based on questionable inputs and dubious assumptions about international land use changes. The commenter also states that from 2004 to 2008, U.S. biodiesel production grew from 25 million gallons to 690 million gallons. Between 2004 and 2008, the land area devoted to soybean production in Brazil decreased by 1.52 million hectares. [[#2409.1 p.2]]

The commenter also states that soybeans everywhere in the world are grown primarily to meet the demand for their 80 percent protein meal. By-products do not drive supply responses and soybean oil for biodiesel does not drive planting decisions for farmers. If it did, then farmers would plant crops other than soybeans, that produce more oil per acre. [[#2409.1 p.3]]

Our Response:

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions such as macroeconomic growth, oil prices, crop growing conditions, exchange rates and government policies. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant.

Furthermore, the agricultural economic models which we used account for the soy meal co-product. For crops with by-products, behavioral equations for the by-products are included (e.g., soybean meal, soybean oil and biodiesel from soybeans). For each commodity, a market-clearing price is achieved by equating quantity supplied to quantity demanded. The market linkages imply that changes in one commodity sector will have impacts on the other sectors.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated.
Comment:
The commenter (2511.1) noted that indirect land use changes pose several significant challenges for analysts and policymakers. The commenter recognizes that land use changes do occur, and that at some level, such changes may be influenced by biofuels policy, in addition to a host of other factors. EPA's proposed rule would unilaterally make changes to domestic U.S. law, with the goal of indirectly addressing an international problem, largely on the other side of the planet. Land use changes in the United States have been minimal, and large-scale land diversion of crop land into conversion use has been in place for decades as a part of U.S. government policy. The commenter has significant concerns that the proposed policy is far too narrow, and hence is an inefficient and ineffective way of reducing GHG emissions. It will also place an unreasonable and disproportionate burden on domestic U.S. farmers and the biofuels industry. It will also unfairly penalize those in developing countries (2511.1, p.1). The commenter also noted that EISA requires that EPA address Indirect Land Use Changes. However, the Act offers EPA broad discretion to adopt an implementing rule that reflects the inherent complexity in such analysis. EISA simply calls for including indirect emissions. The Act does not specify a direct mechanism, or any other mechanism, on how to design and model the impact of biofuels on land use changes, and is silent on whether the act is designed to be extraterritorial. The commenter believes that EPA should ensure flexible implementation and compliance with Indirect Land Use parameters. (2511.1, p.3)

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

Although considering international emissions in its analyses could result in different implications under the statute for various fuels and fuel pathways as compared to ignoring these emissions, EPA believes that this is precisely the outcome that Congress intended. Implementation of EISA will undoubtedly benefit the domestic agricultural sector as a whole, with some components benefiting more than others depending in part on the lifecycle GHG emissions associated with the products to be made from individual feedstocks. If Congress had sought to promote all biofuel production without regard to GHG emissions related to the full lifecycle of those fuels, it would not have specified GHG reduction thresholds for each category of renewable fuel for which volume targets are specified in the Act.

Including international indirect emissions in EPA's lifecycle analysis does not exercise regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated.
Comment:
The commenter noted that under EPA's proposed rule, a rather simple, direct allocation to the biofuels industry is determined on the potential gallons produced per acre. The commenter believes that this rule, while simple, vastly underestimates the myriad of other factors that influence land use decisions and lacks accuracy. The commenter also believes that any calculation of land use changes should also monitor and factor in the improvements in marginal lands. Substantial improvements can and will be made in utilizing marginal lands, if producers are allowed to respond and given the tools to responsibly cultivate and develop these acres.

Omitting these acres as a likely first response to market conditions seriously alters the emissions calculations. (2511.1, pp.2-3)

Our Response:

It appears that the commentor has misinterpreted our analysis of indirect land use change. Our methodology does not attribute all land use change to renewable fuels. Instead, only the incremental change in land use that occurs as a result of the increase in renewable fuel volumes required by the RFS2 is attributed to renewable fuels. To the extent that other drivers such as urban development, demand for wood products, and demand for other agricultural products result in land use changes, those impacts are included in our reference case and are not allocated to the renewable fuels. However, secondary impacts, such as a reduction in meat demand that might occur if feed prices increase, are captured in our agricultural modeling framework. Therefore, we disagree with the commentor that we have reduced a "complex, multi-dimensional system to something so simple as to be almost unrecognizable."

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated.
Comment:
The commenter believes that the proposed rule penalizes lesser-developed countries. Biofuels have created an entirely new distribution choice for the world's farmers. Now, by inhibiting this industry and restricting this new source of demand, they would be preempting a strong anti-poverty measure for those in need. (2511.1, p.3)

The commenter also noted that a direct approach to limiting land clearing is a much more reliable approach to reducing GHG emissions. The commenter believes that nations should be encouraged to finalize and enforce existing, and new, land use regulations that are structured to reduce deforestation. The commenter also encourages the U.S. government to work with other countries that are also currently analyzing the impacts of land use changes. (2511.1, p.3)

The commenter believes that EPA needs to determine the basis for allocating the land use changes such that one country's direct changes are not double counted as another country's indirect changes. In order to properly allocate and determine the extent of the land use changes that should be borne by the biofuels industry, the EPA needs data that shows causation as opposed to speculative data. (2511.1, p.6)

Our Response:

It appears that the commenter has misinterpreted our analysis of indirect land use change. Our methodology does not attribute all land use change to renewable fuels. Instead, only the incremental change in land use that occurs as a result of the increase in renewable fuel volumes required by the RFS2 is attributed to renewable fuels. To the extent that other drivers such as urban development, demand for wood products, and demand for other agricultural products

result in land use changes, those impacts are included in our reference case and are not allocated to the renewable fuels. However, secondary impacts, such as a reduction in meat demand that might occur if feed prices increase, are captured in our agricultural modeling framework. Therefore, we disagree with the commenter that we have reduced a "complex, multi-dimensional system to something so simple as to be almost unrecognizable."

The regulations finalized for RFS2 determine GHG threshold compliance on the basis of fuel pathways, irrespective of the country where the feedstock or the fuel was produced

EISA requires EPA to develop regulations for biofuels based on the development of a lifecycle analysis methodology that includes significant indirect effects such as land use change. The direct approach to limiting land clearing discussed by the commenter is outside of the scope of EISA's provisions for the Renewable Fuel Standard.

EPA's approach avoids double counting of emissions associated with the renewable fuel pathway. The key issue at hand here is whether there are controls through other mechanisms on these sources of emissions that are included in the analysis. If international land use change emissions indirectly due to biofuels were accounted for and controlled through other policy systems of accounting, then the biofuels indirect impacts would not need assessment, but currently that is not the case.

EPA notes that Congress has specified in Section 211(o) the required causal link between a fuel and indirect emissions. The indirect emissions must be "related to" the full fuel lifecycle. EPA believes that it has demonstrated this link through its modeling efforts. Specifically, the models predict that increased demand for feedstocks to produce renewable fuel that satisfies EISA mandates will likely result in international land use change. Such change is, then, "related to" the full fuel lifecycle of these fuels. EPA does not believe that the statute requires EPA to wait until these effects occur to establish the required linkage, but instead believes that it is authorized to use predictive models to demonstrate likely results.

Therefore, we do not attribute all land use change to biofuels in our lifecycle analysis. Instead, we evaluated the incremental impact that biofuel production will have on existing land use and land use change. Our approach assumes that other drivers will still be in place and isolates the impacts due to biofuels production**.**

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated.
Comment:
The commenter is concerned that EPA's data and the California Air Resources Board (CARB) data have such widely varying results. The commenter suggests that neither model is robust enough to calculate a firm number. More sensitivity analysis and Monte Carlo simulations need to be conducted to demonstrate where there are areas to tighten within the model to eliminate errors. (2511.1, p.7)

Our Response:

For the final rule, EPA has included uncertainty and sensitivity analyses about critical parameters. We also anticipate continuing to work with CARB and other organizations and experts to improve LCA modeling and data.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2423
Organization: Green Earth Fuels, LLC
Comment:
The commenter (2423) addresses the provision in the proposal which deals with the calculation of GHG reductions and indirect land use. The commenter first points out that they have already invested money, earned from producing "first generation biofuels," to develop non-food feedstocks such as camelina and jatropha which can be produced with less environmental impact. The commenter believes this is critical to our industry's growth and a demonstration of the value of supporting first generation biofuels and that these are the types of crops EPA's rules should be supporting; however under the proposal, they would not quality for RFS2. [[Docket number 2423, pp. 1-2]]

The commenter notes that they have been developing a palm plantation in Guatemala using the latest and most advanced environmental standards and working with NGO's such as Rainforest Alliance to develop sustainable palm standards for the region. EPA's proposed international indirect land use rules suggest that for every gallon of biodiesel produced rain forests will be destroyed. In fact the commenter believes that they are saving rainforests and preserving lands ravaged not by industrial farmers but rainforest land burned by indigenous people just trying to survive through subsistence farming. By disqualifying vegetable oil based biodiesel from qualifying for the RFS2, EPA eliminates much of the incentive for pursuing these new, positive practices. [[Docket number 2423, p. 2]]

Our Response:

EPA provides in the final rulemaking a petition process by which those fuel pathways that have not yet been modeled EPA modeling can be evaluated to determine compliance with one or more of the renewable fuel categories. Section V.C of the Preamble describes the petition process.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2424
Organization: The Pacific Forest Trust
Comment:

The commenter (2424.1) applauds EPA that they include the impacts of both direct and indirect land use in the analysis of biofuel lifecycle emissions. (2424.1, p.1)

The commenter noted that while the utilization of biofuels might reduce the amount of carbon released through the combustion of fossil fuels, the attendant changes in land use can result in increased emissions from terrestrial systems. The commenter believes that selectively accounting for only the fossil fuel carbon reductions from biofuel utilization, without considering resultant terrestrial emissions, is not just poor accounting, it is self-defeating - both for the environment and ultimately the broader economy. (2424.1, p.1) (See Docket Number 2424.1, pp.1-5 for more discussion about this issue)

The commenter also noted that while biofuel production that causes the conversion of terrestrial ecosystems may be favored by landowners who stand to gain from biofuel production (if not carbon management), the carbon benefits (or lack thereof) of biofuel production are highly variable and contingent upon a variety of factors. In some instances, biofuel production may indeed be beneficial but this is highly dependent upon a variety of actors. If biofuels are produced from waste biomass or crops grown on degraded or abandoned agricultural lands, little or no carbon debt is incurred, and immediate emissions reduction benefits may well result. However, establishing this determination requires the accurate accounting of not only the carbon benefits of biofuel production, but all attendant emissions as well. (2424.1, p.5)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, including both direct and the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA In particular it takes into account impacts on GHG emissions due to changes in land use such as the removal of trees.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2424
Organization: The Pacific Forest Trust
Comment:
The commenter (2424.1) believes that it is apparent that retaining terrestrial systems to actively sequester and store atmospheric carbon is paramount. The commenter noted that currently, domestic forestry and land use sequester approximately 884 million metric tons of carbon dioxide annually, or nearly 12% of all U.S. GHG emissions. However, these lands have the potential to sequester and store far more carbon - up to an additional 40 to 60 billion tons of carbon from forests alone over the next half century. When the climate benefits of all global terrestrial systems are considered, the services provided are staggering - with more than 2 trillion

metric tons of carbon stored in the Earth's soils and aboveground biomass. The vast, terrestrial carbon reserves will be critical to effectively combating global climate change. However, the efficacy of this invaluable asset depends on the continued existence and sustainable management of these systems. This will require that policies accurately account for carbon emissions and reductions related to these lands, such as the lifecycle accounting of carbon emissions from both direct and indirect land use. (2424.1, p.2)

Our Response:

EPA is making the GHG threshold determinations for RFS2 based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA received significant comment on including international indirect emissions in its lifecycle calculations. EPA continues to believe that compliance with the EISA mandate — determining "the aggregate GHG emissions related to the full fuel lifecycle, including both direct emissions and significant indirect emissions such as land use changes" — makes it necessary to assess those direct and significant indirect impacts that occur not just within the United States, but also those that occur in other countries. Preamble Section V includes more discussion of our reasons for including carbon emissions from indirect land use change.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) states that it is critical the RFS2 clearly state secondary land use emissions are not applicable to renewable fuels derived from non food-based feedstock. The commenter adds that although the inclusion of secondary land use emissions has merits, the models used to estimate secondary land use emission are simply not as transparent as they need to be and further evaluation of this requirement and the models is needed. The commenter believes that it is the spike in CO2 emissions caused by the indirect land use that is causing EPA to look at 30 or 100 year emission profiles so the net present value (NPV) of GHG emissions have an opportunity to meet the RFS2 GHG reduction criteria. [[Docket number 2425.1, p. 5]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA. Regarding renewable fuels from non food feedstock, EPA modeled a variety of pathways such as those using corn stover, switchgrass and algae as

feedstock sources with varying impacts on land use. These results are detailed in the preamble and to a greater extent in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2446
Organization: Minnesota Farm Bureau Federation
Comment:
MFBF strongly objects to the Agency's proposal related to indirect land use changes. There is no reliable way to measure or accurately predict how the production of biofuels will affect land use change in other countries.

Our Response:

The Agency believes it has developed a scientifically sound, state-of-the-art, methodology. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule. It is also clear that there are uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) strongly recommends inclusion of the impact of indirect and use change in GHG emissions accounting. The commenter (2466) fully supports EPA's use of lifecycle analysis of biofuels, which evaluates GHG emissions on a full fuel lifecycle basis, including direct emissions and significant indirect emissions such as significant emissions from land use changes. The commenter (2466) suggests that land use change, particularly from clearing and degradation of tropical forests, is responsible for approximately one-fifth of annual global GHG emissions. Given the volumes of biofuels proposed to be required under the proposed renewable 2 fuel standard (RFS), the rule when finalized could potentially add substantial pressure to world markets for agricultural and forest-based biomass. (2466.1.pdf, p2)

The commenter (2466) encourages EPA to devote sufficient resources to continued improvement of modeling tools to estimate land use change resulting from increased demand for biofuels and evaluation of alternative models and approaches.(2466.1.pdf, p2)

Our Response:

EPA agrees with commenter and is making the GHG threshold determinations based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. The Agency also agrees with commenter on the importance of continuing this work. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) finds it troubling that EPA's proposed rule includes indirect land use change ("ILUC") assessments that would disqualify virgin oil-based biodiesel from satisfying the Biomass-Based Diesel mandate. There appears to be sufficient disagreement over the science of ILUC and how best to make the assessments and apply the models. The commenter urges EPA to consider tabling this part of the rule for further study. There is no downside in allowing for more time to gather more information. (2471.1, p.10)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) supports EPA's Life Cycle Analysis work and the inclusion of In-Direct Land Use Change in the RFS2 regulations. The commenter commends EPA on the job that they

have done and believe that this part of the proposed regulations is based on sound science and adheres to the other core principals. [[Docket number 2072, p. 2]]

Our Response:

EPA agrees with commenter that the lifecycle methodology is based on sound science and that it incorporates indirect land use changes.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that EPA should correct the false statement included in the proposal that "the impact of any land-use change tends to be magnified with soybean bio-diesel." (2474, p.1)

Our Response:

As stated in other responses, we believe the quoted statement is being misinterpreted. This statement was a qualitative explanation for why land use changes projected by the agricultural sector models in the NPRM analysis may have been larger than the corn ethanol land use changes on a per BTU basis. We were not implying that soybeans were being planted exclusively for soybean oil. The agricultural sector models take into account the fact that soybeans are approximately 80% meal and 20% oil. Furthermore, the agricultural sector models assume that farmers choose to plant soybeans based on the expected net returns associated with the sum of both the oil and the meal ree streams. We believe this optimization approach accurately represents the soybean production markets.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2478
Organization: ZeaChem Inc.
Comment:
The commenter (2478) is highly uncertain of the speculative inclusion of indirect land use change (ILUC) emissions associated with advanced biofuels production. There is no scientific consensus on how to accurately measure the indirect effects of any fuel type. Rigorous model validation is needed to align model data sets to real world facts. This validation needs to be undertaken in a transparent manner so that the integrity of all data and information can be ensured. The commenter believes that the biofuels industry should not be singled out or held to a separate standard compared to other fuels. For example, indirect GHG emissions related to the oil supply chain are apparently not considered in the 2005 petroleum baseline as calculated by EPA. This biased and uneven comparison automatically puts domestically produced biofuels at a

disadvantage compared to carbon intensive, fossil fuel resources. [[Docket number 2478.1, pp. 2-3]]

Our Response:

EPA believes there is a great deal of scientific consensus on the need to account for indirect emissions in assessing the lifecycle impacts of biofuels. EPA's goal in developing this methodology was to use a scientifically sound approach and to appropriately characterize uncertainty. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule.

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
The commenter (2486) states that if indirect land-use change (iDLUC) is to be charged to biofuels production, then reductions in land-use must also be counted towards a credit with co-products due to displacement. In keeping with displacement co-product credit allocation methodology, any "cost" or "penalty" associated with a product must be counted as an "asset" with regards to new co-products. This should also be true with regards to iDLUC penalties for biofuels feedstock. IDLUC impacts must be counted as credits towards co-products. For example, waste corn oil extracted from thin-stillage from dry mill ethanol plants offsets soybean oil in the biodiesel industry. IDLUC penalties charged to soybean oil should accordingly be counted as a credit for waste corn oil. [[Docket number 2486.1, p. 2]]

Our Response:

EPA agrees that displacement methodology should be used to assign credits to co-products. In EPA's analysis, this methodology is used to assign the proper credits to particular renewable fuels based on their related co-products, such as distillers grains and soybean meal. Additional information on co-product credits and how they are attributed to renewable fuels can be found in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
Referring to the "polluter pays principle," the commenter states that iDLUC is a market-mediated effect, and as such there are multiple causes of land use-change. Charging biofuels for some theoretical share of this impact while not charging other (much larger and more mature) industries is not in keeping with the polluter pays principle. In fact, it effectively subsidizes the detrimental environmental impacts of industries like pulp & paper, timber, and cattle ranching. [[Docket number 2486.1, p. 2]]

Our Response:

This rule is focused on the impacts of transportation fuels, not on the larger economy and sources of pollution

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:

The commenter believes that so-called indirect land-use changes ought to be dealt with more directly. Rather than attempting to mitigate the impact of non-U.S. land-use changes, EPA should engage non-U.S. governments directly, to promote and establish native-ecosystem protections and more sustainable land-use policies. [[Docket number 2486.1, p. 4]] [[See docket number 2486.1, pp. 3-4 for further discussion of this issue.]]

Our Response:

The commenter's suggestions on engaging other nations in mitigating the impacts of land use changes are outside the scope of this rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2487
Organization: Abengoa Bioenergy Corporation
Comment:
The commenter (2487) believes that EPA should exclude any estimates of international indirect land use changes from the lifecycle GHG analysis of biofuels as there is no legitimate scientific way to quantify those impacts. Inclusion of penalties for ILUC are based on conjecture and assumptions that have no valid scientific basis, and which defy any credible causal link.

Our Response:

EPA disagrees with commenter that there is no legitimate scientific way—or valid scientific basis--to quantify international land use impacts. The Agency believes it has developed a scientifically sound, state-of-the-art, methodology. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule. It is also clear that there are uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. Therefore, we focused our efforts on the international indirect land use change emissions and worked to manage the uncertainty around those impacts.

EPA disagrees that accounting for international land use impacts constitutes a penalty. EPA is simply attempting to account for all GHG emissions related to the full fuel lifecycle as required by EISA. Domestic renewable fuel producers may have no direct control over land use changes that occur overseas as a result of renewable fuel production and use here, but their choice of feedstock can and does influence oversees activities, and EPA believes it is appropriate to consider the GHG emissions from those activities in its analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2487
Organization: Abengoa Bioenergy Corporation
Comment:
In addition, if indirect land use change consequences for biofuels are to be attributed, then EPA should also estimate and attribute indirect impacts of the continued use of petroleum. [[Docket number 2487, p. 1]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for

petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2488
Organization: Kansas Corn Growers Association
Comment:
The commenter (2488) noted that there is no evidence that corn production in the United States has had an impact on land use in Brazil or other countries. U.S. corn growers continue to grow more corn per acre, thanks to advances in technology and farming practices. Yields are predicted to continue to increase especially as new biotech seed traits are introduced. A new drought tolerant trait will soon be available in corn, allowing even more efficiencies and ability to overcome adverse conditions that have in the past caused high yield losses. Not only do these advances allow companies to produce more on less land, they also allow the companies to meet the needs of all their customers, including the ethanol industry. (2488, p.2)

Our Response:

To quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios using well established-economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. The scenarios that we compared include the same background projections about agricultural and economic conditions, such as the rate of crop yield technology improvement. Thus, we isolate the effects of each type of biofuel expansion because all other factors that affect the agricultural economy are held constant. Our analysis suggests that even when increased crop yield are taken into account, corn ethanol

production in the U.S. does have impacts on global commodity prices and land use decisions in other countries.

A factor that can have a significant impact on the amount of land that may be converted as a result of increasing biofuel demand are changes in crop yields over time. As discussed in the NPRM, our proposal based domestic yields on USDA projections for both the reference case and the control case. As discussed in preamble Section V.B.1.c, for this FRM we have also included scenarios that use higher yield projections in both the reference case and the control case. One of the key uncertainties associated with our agricultural sector economic modeling that has the biggest impact on land use change results is the assumptions around crop yields. As discussed in preamble Section V.A.2, we are conducting sensitivity analysis around different yield assumptions in our analysis.

In the NPRM we also requested comment on whether the higher prices caused by an increased in demand for biofuels would increase future yield projections in the policy case beyond the yield trends in the reference case (sometimes referred to as "price induced yields"), or whether these price induced yields would be offset by the reduction in yields associated with expanding production onto new marginal acres (sometimes referred to as extensification). Based on the comments we received, along with additional historical trend analysis conducted by FAPRI, the international agricultural modeling framework now incorporates a price induced yield component. The new yield adjustments are partially offset by the extensification factor, however, the combined impact is that fewer new acres are needed for agricultural production to meet world agricultural demands. Our consideration of price-induced yield impacts is explained in RIA Chapter 5.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2490
Organization: Sapphire Energy
Comment:
While the commenter (2490) supports the consideration of indirect changes to land use as part of the EPA's lifecycle analysis, they believe that the science underlying such consideration must be further validated before it is applied. As a matter of policy, a lifecycle analysis that does not consider indirect changes to land use will provide a misleading analysis of the true carbon impact of biofuels, and undermine the objective of reducing GHG emissions. The commenter also notes that the EPA correctly recognizes in the Preamble that the production of algae-based biofuels does not compete with food crops and can be cultivated on marginal land rather than cropland. Thus, the production of algal fuel will result in dramatically fewer indirect land use changes than many other renewable alternatives. Consequently, algae-based fuel has a significantly lower carbon footprint than renewable fuel feedstocks that are grown on croplands. [[Docket number 2490.1, p. 7]]

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:

Regarding indirect GHG emissions from land use changes, the commenter (2491) recommends that the EPA conduct a formal uncertainty analysis of ILUC GHG estimates obtained from both GTAP model, and a combination FASOM and FAPRI models using Monte Carlo analysis. A comparison of estimates obtained from various models will help correct the model assumptions and parameters and develop a more robust and integrated model that can predict ILUC emissions with a reasonable certainty. [[Docket number 2491.1, pp. 3-4]]

Our Response:

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in preamble Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change - the types of land converted and the GHG emission associated with different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

The structure of the FAPRI international model framework is not currently suited for Monte Carlo type analysis. Thus, we were not able to complete the specific analysis recommended by the commenter. However, as noted above, EPA believes that we have quantified uncertainty from the most important factors in our analysis. Furthermore, as explained in preamble Section V, we did conduct systematic sensitivity analysis with the GTAP model. Based on the GTAP analysis results we were able to conclude that the impacts of the corn ethanol and soybean biodiesel mandates on land use change are statistically significant.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter [[2494]] states that there are large uncertainties and lack of evidence to support theoretical scenarios of how changing U.S. biofuels production can be linked in a cause and effect to land use changes in other countries. The Energy Independence and Security Act requires the National Academies of Science to produce a study and report on this topic along with other associated environment effects, which may provide some valuable insight into how to consider this issue.

Our Response:

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. That being said, the Agency has been clear to recognize that there are significant uncertainties associated with these estimates, particularly with regard to indirect land use change and the use of economic models to project future market interactions. EPA has quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2494
Organization: Council of Western State Foresters
Comment:
The commenter also states that wood products produced as a result of forest land conversion should be accounted for in GHG emissions associated with different types of land conversion. Many of these products store sequestered carbon long after they are removed from the landscapes terrestrial carbon pool, and should be considered as carbon release happening over time rather than just a one-time release of carbon when the land is converted to a non-forest use production. If the converted land was once undisturbed then the system was likely mature and in equilibrium and not necessarily sequestering additional carbon if left alone. [[see docket # 2492.1p.2]]

Our Response:

As the commenter states, some wood felled during timber harvest and deforestation is used in wooden products (e.g., furniture) that retain biogenic carbon for a long period of time. Emissions from forest products can also occur over several years or decades.

With the addition of the forestry module to the FASOM domestic modeling, FASOM takes into account both the carbon stored in harvested wood products (HWP) and the emission streams associated with them over time for domestic forests. Thus, wood products are accounted

for in the domestic modeling for the final rulemaking. For details on these domestic HWP calculations, see the RIA 2.4.4.1.

Some commenters argued that consideration of the use of harvested wood in products would decrease land use change emissions and reduce the impacts of biofuel production. For the international land use analysis in the proposed rule, we investigated the share of cleared forest biomass that is typically used in HWP. However, we did not account for this factor in the proposed rule after it was determined that HWP would have a very small impact on the magnitude of international land use change emissions.

A number of commenters expressed concern that we did not account for HWP, and they argued that HWP would be more significant than we had determined. However, in response to specific questions on this topic, all of the expert peer reviewers agreed that EPA had properly accounted for HWP and other factors (e.g., land filling) that could prevent or delay emissions from land clearing. One of the peer reviewers noted that forests converted to croplands are generally driven by interests unrelated to timber, and thus the trees are simply burned and exceptions are probably of minor importance.

To study this issue further, we looked at FAO timber volume estimates for 111 developing countries, and published literature on the share of harvested timber used in wood products and the oxidation period for wood products, such as wood-based panels and other industrial roundwood. Consistent with the peer reviewers' statements, our analysis concluded that even in countries with high rates of harvested timber utilization, such as Indonesia, a very small share of harvested forest biomass would be sequestered in HWP for longer than 30 years. The details of our HWP analysis are discussed further in RIA Chapter 2.

This is an area for further work, but based on our analysis, and the feedback from expert commenters, we do not expect that consideration of HWP would have a significant impact on the magnitude of GHG emissions from international deforestation in our analysis. Furthermore, the range of outcomes from consideration of HWP is indirectly captured in our assessment of forest carbon stock uncertainty.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2495
Organization: GROWMARK, Inc.
Comment:
The commenter (2495) has concerns with EPA's proposed rule to implement the expanded Renewable Fuels Standard with a calculation for indirect land use on international lands. The provision addressing indirect land use should not be included in any final rule. EPA's base assumption for corn ethanol life cycle analysis appear deficient or unreasonably limited and does not do enough to reflect current data for corn production. It is admittedly known that land use data in other countries is limited at best and this allows too much variance for false conclusions on what is driving land use decisions. (2495, p.1)

Our Response:

EPA rejects the view that the modeling relied upon in the final rule, which includes emissions associated with international indirect land use change, cannot provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. In addition, the definition of lifecycle emissions includes significant indirect emissions associated with land use change. In deciding whether a bio-fuel pathway meets the threshold, EPA has to consider what it knows about all aspects of the lifecycle emissions, and decide whether there is a valid basis to find that the aggregate lifecycle emissions of the fuel, taking into account significant indirect emissions from land use change meets the threshold. Based on the analyses conducted for this rule, EPA has determined international indirect land use impacts are significant and therefore must be included in threshold compliance assessment.

The Agency has updated and refined its modeling approach since proposal in several important ways, including a number of updates made in direct response comments from the public and peer reviewers. EPA is confident that its modeling of GHG emissions is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2499
Organization: Dial Corporation (Henkel Company)
Comment:
The commenter [[2499]] states that they share the concerns of Soap and Detergent Association about the potential for this rule to divert oleochemical feedstocks to biofuel production, forcing the industry to seek alternative raw materials, such as palm oil, for oleochemical production. Recently, Dial has had to compete with the biofuels industry for animal fats (tallow) based upon government policies that favor biofuel production rather than traditional uses. Supporters argue that animal fats are waste products, but this is far from true. Animal fats and waste greases have a variety of uses, such as for oleochemicals, pet food, and animal feed. Animal fats are also not an expandable resource; supply will not increase as demand increases- driven by government mandates. EPAs' proposed rule has the potential to shift the country's animal fats to biofuel production as the nation seeks to comply with the Renewable Fuel Standard. If soy-based biodiesel is deemed ineligible for RIN credits due to potential greenhouse gas emissions under the indirect land use change calculations, then increased pressure will be placed on using animal fats for biofuels [[See #2499.1 p.1]]

Our Response:

EPA did not fully analyze competing uses for some feedstock sources such as the commenter identified. While these uses may have economic impacts, they do not impact the lifecycle GHG assessment or eligibility of the feedstock for use in transportation fule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) believes that EPA should defer consideration of indirect land use change issues, and specifically the international component of land use change, until there is a stronger empirical basis for drawing conclusions supported by broad scientific consensus. (2502.1, p.9) (See Docket Number 2502.1, pp.8-9 for a detailed discussion of this issue)

Our Response:

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences over the next two years evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent rulemakings on this subject. This new assessment could result in new determinations of threshold compliance compared to those included in this rule that would apply to future production (from plants that are constructed after each subsequent rule).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (25085.2) believes that rather than imposing a highly uncertain indirect land use change factor on the carbon intensity of biofuels, EPA should focus solely on direct land use change at this time, and adopt a globally harmonized approach to for biofuels to address potential indirect land use change issues. The commenter also believes that rather than adopting a highly uncertain indirect land use change factor, EPA should adopt appropriate sustainability criteria for biofuels. The commenter is concerned that applying an indirect land use change factor could have a significant adverse impact on the existing biofuels industry, and the developing advanced biofuels industry. (2505.2, p.15)

Our Response:

EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel. The statute specifically directs EPA to include in its analyses significant indirect emissions such as significant emissions from land use changes. EPA has not ignored either the terms "significant" or "life cycle." It is clear from EPA's assessments that the modeled indirect emissions from land use changes are "significant" in terms of their relationship to total GHG emissions for given fuel pathways. Therefore, they are appropriately considered in the total GHG emissions profile for the fuels in question. EPA has not ignored the term "life cycle." The entire approach used by EPA is directed to fully analyzing emissions related to the complete lifecycle of renewable and baseline fuels.

EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on all the infomration currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) believes that EPA has the authority and duty to account for direct land use changes. There is significant potential as well for domestic indirect land use change that should be accounted for by EPA. Such indirect land use change can occur if a producer replaces food crops with fuel crops on existing cropland and then clears forest, rangeland, or pasture to plant food crops. Expanding his cropland acreage to produce the food crops, even without international ILUC accounting, this type of obvious domestic indirect land use change should be accounted for. (2508, p.2)

The commenter is also very concerned about the potential for slippage under the land conversion prohibitions. If a producer plants energy crops on existing cropland, then clears other land to produce the displaced crops, slippage is occurring. EPA explicitly states in the rule that they

don't have authority to prohibit slippage. The commenter believes that some coordination between USDA base acreage accounting and EPA biofuel feedstock accounting needs to be developed to avoid this problem. (2508, p.2)

Our Response:

EPA agrees with commenter on the importance of accounting for domestic and international indirect emissions. Our final methodology as presented in this final rule includes these emissions.

In keeping with EISA, under today's final rule, renewable fuel producers may only generate RINs for fuels made from feedstocks meeting the definition of renewable biomass. In order to implement this requirement, the final rule presents three potential mechanisms for domestic and foreign renewable fuel producers to verify that their feedstocks comply with this requirement. Further, based on USDA's publicly available agricultural land data, EPA is able to establish a baseline of the aggregate amount of U.S. agricultural land (meaning cropland, pastureland and CRP land in the United States) that is available for the production of crops and crop residues for use in renewable fuel production consistent with the definition of renewable biomass. EPA has determined that, in the aggregate this amount of agricultural land (land cleared or cultivated prior to EISA's enactment (December 19, 2007) and actively managed or fallow, and nonforested on that date) is expected to, at least in the near term, be sufficient to support EISA renewable fuel obligations and other foreseeable demands for crop products, without clearing and cultivating additional land. Discussion of other comments related to this issue is contained in section 3.3.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that if EPA includes indirect emissions due to land use change it has to be applied across the board equally, not selectively. Land use is constantly changing here and abroad. The American farmer and small businessman CAN NOT be held responsible for actions of foreign governments in setting policy, including how land is used or what crops may be grown. The commenter believes EPA is assuming that when anyone in the world is tilling another acre of soil for crops it is not going to be used for food. That's incorrect, acres are tilled, acres are put into conservation - it an ever changing number. As crops are grown more efficiently, is it wrong to not use additional gains beyond food needs for uses that also benefit mankind, including the reduction of petroleum oil usage? The commenter urges EPA to discard this piece of the RFS2. [[Docket number 2510.1, p. 5]]

Our Response:

EPA notes that Congress has specified in Section 211(o) the required causal link between a fuel and indirect emissions. The indirect emissions must be "related to" the full fuel lifecycle.

EPA believes that it has demonstrated this link through its modeling efforts. Specifically, the models predict that increased demand for feedstocks to produce renewable fuel that satisfies EISA mandates will likely result in international land use change. Such change is, then, "related to" the full fuel lifecycle of these fuels. EPA does not believe that the statute requires EPA to wait until these effects occur to establish the required linkage, but instead believes that it is authorized to use predictive models to demonstrate likely results.

Therefore, we do not attribute all land use change to biofuels in our lifecycle analysis. Instead, we evaluated the incremental impact that biofuel production will have on existing land use and land use change. Our approach assumes that other drivers will still be in place and isolates the impacts due to biofuels production**.**

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512) feels the inclusion of indirect land use change is absolutely critical to ensuring biofuels play a real role in reducing global greenhouse gas emissions, and thus mitigating climate change. The commenter would strongly oppose any attempts to remove iLUC from the RFS2. (2512, p.1)

Recognizing the uncertainty inherent in iLUC calculations and the limitations of current models, the commenter recommends that models and assumptions be reviewed after a specified period of time (perhaps 5 years) and adjusted as necessary, to take into account advances in science and modeling and lessons learned from the first years of implementation of the RFS2. (2512.1, p.3)

The commenter believes that the direct emissions calculations should also include any clearing of vegetation on land placed under production for feedstocks (for example, secondary forest that has regenerated on previously-cleared land). (2512.1, p.4)

The commenter also agrees that emissions from outside the U.S. (both direct and indirect) must be includes in analysis, as the impact of GHG emissions is not constrained by borders, but rather affects the global climate. (2512.1, p.7)

The commenter noted that ISO standards serve as an important minimum standard for programs, and the ISO standard offers one of the more developed standards for biofuels. The commenter believes that EPA should clarify it will use a cradle-to-grave LCA as opposed to any other boundary option possible. (2512.1, p.7)

The commenter questions if potential REDD payments are factored into the models. If they are not, the commenter suggests this option be considered, as potential payments for maintaining standing forests will likely be a factor in decisions by landowners whether to convert land in the future. The commenter believes it is also important to note that while economic factors are critical to landowners in making conversion decisions, costs and profit are not the only factors.

Other issues, such as securing recognized land ownership and tenure, can also be driving forces behind conversion. The commenter believes that it should be made clear that the potential conversion of forestry lands is indirect, as direct conversion would not be allowed given the cut-off date. The commenter fully supports the concept of incorporating government policies and regulations, as well as enforcement capabilities into the models (perhaps through a governance coefficient for enforcement effectiveness). (2512.1, pp.10-11)

The commenter (2512.1) believes that foregone sequestration should be included in the proposal. (2512.1, p.11)

Our Response:

EPA appreciates Conservation International's support for including indirect land use change in the lifecycle analysis. EPA recognizes that it has had to break new scientific ground in developing a lifecycle methodology as required by EISA. This is why the Agency employed a collaborative, transparent and science-based approach. EPA took numerous measures to seek public comment on our approach—including extending the comment period for the proposed rule, holding a two-day public workshop on the lifecycle methodology, and reaching out to dozens of stakeholders, including the biodiesel community, through individual meetings, conferences and events. As noted by the commenter, EPA also initiated an independent peer review of specific areas of our work. The information we received through this process has led to the approach in this final rule which bases the GHG threshold compliance determinations on the weight of evidence currently available and quantifies the uncertainty about critical variables.

Further, EPA recognizes the state of scientific knowledge continues to evolve in this area. While the Agency is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, the Agency is also committing to further reassess these determinations. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences as well as other experts.

For EPA's modeling of both domestic and international land use change, lifecycle GHG assessments include emissions due to clearing of land due for direct cultivation of renewable fuel feedstocks. FASOM incorporates this calculus directly in its domestic land use modeling. In the case of international land use change, satellite data analyses provide historical trends that capture land conversion of secondary forests into agricultural lands.

EPA has included in its analysis significant direct and indirect land use change that occurs domestically and internationally due to biofuels production under the Renewable Fuel Standard program, in accordance with EISA. In agreement with the commenter, EPA believes that a complete analysis of the aggregate GHG emissions related to the full lifecycle of renewable fuels includes the significant indirect emissions from international land use change that are predicted to result from increased domestic use of agricultural feedstocks to produce renewable fuel.

EPA has used International Standards Organization (ISO) guidance on lifecycle analysis in developing its lifecycle analysis. We have drawn upon a suite of the most recent and

advanced and peer-reviewed models, studies, and data to develop a methodology for lifecycle analyses of renewable fuel greenhouse gas emissions. As mandated in EISA, lifecycle GHG emissions of biofuels was compared to the lifecycle GHG emissions of a 2005 gasoline or diesel baseline. For both the biofuels and petroleum GHG lifecycle analysis, EPA has developed clear and consistent system boundaries (both physical and temporal) which are explicitly laid out in the Final Rulemaking. Further, we assessed uncertainty in the final analysis. EPA provides a complete description of the lifecycle analysis methodology and provides the data used in the analysis in the Final Rule Preamble, Regulatory Impact Assessment, and the Docket.

The lifecycle analysis used for the final rulemaking is based on current domestic and international laws, regulations, and policies, as EPA cannot predict those policies which will be implemented in the future in the U.S., other countries, or internationally. Therefore, REDD payments are not incorporated into the current lifecycle analysis.

Foregone forest sequestration was included in EPA's analysis for the proposal and it is still included in EPA's analysis for this final rulemaking. Preamble Section V explains our evaluation of foregone sequestration and how it fits into our lifecycle GHG analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2513
Organization: Institute for Agriculture and Trade Policy
Comment:
The commenter [[2513]] does not presently support the inclusion of indirect land use change estimates in these calculations, as they do not believe the science behind their calculations is sufficiently accurate at this stage to be used for effective policymaking. They do not dispute the fact that undesirable land use change is a very serious issue and that biofuel development may certainly play a part in driving this change, but it is one they believe at this time, with our current state of knowledge, would be best dealt with through direct policies and shared actions to attack the overall systemic conditions that result in undesirable land use change and environmental degradation. [[Docket # 2513.1 p.1-2]]

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. We plan to continue to improve upon our analyses, and will update it in the future as appropriate. Through

these actions, EPA has met its obligations under EISA. The additional policies mentioned by commenter are beyond the scope of this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2514
Organization: Western Organization of Resource Councils
Comment:
Conversion [[2514]] of land to agro-fuels crops outside the borders of the U.S. is an issue that needs to be dealt with forcefully and directly. The obvious approach is by not permitting imports of ethanol and biodiesel. [[#2514.1 p.3]]

Our Response:

The application of the lifecycle analysis methodology is neutral to country of origin. The same requirements apply to both domestic and imported fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2517
Organization: National Association of State Foresters
Comment:
The commenter urges EPA to conduct its own Life Cycle Analysis, and to consider the one being conducted by the National Academy of Science per EISA, before promulgating final regulations based on science that is incomplete, uncertain and variable. The commenter believes the agency will then find that wood and forest biomass will meet the requirements for advanced biofuels or cellulosic biofuels criteria.

Our Response:

EPA has conducted its own LCA for this rulemaking. We have determined that fuels produced from forest waste biomass do meet the requirements for advanced biofuels and cellulosic biofuels criteria. We continue to evaluate the lifecycle GHG impacts of producing biofuels from from wood from commercially planted forests.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2519
Organization: Canada, Foreign Affairs and International Trade
Comment:
The commenter (2519) specifically questions the regulatory assessment that could include indirect land use change and they would like to reserve comment pending further development of the proposal. [[Docket number 2519.1, p. 1]]

Our Response:

As required by EISA and as technically appropriate, EPA has included indeirect land use change in its GHG assessment. EPA provided a public comment period and other opportunities which parties have utilized to provide comments and suggestions to EPA on its LCA. Since EPA expects to continue to refine and update its lifecycle assessment, this should provide an opportunity to further comment.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2528
Organization: U.S. Congress, House of Representatives
The commenter included a comment letter from the Missouri Corn Growers Association (2528, pp.2-3)
Comment:
The commenter (2528) does not believe indirect land uses in foreign countries ought to be a consideration when it comes to advancing the American biofuels industry. (2528), p.1)

Our Response:

EPA notes that implementation of EISA will undoubtedly benefit the domestic agricultural sector as a whole, with some components benefiting more than others depending in part on the lifecycle GHG emissions associated with the products to be made from individual feedstocks. However, if Congress had sought to promote all biofuel production without regard to GHG emissions related to the full lifecycle of those fuels, it would not have specified GHG reduction thresholds for each category of renewable fuel for which volume targets are specified in the Act.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2529
Organization: National Grain and Feed Association
Comment:
The commenter (docket #2529.1) states that EPA is using unproven models when making its proposed policy decisions, because the science on indirect land use is immature, and that models used by the agency are not sufficiently developed to provide validated outcomes.

The commenter states that EPA's models, after considering land use changes, reduce the estimated reduction of GHG emissions of corn ethanol from 61 percent to 16 percent, and reduce the estimated reduction of GHG emissions of soy biodiesel from 80 percent to 22 percent, with essentially all of the decrease resulting from alleged international land use change.

The commenter dislikes that EPA assumes a static U.S. land use scenario under which 34 million acres of land will remain in the Conservation Reserve Program (CRP), even if crop prices increase. They feel that it makes sense to assume some flexibility in U.S. land use patterns in the coming years, rather than to assume a completely static land use situation.
[[see docket #2529.1 p. 1]]

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

Based on coordination with USDA, EPA modeled assuming land in CRP will be supported by USDA and therefore would not be available for biofuel feedstock production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2532
Organization: BioEnergy Producers Association
Comment:
The commenter (2532) points out that they have previously written to urge that EPA, in any future regulations relating to Indirect Land Use Change, stipulate that there are no such impacts direct or indirect involved in the production of advanced biofuels from organic wastes. It is important for EPA to calculate the life-cycle benefits of biofuels production. [[Docket number 2532, p. 1]]

The commenter believes the regulations under consideration in association with EPA's ILUC rule making would be burdensome for third generation biofuels producers (i.e., those that will be using new conversion technologies to produce advanced biofuels, electricity and other products from municipal solid waste and other non-food derived and non-purpose grown organic waste materials). [[Docket number 2532, p. 2]]

Our Response:

EPA has analyzed biofuels from biogenic waste feedstock and assessed their potential indirect land use impacts, determining that such impacts are negligible or nonexistent.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2541
Organization: Citizen
Comment:
The commenter (1722) noted that the contentious issue is EPA's interpretation that the land use evaluation should be applied to foreign nations. Biofuel industry representatives argue that this was not the intent of Congress. The commenter noted that in adding projected foreign land use change to 2022, the reduction in GHG emissions for corn ethanol plants using natural gas as a fuel drops form 60% to 16% to 35%, depending on the type of operation. For soybean oil biodiesel plants, the reduction drops from 80% to 22%. (2541_Copyright, p.1)

Our Response:

EPA does not agree with the presumption that Congress is concerned only with domestic effects and domestic impacts only or that Congress intended to benefit domestic agriculture through EISA enactment, and that the statute's ambiguous terms should not be interpreted in a manner that could harm domestic agriculture in general. Although considering international emissions in its analyses could result in different implications under the statute for various fuels and fuel pathways as compared to ignoring these emissions, EPA believes that this is precisely the outcome that Congress intended. Implementation of EISA will undoubtedly benefit the domestic agricultural sector as a whole, with some components benefiting more than others depending in part on the lifecycle GHG emissions associated with the products to be made from individual feedstocks. If Congress had sought to promote all biofuel production without regard to GHG emissions related to the full lifecycle of those fuels, it would not have specified GHG reduction thresholds for each category of renewable fuel for which volume targets are specified in the Act.

Based on the analyses and approach described in Section V of the preamble, EPA is determining that ethanol produced from corn starch at a new (or expanded capacity from an existing) natural gas fired facility using advanced efficient technologies that we expect will be most typical of new production facilities will meet the 20% GHG emission reduction threshold compared to the 2005 baseline gasoline. We are also determining that biobutanol from corn starch meets the 20% threshold. Similarly, EPA is making the determination that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% GHG threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline. In addition, we have now modeled biodiesel and renewable diesel produced from algal oils as complying with the 50% threshold for biomass-based diesel. EPA is also determining that ethanol from sugarcane complies with the applicable 50% GHG reduction threshold for advanced biofuels. The modeled pathways (feedstock and production technology) for cellulosic ethanol and cellulosic diesel would also comply with the 60% GHG reduction threshold applicable to cellulosic biofuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:

The commenter (2549.1) believes that flawed and immature assumptions and methodology are being utilized to measure the indirect land use impacts of U.S. soy Renewable Diesel production. (2549.1, p.2)

The commenter believes that ILUC is not fully developed and many assumptions penalize the biofuel industry. The commenter requests careful review and development of ILUC be conducted and that indirect effects of all other fuels are also included in the calculations. (2549.1, p.7)

Our Response:

Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels.

EPA also recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule.

Lastly, EPA disagrees that accounting for international land use impacts constitutes a penalty. EPA is simply accounting for all GHG emissions related to the full fuel lifecycle as required by EISA in order to determine the threshold performance for these biofuels. Domestic renewable fuel producers may have no direct control over land use changes that occur overseas as a result of renewable fuel production and use here, but their choice of feedstock can and does influence oversees activities, and EPA believes it is appropriate to consider the GHG emissions from those activities in its analyses.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2613
Organization: Citizen (*sample comment letter representing 306 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2613) notes that, "The methodology used to measure the impacts of U.S. corn and ethanol production is the issue of International Land Use Change or Indirect Land Use is flawed and immature. There is no evidence to support EPA's claim that corn production in the U.S. has any impact on the production of crops in other countries such as Brazil." (2613 p. 1)

Our Response:

The Agency believes it has developed a scientifically sound, state-of-the-art, methodology. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. The Agency also has updated and refined its modeling approach since proposal in several important ways, including a number of updates made in direct response comments from the public and peer reviewers. EPA is confident that its modeling of GHG emissions is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change.

EPA has used a suite of global models to project a variety of agricultural impacts of the RFS program, including changes in the types of crops and number of acres planted world-wide. These shifts in the agricultural market are a direct consequence of the increased demand for biofuels in the U.S. This increased demand diverts biofuel feedstocks from other competing uses, and also increases the price of the feedstock, thus spurring additional international production. Our analysis uses country-specific information to determine the amount, location, and type of land use change that would occur to meet these changes in production patterns. The linkages of these changes to increased U.S. biofuel demand in our analysis are generally close, and are not extended or overly complex.

Overall, EPA is confident that it is appropriate to consider indirect emissions, including those from both domestic and international land use changes, as "related to" the full fuel lifecycle, based on the results of our modeling. These results form a reasonable technical basis for the linkage between the full fuel lifecycle of transportation fuels and indirect emissions, as well as for the determination that these emissions are significant. EPA believes that while uncertainty in the resulting aggregate GHG estimates should be taken into consideration, it would be inappropriate to exclude indirect emissions estimates from this analysis. The use of reasonable estimates of these kinds of indirect emissions allows EPA to conduct a reasoned evaluation of total GHG impacts, which is needed to promote the objectives of this provision, as compared to ignoring or not accounting for these indirect emissions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2614
Organization: Citizen (*sample comment letter representing 364 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2614) notes that, "EPA should consider domestic land use change only. Trying to reign in international land use changes is not EPA's jurisdiction and nearly impossible as many countries such as China, India and Brazil do not conform to Green House Gas compliance

anyway. Your indirect land use proposal will place the grain I produce at a competitive disadvantage in our global market place." (2614 p.1)

Our Response:

EPA does not agree that including international indirect emissions in EPA's lifecycle analysis exercises regulatory authority over activities that occur solely outside the U.S., nor does it raise questions of extra-territorial jurisdiction. EPA's regulatory action involves an assessment of products either produced in the U.S. or imported into the U.S. EPA is simply assessing whether the use of these products in the U.S. satisfies requirements under EISA for the use of designated volumes of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel. Considering international emissions in determining the lifecycle GHG emissions of the domestically-produced or imported fuel does not change the fact that the actual regulation of the product involves its use solely inside the U.S.

If Congress had sought to promote all biofuel production without regard to GHG emissions related to the full lifecycle of those fuels, it would not have specified GHG reduction thresholds for each category of renewable fuel for which volume targets are specified in the Act.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2615
Organization: Citizen (*sample comment letter representing 9 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2615) notes that the consideration of international land use change should be eliminated. Calculations should focus on domestic land use change only. (2615 p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2617
Organization: Citizen (*sample comment letter representing 72 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter notes that, "EPA's proposal assumes that U.S. biofuel production will lead to reduced exports. But there's simply no evidence to support that claim – nor other EPA assumptions about how agricultural land use will change with increased biofuel production." (2617 p. 1)

Our Response:

EPA's analysis is focused only on the difference between two biofuel scenarios, holding all other changes constant. Thus when considering the impact on exports, our analysis sought to determine only the impact of the higher volume of renewable fuels as mandated by EISA compared to a business as usual case. To conduct this analysis we use economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The comments and peer review supported our need to use these economic models.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2618
Organization: Citizen (*sample comment letter representing 40 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2618) notes that, "Forcing hypothetical 'models' on U.S. farmers and renewable fuel producers which the rest of the world does not abide by is unfair and puts our country at a huge disadvantage. Indirect land use is an unproven concept and should not be a consideration in the RFS2." (2618 p. 1)

Our Response:

As described in the proposal, to estimate lifecycle indirect impacts of biofuel production requires the use of economic modeling to determine the market impacts of using agricultural commodity feedstocks for biofuels. The use of economic models and the uncertainty of those models to accurately predict future agricultural sector scenarios was one of the main comments we received on our analysis. While the comments and specifically the peer review supported our need to use economic models to incorporate and measure indirect impacts of biofuel production, they also highlighted the uncertainty with that modeling approach, especially in projecting out to the future.

However, it is important to note that while there are many factors that impact the uncertainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops and other variables in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of using the economic models for our analysis.

Furthermore, one of the key uncertainties associated with our agricultural sector economic modeling that has the biggest impact on land use change results is the assumptions around crop yields. As discussed in preamble Section V.A.2, we are conducting sensitivity analysis around different yield assumptions in our analysis.

Therefore, because of the fact that we are only using the economic models to determine the difference between two projected scenarios and the fact that we are conducting sensitivity analysis around the yield assumptions we feel it is appropriate and acceptable to use economic models in our analysis of determining GHG thresholds in our final rule analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2619
Organization: Citizen (*sample comment letter representing 162 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2619) is concerned that, "The calculation of greenhouse gas emissions includes indirect land use changes for biofuels that as currently drafted in the RFS2 disqualifies Biomass-based Diesel derived from vegetable oil, including domestically produced soybean. Vegetable oils account for more than sixty percent of the feedstock that is available to meet the RFS2 Biomass based Diesel targets, and the use requirements established cannot be met if these feedstocks are disqualified from the program. Given the complexity of calculating the indirect land use component of the greenhouse gas emissions for biofuels at this time we ask that the EPA refrain from including any calculation of the indirect land use change components in determining the life-cycle greenhouse gas emissions for biofuels at this time." (2619 p. 1)

Our Response:

Based on the analyses and approach described in Section V of the preamble, EPA is determining that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% GHG threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline. In addition, we have now modeled biodiesel and renewable diesel produced from algal oils as complying with the 50% threshold for biomass-based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2623
Organization: Citizen
Notes:
Docket number 2623 includes a letter of affirmation from Sierra Club (2623), a petition letter signed by 13,432 citizens (2623.2) and 1,614 personalized comments based on the petition letter (2623.1). Due to some overlap in the two attachments this equates to a total of 14,855 individual comments. Information for all 3 sources is summarized under this docket number.
Comment:
The commenter (2623) notes that, "Accounting for indirect land use changes as Congress called for in creating this RFS - is critical to making sure we truly reduce greenhouse gas emissions by 2050 as we use more renewable fuels." (2623.2 p. 1)

Our Response:

EPA agrees with the importance of accounting for indirect land use change as required by Congress.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2624
Organization: Citizen (*sample comment letter representing 1,084 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter encourages EPA to, "withdraw the international land use penalties that are assigned to Biofuel." (2624 p. 1)

Our Response:

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. The Agency has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2625) notes that, "Existing feedstock sources are already available to meet this production level (and even additional production as noted below). As such, no land use changes, and therefore no significant emissions from those changes, can be associated with existing production." (2625 p. 1)

Our Response:
EPA believes its analysis has clearly established that the increase in biofuel production as mandated by EISA results in both direct and indirect land use changes.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
Further, the commenter (2625) notes outputs from lifecycle analysis models are only as good as their inputs. Unfortunately, much of the data and assumptions contained within the nine models used by EPA are inaccurate. Examples include:

o Energy balance data used by EPA is out of date.
o Co-product allocations for glycerine were not incorporated.
o Global market drivers for feedstocks, like soybeans are not included.
(2625 p. 2)

Our Response:

To the maximum extent possible, we have continued to review and update the data and assumptions underlying our modeling tools. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports including the University of Idaho Study. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis. In addition, we have revised our analysis to assume that glycerin will displace residual oil as an energy source for this final rulemaking. We disagree, however, that global market drivers for feedstocks are not included in our models. For example, our partial equilibrium agricultural sector models FASOM and FAPRI both take into account that approximately 80% of the soybean is meal, whereas approximately 20% of the soybean is oil. Profit maximization that takes into account both streams of ree is included in the projected planting decisions of farmers. In addition, both agricultural sector models take into account changes in macroeconomic conditions over time, such as increases in income and population that also affect world markets for feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
Further, the commenter (2625) notes that, "EPA's approach establishes an artificially low production baseline, and does not accurately account for increasing crop yields and production efficiencies. The agency utilized a 2007 Energy Information Agency analysis that underestimates U.S. biodiesel production. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. These use requirements will increase the baseline volume of biodiesel that will be used regardless of the RFS2 program. The EPA also penalizes the biodiesel industry by not considering new technology regarding fats and oils production. Sources such as camelina, winter canola, and algae are not taken into account. In addition, higher yielding oilseed technology has not been fully incorporated. Thus, EPA overestimated potential indirect land use change associated with vegetable oil based biodiesel." (2625 p.2)

Our Response:

We do consider in our analysis the increasing crop yields and production efficiencies over time. In addition, we have also analyzed as part of this rulemaking a high yield case as a sensitivity analysis. This does not change the fact that any change in biofuel volumes for whatever reason compared o a case without them would still have impacts. Even if biodiesel

volumes would have reached the mandated volumes in 2022 there is still an impact with producing these volumes compared to a case without them. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

For this rulemaking analysis we are only considering the policy for which this analysis was done, namely EISA. Where there are other polices on the books that would impact our analysis, they have been accounted for but we do not project future polices that are not in place.

For the final rule analysis we have incorporated the LCA results for an algae oil pathway but not for other oilseed pathways. However, we do not extend our results from soybean modeling to other oilseed pathways. Those would be analyzed separately through future rulemaking analysis if necessary.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
Further, the commenter (2625) notes that, "The GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed, rather than the 30 years some have suggested. Historical data indicates that land converted to agricultural production tends to continue in that purpose for at least a century. Dramatic innovation is not occurring in the engine manufacturing industry in a way that suggests that heavy duty liquid transportation fuels will no longer be needed in as little as 30 years, or any remotely similar timeframe. Additionally, 100 years is a modest scope of time when you consider that the greenhouse gases that are being released by the burning of fossil fuels took the Earth millions of years to capture and sequester." (2625 p.2-3)

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to

value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
Finally, the commenter (2625) notes that, "In Section VI.C.D of the preamble, it is stated that the impact of any land-use change tends to be magnified with soybean biodiesel. The statement is justified by asserting that soybeans have a low gallon-per-acre yield compared to corn ethanol. This statement is simply false. For this to be true, soybean oil used for biodiesel must require additional soybeans to be grown somewhere else in the world to replace the oil used for biodiesel. Everywhere in the world, soybeans are grown primarily for the demand created by the protein meal, which comprises 80 percent of the bean. By-products do not drive supply responses and soybean oil for biodiesel does not drive planting decisions for farmers. If it did, then farmers would plant crops, other than soybeans, that produce more oil per acre. This economic reality invalidates EPA's link between use of soybean oil for biodiesel and magnified land use change impact. We strongly urge EPA to correct this statement in its final rule." (2625 p.3)

Our Response:

As stated in other responses, we believe the quoted statement is being misinterpreted. This statement was a qualitative explanation for why land use changes projected by the agricultural sector models in the NPRM analysis may have been larger than the corn ethanol land use changes on a per BTU basis. We were not implying that soybeans were being planted exclusively for soybean oil. The agricultural sector models take into account the fact that soybeans are approximately 80% meal and 20% oil. Furthermore, the agricultural sector models assume that farmers choose to plant soybeans based on the expected net returns associated with

the sum of both the oil and the meal ree streams. We believe this optimization approach accurately represents the soybean production markets.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
Lipid sources such as camelinia, winter canola, algae and other sustainable oilseed crops are not factored in

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) states that a review of the EPA reference case, which was used to calculate the increased levels of biofuels needed to meet RFS2, reveals the fact that the agency has penalized the biodiesel industry when calculating potential global land use change by establishing an artificially low production baseline. EPA utilizes a 2007 Energy Information Administration (EIA) analysis that underestimates U.S. biodiesel production, which reached levels of 690 million gallons in 2008. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. These use requirements will increase the baseline volume of biodiesel that will be used regardless of the RFS2 program. Underestimating biodiesel volumes results in an overestimate of indirect land use changes, penalizing the biodiesel industry. In looking at an incremental change, EPA's approach also does not accurately reflect increasing crop yields, which have allowed the agricultural industry to keep up with demand. The EPA analysis also penalizes the biodiesel industry by not fully considering new fats and oils technology that can increase the contribution biodiesel will make to the Biomass-based Diesel category in RFS2. The proposed rule only considers soybean oil, vegetable oil from ethanol plants, and rendered fats and waste greases in its analysis. Lipid sources such as camelina, winter canola, and algae are not factored into the feedstock supply. In addition, higher yielding oilseed technology has not been fully incorporated. Implementation of a workable RFS2 Program will continue to support investment in new technology. Regardless, whether or not additional vegetable oil supplies are factored into the EPA reference case or the EPA control case, the result should be the same. The amount of vegetable oil produced domestically is greater than assumed in the proposed rule. Thus, the commenter believes that EPA's approach has severely overestimated potential indirect land use change associated with vegetable oil based biodiesel. [[Docket number 2435.1, p. 4]]

Our Response:

As was done for the proposal, to quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios in our economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. Rather than focus on the

impacts associated with a specific gallon of fuel and tracking inputs and outputs across different lifecycle stages, we determined the overall aggregate impacts across sectors of the economy in response to a given volume change in the amount of biofuel produced.

The two future scenarios considered included a "business as usual" volume of a particular renewable fuel based on what would likely be in the fuel pool in 2022 without EISA, as predicted by the Energy Information Agency's Annual Energy Outlook (AEO) for 2007 (which took into account the economic and policy factors in existence in 2007 before EISA). The second scenario assumed a higher volume of renewable fuels as mandated by EISA for 2022. In this rulemaking analysis we only account for other policies that are currently in effect, we do not model any future potential regulations. However, we do consider in this analysis increasing crop yields and production efficiencies over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that EPA should adjust its estimates of the baseline level for biodiesel without the RFS. The commenter thinks that the levels are too low leading to an overestimate of potential land use impacts. The EPA reference case, which was used to calculate the increased levels of biofuels needed to meet RFS2, underestimates biodiesel production without the RFS. In addition, the amount of vegetable oil produced domestically is greater than assumed in the Proposed Rule. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. The commenter believes that these use requirements will increase the baseline volume of biodiesel that will be used regardless of the RFS2 program. Thus, these factors in the baseline have resulted in an overestimate of the potential indirect land use change associated with vegetable oil based biodiesel. The commenter refers to the Kruse RFS2 Report [[see docket number 2232.1, Attachment 10]] for additional information related to EPA's undercount of biodiesel production without RFS2. [[See docket number 2249.2, pp. 99-101 for detailed discussion of this issue.]]

Our Response:

We disagree with the comment that our baseline level is too low and that as a result we are overestimating the potential land use impacts. As was done for the proposal, to quantify the lifecycle GHG emissions associated with the increase in renewable fuel mandated by EISA, we compared the differences in total GHG emissions between two future volume scenarios in our economic models. For each individual biofuel, we analyzed the incremental GHG emission impacts of increasing the volume of that fuel to the total mix of biofuels needed to meet the EISA requirements. Rather than focus on the impacts associated with a specific gallon of fuel and tracking inputs and outputs across different lifecycle stages, we determined the overall aggregate impacts across sectors of the economy in response to a given volume change in the amount of biofuel produced.

The two future scenarios considered included a "business as usual" volume of a particular renewable fuel based on what would likely be in the fuel pool in 2022 without EISA, as predicted by the Energy Information Agency's Annual Energy Outlook (AEO) for 2007 (which took into account the economic and policy factors in existence in 2007 before EISA). The second scenario assumed a higher volume of renewable fuels as mandated by EISA for 2022. In this rulemaking analysis we only account for other policies that are currently in effect, we do not model any future potential regulations.

While we recognize that the AEO 2007 renewable fuel volumes may be lower than currently projected U.S. biodiesel production and fleet requirements, we believe the AEO 2007 projections represent a reasonable baseline against which to measure the impact of an increase in renewable fuel volumes as a result of the RFS2 because it was the last official EIA projection that did not take into account the new volumes required by EISA.

For this rulemaking analysis we are only considering the policy for which this analysis was done, namely EISA. Where other existing requirements would impact our analysis, they have been accounted for but we do not project future requirements that are not in place.

For the final rule analysis we have incorporated the LCA results for an algae oil pathway but not for other oilseed pathways. However, we do not extend our results from soybean modeling to other oilseed pathways. Those would be analyzed separately through future rulemaking analysis if necessary.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should update its reference case to better reflect expected ethanol production. The 12.4 bgy estimate for the 2022 base case is inappropriate, and EPA should reassess its baseline. Using the Informa forecast, there would be no international land use changes associated with the RFS2, because the reference case would be higher than the control case. (2329.1, p.61)

Our Response:

We disagree with this comment, even if ethanol volumes would have reached the mandated volumes in 2022 there is still an impact with producing these volumes compared to a case without them. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

We believe that our primary reference case projections are appropriate because they are consistent with those forecasts previously used by our agency as well as by our federal agencies. We use the Energy Information Administration (EIA)'s Annual Energy Outlook (AEO 2007) for estimating renewable fuel volumes because it does not already take into account the enactment of EISA. Wherever possible we have also assessed many of the impacts of the program relative to the RFS1 mandated renewable fuel volumes to give another perspective. By using these reference cases, our assessments provide important information on the wider public policy considerations related to renewable fuel production and use, climate change, and national energy security.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2626
Organization: Citizen (*sample comment letter representing 2,048 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2626) urges, "EPA to keep the timeframe for crediting reduced emissions from biofuels to 30 years or less. A longer timeframe would only complicate this process and delay the swift action we need now to avoid catastrophic impacts from climate change. A timeframe of 100 years or more would allow biofuels that are bad for the climate to squeak through the reduction requirements." (2626 p.1)

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2634
Organization: Citizen (*sample comment letter representing 155 comment letters received from mass comment campaign sponsored by Prairie Pride Inc.*)
Comment:
The commenter (2634) notes that, "Existing biodiesel facilities meeting the RFS2 requirements with existing feedstock sources should not be unfairly penalized for assumptions related to international land use changes. We request the EPA use its regulatory authority to exempt existing biodiesel facilities from land use changes. The U.S. biodiesel industry has been steadily growing over the past several years with 690 million gallons in production in 2008. Existing feedstock sources are already available to meet this production level. As such, no land use changes, and therefore no significant emissions from those changes, should be associated with existing production. We recommend changing the Lifecycle Greenhouse Gas Methodology for Biodiesel and consider the following elements of EPA's lifecycle analysis: EPA's assumptions regarding international land use changes associated with U.S. biodiesel production do not reflect historical results and should be revised. EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. Brazilian soybean acreage has decreased 1.5 million hectares from 2004 through 2008, a time in which U.S. biodiesel production increased from 25 million to 690 million gallons." (2634 p 1-2)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2634
Organization: Citizen (*sample comment letter representing 155 comment letters received from mass comment campaign sponsored by Prairie Pride Inc.*)

Comment:
Further, the commenter (2634) notes that, "The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. EPA should incorporate the IPCC's nitrogen findings and remove the attribution of excess nitrogen emissions from soybean cultivation. This change will reduce GHG score for soy biodiesel by more than 20 percent." (2634 p. 2)

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

We received a number of comments on our proposal results indicating that the N_2O emissions were overestimated from soybean and other legume production (e.g., nitrogen fixing hay) in our analysis. The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2634
Organization: Citizen (*sample comment letter representing 155 comment letters received from mass comment campaign sponsored by Prairie Pride Inc.*)
Comment:
Further, the commenter (2634) notes that, "Co-product allocations for glycerin need to be incorporated in GHG calculations." (2634 p.2)

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0933
Organization: Citizen
Comment:
The commenter (0933) believes that use of ethanol is a good way to lessen imports of petroleum products while keeping dollars in the USA and reduce the cost of farm program expenses. The commenter strongly opposes the land use change calculations presented by Mr. Searchinger. (P. 1)

Our Response:

The lifecycle methodology developed by EPA, and explained in detail in this final rule, is based on the best available scientific techniques. It does not rely on one study in the literature, but instead relies on the body of scientific literature on this topic as well as an independent scientific peer review of EPA's methodology. The peer review, the public comments we have received, and the analysis conducted for the proposal and final rule indicate that it is important to take into account indirect emissions. Through this evaluation, EPA also has determined that biofuels production leads to both negative and positive indirect land use changes. We also recognize the uncertainties inherent in this estimation and therefore have taken an approach that quantifies the uncertainty and presents the weight of currently available evidence in making our threshold determination.

7.2.5.3 Feedstock Transport

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)

Comment:
The commenter (2624) notes that, "After concluding biodiesel from virgin vegetable oils does not qualify for the program, the agency attempts to restore it, in part, by creating a pathway for compliance purposes whereby virgin vegetable oils can be combined with waste oils in a 52-48 percent ratio. This is unworkable from a practical perspective. Instead, EPA should recognize that U.S. feedstock supplies naturally produce a feedstock mix that, even when using EPA's low GHG values, meets the thresholds for Advanced Biofuels. Moreover, to the extent necessary, EPA should use its authority and adjust the 50 percent reduction requirement downward to 40 percent to ensure U.S. biodiesel can meet the biomass-based diesel requirements, as intended by Congress." (2625 p.3)

Our Response:

For the final rule we are not allowing averaging of soy-based biodesel and biodiesel produced from waste products since this is not necessary for threshold compliance of soy-based biodiesel

7.2.5.4 Processing

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that the EPA methodology inaccurately assesses the glycerin co-product of biodiesel production from vegetable oil. While the approach used by the EPA with the FASOM and FAPRI models should deal with the agricultural co-products as part of the new equilibrium, the models are not capable of automatically compensating for non-agricultural co-products, and these would have to be dealt with outside the models. (2360.1, p.3)

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter also believes that the EPA methodology inaccurately assesses the energy balance of biodiesel production. The input data used by EPA for the amount of energy used to create a gallon of biodiesel is overstated. EPA used a factor of 3.2 units of energy produced per unit of energy used. The updated factor should be 5.2 units of energy produced per unit of energy used. Updating this data point would decrease the biodiesel emissions factor by 1.5%. (2360.1, p.3)

Our Response:

We have updated our analysis to include the latest information available on process energy requirements.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
The commenter (2486) believes that co-product allocation should be based on displacement methodology. Displacement methodology provides the greatest incentive to improve environmental performance per dollar invested. This will catalyze the uptake of new process technologies to produce new products from waste streams including renewable chemicals and other higher value materials. [[Docket number 2486.1, p. 1]] [[See docket number 2486.1, pp. 1-2 for further discussion of this issue.]]

Our Response:

EPA agrees that displacement methodology should be used to assign credits to co-products. In EPA's analysis, this methodology is used to assign the proper credits to particular renewable fuels based on their related co-products, such as distillers grains and soybean meal. Additional information on co-product credits and how they are attributed to renewable fuels can be found in the RIA.

7.2.6 Petroleum Baseline

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium

Comment:
EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude.

Document No.: EPA-HQ-OAR-2005-0161-1989
Organization: Iowa Farm Bureau Federation
Comment:
Two of the more apparent omissions in the study are GHG emissions as a result of required military presence in foreign countries to assure an undisturbed supply chain and changes in the proportion of fuel produced from more intensive GHG pathways such as fuel extracted from tar sands. Some studies have estimated conservatively that military emissions resulting from security requirements could easily double the amount of total life-cycle GHG emissions related to petroleum (Liska, 2009).

In addition, as fuel continues to be more demanded, the argument can be made (Liska, et al) that gasoline pathways other than crude petroleum will become a larger part of the fuel mix. In order to accurately compare potential GHG savings from ethanol use, the baseline needs to include the future mix of all pathways given pre-2005 trends. Including both of these factors in the analysis will provide a much more accurate estimate of the GHG emissions from the fuel that ethanol will be replacing.

Document No.: EPA-HQ-OAR-2005-0161-2152.1
Organization: Minnesota Coalition for Ethanol
Comment:
The commenter (2152) believes the 2005 gasoline baseline included in EISA should reflect the sources of crude oil that would have been used in the absence of the RFS – the carbon impact of the fossil fuel sources that ethanol and other biofuels will replace in the future. Biofuels are not replacing the "easy" sources of liquid fuels, such as light, sweet crude from West Texas. Biofuels are displacing the energy-intensive, environmentally-destructive sources such as fuel derived from tar sands, oil shale, and deep water drilling. It is equally critical to estimate the amount of carbon emissions that will be offset by the expanded use of ethanol and reduced reliance on traditional fossil fuels. (2152.1 Pg. 1).

Our Response:

The reason the system boundaries used for threshold gasoline assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for

comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that the 2005 baseline does not adequately address the increasing use of marginal sources of petroleum. The commenter believes that EPA cannot wholly ignore the fact that ethanol is reducing and delaying the need to resort to more and more high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. (2329.1, p.55) [[See Docket Number 2329.1, pp.55-57 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter (0981) states that as unconventional petroleum sources (tar sands, coal-to-liquids, and oil shale) become more dominant in the future, the GHG-intensity of gasoline will increase, and the life cycle emissions estimates need to account for these changes. The commenter also provides estimates of the average additional GHG emission attributable to gasoline to account for military security in the Middle East. The commenter recommends that the gasoline baseline be updated either annually or biannually to accurately represent changes in the petroleum supply. If indirect effects are included for other fuels, then the marginal indirect GHG emissions associated with military security for oil need to be included in the life cycle emission of petroleum. (Pp. 9-12)

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, et al.
Comment:
The commenters noted that EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands. EPA's analysis also compares estimated future direct and indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle, that comparative analysis contains the same comparative criteria.

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) recommends that EPA annually update the petroleum baseline to more accurately capture the carbon intensities of future sources of oil and gasoline. (2101.1, p.16)

Document No.: EPA-HQ-OAR-2005-0161-1669
Organization: Environmental Intelligence, Inc.
Comment:
The commenter (1669.1) noted that EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to only direct emissions for petroleum. (1669.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle, that comparative analysis contains the same comparative criteria. (2079.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2136
Organization: Iowa Renewable Fuels Association (IRFS)
Comment:
The commenter (2136) notes that there is consensus that as we move from 2010 to 2022, the carbon footprint of the average gasoline or diesel fuel will be much higher than in 2005. The marginal barrel of oil will come from nontraditional sources, such as the Canadian tar sands, Venezuelan heavy crude, or super-deep drilling ocean rigs. The carbon footprint of these fossil

fuels is significantly higher than light, sweet crude oil from Saudi Arabia. The DOE's senior analyst Zia Haq agrees that the marginal barrel of oil will come from these nontraditional sources. As biofuels use increases, it will replace fuels from these nontraditional sources, not Saudi Arabian oil. Ignoring the indirect emissions due to land use changes results in a GHG analysis that bears little relationship to the real-world emission impact of fossil fuels. The commenter urges the Agency to recognize the most likely fossil fuels that increased biofuels usage will displace and credit biofuels with the avoided emissions compared to the 2005 baseline fossil fuels. [[Docket number 2136.1, p. 8]]

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
The commenter (2140.1) believes that EISA created an inappropriate framework for estimating greenhouse gas emission from various fuels, comparing total future direct and indirect lifecycle emissions from renewable fuels to a 2005 petroleum baseline that only includes direct emissions impacts. Although calculating indirect emissions from petroleum is certainly complicated, the commenter believes that it is important that any assessment of the environmental benefits of renewable fuels be made using adequate and comparable assessments of conventional fuels. It is also critical to acknowledge that the 2005 petroleum baseline does not likely reflect the petroleum fuel mix of the future. (2140.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2148
Organization: Hornbeck Agricultural
Comment:
The commenter (2148) noted that it is not clear that the indirect emissions of petroleum diesel (the baseline against which biodiesel is being measured) are adequately factored into that baseline. The commenter believes that it must be recognized that EPA's use of an inaccurate baseline would distort and diminish the credit EPA gives to soy biodiesel for its ability to reduce greenhouse gas emissions. Biodiesel has been shown to reduce certain greenhouse gas emissions by 78%, but EPA proposes to credit soy biodiesel with a substantially lower GHG reduction. (2148, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2190
Organization: Illinois River Energy, LLC.
Comment:
The commenter [[2190]] states that in contrast to the complicated model based treatment of biofuels, fossil fuel alternatives are treated overly simplistically and their very real indirect effects are not even seriously considered. There is very real evidence that the carbon intensity of fossil fuels is increasing and that biofuels are compared against an unreal, lower carbon intensity benchmark. [[#2190 p.1]]

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] states that a baseline of 2005 fossil fuel is not appropriate as a long-term baseline, in part because current fossil fuels are explicitly assumed to have the same value

and it does not reflect changes in production. We disagree with the assessment presented in the DRIA (pg. 285) that the annual baseline emissions for gasoline and diesel do not change substantially over time; while that may have been acceptable in the past, current extraction practices as illustrated by tar sands and oil shale, along with the growing processing of heavier, more sour crude, require a more up-to-date evaluation of the fossil fuel baseline. [[#2302 p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2316
Organization: University of Minnesota
Comment:
The commenter [[2316]] states: my fifth comment concerns the GHG impacts of petroleum-based fuels. Even though it is not strictly written into EISA, I encourage you to include indirect GHG emissions from gasoline and diesel in your baseline calculations, while also considering that the marginal increase in crude production should include advanced extraction technology and discovery of new fields. Indirect GHG emissions for petroleum may include land-use change and emissions due to international security. If the latter is considered it would also be appropriate first to allocate emissions in foreign conflicts over all applicable causes for international involvement beyond stabilization of foreign petroleum supplies, and second to consider allocated emissions due to homeland security when calculating emissions for domestic biofuel production. [[2316.1 p.2]]

Document No.: EPA-HQ-OAR-2005-0161-2350
Organization: BioEnergy Producers Association
Comment:
The commenter (2350) believes that common sense tells us that biofuels are not the only energy source that has indirect land use impacts. If EPA finds it difficult to identify an indirect land use change resulting from petroleum, the commenter suggests a look at the bayous of Louisiana that have been fouled by pollution from oil refining, the devastation being created in Canada by tar sands oil recovery, or the Exxon Valdez disaster. The commenter questions how EPA can conclude that no indirect land use impact results from the use of petroleum. The commenter also contends that if the EPA believes it is so easy to project the impact of a corn grower in Iowa on the many economic and social motivations of those who are removing forests in Brazil, it should be equally as easy to project the worldwide indirect land use change resulting from the worldwide recovery and transport of petroleum. [[Docket number 2350, pp. 2-3]]

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:
The commenter [[2357]] states that EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. In addition, EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to only direct emissions for petroleum. [[2357.1 p.5]]

Document No.: EPA-HQ-OAR-2005-0161-2367
Organization: New Fuels Alliance (NFA)
Comment:

The commenter (2367) is concerned about EPA's assessment of petroleum and states that recent work suggests that there are significant omissions from the petroleum fuel carbon score. The commenter contends that oil has a direct land use effect and believes that EPA must assess petroleum-based fuels for indirect effects and points out that crude oil is a finite resource. The commenter also questions why EPA decided not to include military emissions as part of the petroleum carbon score. [[Docket number 2367.1, pp. 18-27]] [[See docket number 2367.1, pp. 18-27 for a detailed discussion of these issues.]]

The commenter also believes that EPA should assess the RFS2 policy for indirect effects, as opposed to individual fuel gallons; to put it another way, a gallon of biofuel would be compared to a gallon of petroleum based on their cumulative direct supply chain emissions, including upstream emissions such as direct biofuel land use and oil extraction. [[See docket number 2367.1, pp. 29-30 for further discussion of this issue.]]

In conclusion, the commenter adds that EPA has the responsibility, and challenge, of determining the GHG impacts of compliance fuels, as they relate to a petroleum baseline, for the RFS2 program. The only way the agency can objectively accomplish that legislative mandate is to measure the GHG profile of a particular gallon of biofuel with the GHG profile of a particular gallon of petroleum using the same metric in both scenarios. To do otherwise would be in direct conflict with the intent of EISA07 to assess the "relative global warming potential" of renewable and petroleum-based fuels and would leave the regulation vulnerable to criticism and potential legal challenge. If EPA is unable to precisely determine the range of direct and indirect emissions of both a gallon of biofuel and a gallon of petroleum, it must then identify a way in which the legislative intent of EISA07 can be followed so that significant GHG reductions are realized in the nation's fuel stream. To achieve that requirement, the commenter strongly encourages EPA to implement a marginal displacement approach to carbon accounting. This would address the major problem of asymmetrical carbon accounting encompassed in EPA's proposed regulation. [[Docket number 2367.1, p. 31]]

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. In addition, EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle, that comparative analysis contains the same comparative criteria. GHG analyses should be "apples-to-apples" comparisons. It was surely the intent of Congress to compare alternative fuels on an equal basis with the fossil-fuels they replace. Such comparison is a basic requirement of lifecycle analysis as applied by competent science and is a specific requirement of the International Standards Organization (ISO) 14040 standard for lifecycle analysis. [[Docket number 2435.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2478
Organization: ZeaChem Inc.

Comment:
The commenter (2478) believes that the 2005 petroleum baseline is not an accurate or proper baseline for which to calculate emissions going forward. Domestically produced ethanol is reducing and delaying the need for gasoline from marginal, high carbon sources of crude oil such as tar sands and extra heavy crude. These marginal sources of petroleum resources have significant indirect impacts that are not included in current calculations or comparisons. [[Docket number 2478.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2487
Organization: Abengoa Bioenergy Corporation
Comment:
The commenter (2487) believes that since biofuels reduce the need for additional gallons of petroleum, the lifecycle impact of biofuels should be compared to the lifecycle impact of the incremental additional gallons of petroleum that would be used if biofuels were not available. [[Docket number 2487, p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) noted that EPA's analysis compares estimated, future direct and indirect GHG emissions for renewable diesel to only direct emissions for petroleum. (2549.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2612
Organization: Citizen (*sample comment letter representing 478 comment letters received from mass comment campaign sponsored by American Soybean Association*)
Comment:
The commenter (2612) identified 8 "vital flaws and concerns with the RFS2 proposed rule," including: "8) Petroleum Baseline – EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to only direct emissions for petroleum." (2612 p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2617
Organization: Citizen (*sample comment letter representing 72 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2617) notes that, "EPA's analysis... ignores the direct land use impacts of future oil exploration and production, and doesn't include any indirect emissions analysis for petroleum – a finite resource, creating an unfair comparison that disadvantages renewable fuel." (2617 p. 1)

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from mass comment campaign sponsored by an anonymous organization*)
Comment:
The commenter (2625) notes that, "EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands. In addition, the agency's analysis compares estimated future direct and

indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle, that comparative analysis contains the same comparative criteria." (2625 p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2634
Organization: Citizen (*sample comment letter representing 155 comment letters received from mass comment campaign sponsored by Prairie Pride Inc.*)
Comment:
The commenter (2634) notes that, "The EPA's analysis compares estimated future direct and indirect GHG emissions for biodiesel to only direct emissions for petroleum. This dramatically reduces biodiesel's GHG benefits compared to petroleum and should be revised so the comparative analysis contains the same comparative criteria. EPA's approach should account for increasing soybean yields and improving farm efficiencies. Soybean hybrids and farming techniques have continuously improved over the past fifty years and this trend is expected to continue." (2634 p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2002
Organization: Novozymes North America, Inc. (Novozymes)
Comment:
The commenter (2002) is concerned about marginal biofuels production in 2022 vs. average petroleum production in 2005. The commenter points out that whereas the EPA has done extensive work on identifying the indirect effects of biofuels (most notably indirect land use change) and has also expanded the system boundaries to take into account the use of biofuels byproducts such as distiller's grains, the agency has done little to account for the actual consequences of displacing fossil fuels. The commenter recommends that EPA performs an analysis to determine the type and status of marginal fossil fuels from now until 2022. Conceptually, this analysis will be no different from considering the market-mediated indirect effects of biofuels. On the contrary, identifying marginal fossil fuels is in complete alignment with the ILUC calculations. Furthermore, the commenter recommends that the EPA recalculates the "payback times" of biofuels (see e.g., DRIA page 286) to reflect the fossil fuel emissions actually avoided by use of biofuels. It is clear that the current approach overestimates the "payback times" due to the false comparison of marginal biofuels production in 2022 with average fossil fuel production in 2005. [[Docket number 2002.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-0897
Organization: Citizen
Comment:
One commenter (0897) appreciates EPA support for the creation and extension of the renewable ethanol standards. This commenter states that EPA's calculation on the land use CO^2 should favor ethanol production. The commenter believes that oil creates a large CO_2 footprint through processes that EPA did not take into account, such as the fuel used by the U.S. military to safeguard the transport of foreign fuel from the Middle East to the U.S. (P. 1)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes

would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

As stated in the proposal and restated in the preamble to the final rule, EPA has not included in its assessment of GHG impacts of petroleum the potential impacts due to military operations to protect sources of petroleum. While these potential military impacts have been estimated by some researchers, there is clearly no consensus on how much if any of the GHG emissions from military operations should be attributed to an assessment of petroleum's GHG lifecycle impact. Do the the widely speculative nature of such an assessment, EPA chose to leave it out of our GHG assessment. This omission has been clearly noted in the pramble to this final rule.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

We also do not believe that emissions arising from military activities can be readily attributed to the protection of oil imports. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than merely protecting oil supplies. In the peer review of the energy security analysis that EPA commissioned, a majority of peer reviewers believed that U.S. military costs should be excluded absent a widely agreed methodology for estimating this component of U.S. energy security. Since military impacts were not considered for the energy security analysis in this final rule, they were also excluded from any lifecycle GHG analyses

Furthermore, increased domestic consumption of renewable fuels is expected to decrease oil demand and thus reduce oil imports. However, an incremental reduction in oil imports is not expected to cause an analogous reduction in U.S. military expenditures and activities. Hence, even if we were able to attribute GHG emissions to the protection of oil imports, it is unlikely that there would be a decrease in military-related GHG emissions as a result of this rule. More detail on this topic can be found in the Energy Security Analysis in Chapter 5 of the RIA.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2514
Organization: Western Organization of Resource Councils (WORC)
Comment:
The commenter [[2514]] states that in regards to using the standard GREET model:

1. With Canadian tar sands pipelines crossing WORC members in several states, WORC is acutely aware of the high carbon costs and net energy losses involved with tar sands. There is a significant carbon footprint and land use impact from stripping the boreal northern forests of Canada to surface mine crude bitumen. In addition, enormous quantities of energy are necessary to refine, heat, and pump the product in massive pipelines to southern U.S. refineries and markets. The pipelines stretching across thousands of miles of farm and ranch lands should be considered as well.
2. Similarly, WORC members also reside in Northwest Colorado where oil shale developments would require huge amounts of energy, despoil enormous tracts of land, and consume vast quantities of water in an arid environment. The energy requirements for removing and processing the oil shale will be enormous as well.
3. WORC members also live and work over coal seams that could be strip mined and refined into liquid fuels, again at enormous costs in land, water and net energy inputs. Much discussion of coal liquefaction presumes a viable technique for carbon capture and sequestration, an emerging and untested technology; but one which assuredly will require significant energy to bring into effect, and which has implications for land use and impacts off-site, including pipelines and drilling, jeopardizing precious groundwater sources.
4. More conventional oil and gas developments are also incurring significant wide scale land use impacts across the Western U.S., including the salinization of the Tongue and Powder River basins from coal bed methane developments and the impacts of increasing use of hydraulic fracturing to extract natural gas on surface and groundwater across Wyoming, North Dakota, Colorado, New Mexico, and Montana. [[#2514.1 p.2]]

Our Response:

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use

change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

We did not consider land use emissions associated with road or other infrastructure construction for petroleum extraction, transport, refining, or upgrading, as the land use change associated with roads constructed for crop and livestock production was also not included. Furthermore, land use associated with natural gas extracted for use in oil sands extraction or upgrading was not considered, as the land use change from natural gas extracted for renewable fuels production was also not considered.

The petroleum production component of the system boundaries was specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel. In 2005, there were a negligible amount of liquid fuels synthesized from oil shale or coal liquefaction.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)
Comment:
With respect to petroleum fuels, the commenter (2491) states that EPA has used default values of GREET, but does not describe which allocation method (value-based approach or system expansion approach—also called displacement method) was used in deriving the default values. The commenter believes that it would be helpful to specify the allocation method used to avoid the misunderstanding and possibility of manipulation by fuel providers. [[Docket number 2491.1, pp. 1-2]]

Our Response:

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

NETL employed a tiered allocation approach to partition the GHG emissions associated with refinery products. The allocation procedure was based on the ISO 14044 (Section 4.3.4.2 Allocation procedure, (b) Step 2) standard for allocating emissions from co-product operations

by first sub-dividing to the smallest unit process and then proportioning the emissions profile based on the dependent physical properties of the sub-unit (volumetric throughput of the sub-unit) when allocation cannot be avoided. The allocation procedure applied by NETL is outlined in Section 4.0 of their report, "Development of Baseline Data and Analysis of Life Cycle Greenhouse Gas Emissions of Petroleum-Based Fuels," available in the RFS2 docket at EPA-HQ-OAR-2005-0161.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
With regards to allocation of refining emissions to different petroleum co-products, the commenter (2048.1) requests that U.S. EPA apply an economic allocation approach. They reference the allocation methods discussed by the ISO or ASTM Committee in Sweden that was responsible for making decisions about life-cycle GHG emissions for petroleum in the EU cap-and-trade system. (2048.1, p.4) (See Docket Number 2048.1, pp.4-5 for a detailed discussion of this issue)

Our Response:

EPA disagrees with the commenter. The economic approach for allocation is more relevant to the EU Emissions Trading System, due to the importance of allocating emissions to specific industrial sectors. However, this is not relevant for our LCA for biofuels. ISO gives specific guidance on hierarchy of allocation methods for LCA, starting with: 1) avoid allocation – what we do for biofuels; 2) partition based on the underlying physical relationships-what we do for refining; and 3) economic value-which is not used in our analysis.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

NETL employed a tiered allocation approach to partition the GHG emissions associated with refinery products. The allocation procedure was based on the ISO 14044 (Section 4.3.4.2 Allocation procedure, (b) Step 2) standard for allocating emissions from co-product operations by first sub-dividing to the smallest unit process and then proportioning the emissions profile based on the dependent physical properties of the sub-unit (volumetric throughput of the sub-unit) when allocation cannot be avoided. The allocation procedure applied by NETL is outlined in Section 4.0 of their report, "Development of Baseline Data and Analysis of Life Cycle

Greenhouse Gas Emissions of Petroleum-Based Fuels," available in the RFS2 docket at EPA-HQ-OAR-2005-0161.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The (2233) commenter supports the exclusion of indirect, including land use and military presence, impacts of petroleum in the petroleum LCA. The commenter believes these types of indirect effects are insignificant and speculative. [[Docket number 2233.2, pp. 51-52]]

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) noted that during the public hearings, several parties suggested that EPA should change the methodology for determining the greenhouse gas emission reductions of biofuels by changing the gasoline and diesel baselines. The commenter agrees with EPA's interpretation of this provision, and EPA's conclusion that Congress did not authorize EPA to go beyond the definition in EISA. (2505.2, p.15)

Our Response:

EPA agrees with these comments. Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) notes several concerns with respect to EPA's development of well-to-tank average GHG emissions factors for gasoline and diesel. Specifically, based on their assessment of EPA's approach to modeling GHG emissions from oil refining as presented in Section 2.4.4 of the DRIA, the commenter believes that the lifecycle GHG emissions for gasoline and diesel fuel may be overstated. The commenter notes inappropriate data and information used in the baseline. [[Docket number 2393.1, p. 51]] [[See docket number 2393.1, pp. 51-55 for a detailed discussion of the petroleum baseline including gasoline baseline, diesel fuel baseline, and indirect impacts of petroleum. The commenter also refers to docket number 2393.4, Attachment 3; however, this is a copyrighted document not available on FDMS.]]

Our Response:

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) states that a lifecycle analysis must not include disproportionate treatment of crop-based biofuels. Comparing direct (only) emissions for petroleum to direct and indirect GHG emissions for biodiesel dramatically reduces biodiesel's GHG benefits compared to petroleum and is an obvious violation of a basic scientific principle. Therefore, EPA must consider direct land use changes associated with petroleum exploration and production and must also consider indirect emission of baseline gasoline and adequately explain why it deems them not to be "significant." [[Docket number 2249.2, pp. 89-91]]

The commenter also believes that the baseline for petroleum should be based on updated information. Baseline emissions are based on outdated information. Although the commenter generally supports use of the GREET model, as an excellent lifecycle assessment tool, the inputs in GREET need updating. Further, more recent data indicates that energy used for crude oil production has increased substantially from the information used by GREET. GREET also appears to underestimate the emissions attributable to oil sands and crude oil transportation. In addition, EPA uses the 1995 IPCC global warming potentials (GWPs) for methane and nitrous oxides. These numbers have been updated twice since these values were produced, resulting in a greater weighting on methane and a lower weighting on nitrous oxide. The most updated GWP's should be used. [[Docket number 2249.2, p. 107]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and

opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

EPA uses the Global Warming Potential (GWP) values from IPCC's Second Assessment Report. These GWP values have been agreed upon in the international framework for addressing climate change and are used in EPA's Endangerment Finding for greenhouse gases and for the official U.S. GHG Inventory.

7.2.7 Energy Sector Indirect Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) noted that if EPA insists upon applying indirect effects, they encourage EPA to apply indirect effects for all fuels. This includes undertaking a complete lifecycle assessment of the indirect emissions associated with petroleum. The commenter noted that direct effects are time-tested, peer-reviewed, reliable and verifiable scientific determinations about the lifecycle carbon footprint of fuels or sources of energy that enjoy broad scientific consensus. So-called "indirect effects," particularly ILUCs attributable to biofuels, are new, untested, unreliable, and controversial computer-generated predictions that are being selectively applied to corn ethanol only at this time. According to scientists, there are no peer-reviewed or published scientific models that accurately calculate the potential indirect carbon intensity of forms of biofuels today, including the models relied upon by EPA in the RFS2 rule. (2101.1, p.2)

The commenter noted that while EPA determined that land use impacts of petroleum production would not have an appreciable impact on the 2005 baseline GHG emissions, the commenter

finds it remarkable and bizarre that EPA fails to see that future sources of petroleum certainly will have appreciable indirect effects due to the massive expenditures in energy made annually by the U.S. military to protect oil supplies and transportation routes around the world, as well as land use effects (i.e., Alberta Tar Sands Oil). To ignore these petroleum-related indirect emissions means that EPA's comparison of emissions from biofuels versus petroleum is at best intellectually dishonest, and at worst a deliberate attempt to obfuscate the truth. (2101.1, p.3)

If EPA is intent on pursuing ILUC and indirect effects, the commenter would like EPA to fairly assess indirect effects on a level playing field. Indirect activities, such as military operations to protect oil supplies and shipping lanes with ships, aircraft, tanks, jeeps, and trucks powered by oil are not accounted for by EPA in their analysis on the carbon intensity of petroleum. (2101.1, p.10)

The commenter also recommends that EPA revisit its lifecycle analysis comparisons and compare future barrels of ethanol to future barrels of oil in determining the carbon intensity of fuels. That approach is much more relevant to the real-world scenarios and would do a much more effective job of identifying what fuels will indeed be more low carbon. (2101.1, p.11)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this

final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

We also do not believe that emissions arising from military activities can be readily attributed to the protection of oil imports. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than merely protecting oil supplies. In the peer review of the energy security analysis that EPA commissioned, a majority of peer reviewers believed that U.S. military costs should be excluded absent a widely agreed methodology for estimating this component of U.S. energy security. Since military impacts were not considered for the energy security analysis in this final rule, they were also excluded from any lifecycle GHG analyses

Furthermore, increased domestic consumption of renewable fuels is expected to decrease oil demand and thus reduce oil imports. However, an incremental reduction in oil imports is not expected to cause an analogous reduction in U.S. military expenditures and activities. Hence, even if we were able to attribute GHG emissions to the protection of oil imports, it is unlikely that there would be a decrease in military-related GHG emissions as a result of this rule. More detail on this topic can be found in the Energy Security Analysis in Chapter 5 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2140
Organization: John Deere Agriculture & Turf Division
Comment:
The commenter (2140.1) supports utilization of biofuels in the United States as a method of increasing energy stability and independence, reducing greenhouse gas emissions, and generating rural economic opportunities. The commenter believes there is currently no scientific consensus regarding indirect land use impacts of biofuels.

The commenter also believes the American Clean Energy and Security Act of 2009 (H.R. 2454) recently passed by the House of Representatives reflects Congressional concern that indirect emissions impacts not be considered at this time. (2140.1, p.1)

Our Response:

EPA believes there is a great deal of scientific consensus on the need to account for indirect emissions in assessing the lifecycle impacts of biofuels. EPA's goal in developing this methodology was to use a scientifically sound approach and to appropriately characterize uncertainty. In an independent peer review or EPA's methodology the reviewers in general supported the importance of assessing indirect land use change and determined that EPA used the best available tools and approaches for this work. This peer review, along with the extensive public comments the Agency received, supported the value of quantifying the magnitude of this uncertainty and its relative impact on the resulting lifecycle emission estimates as is done in this final rule.

EPA's obligation is to implement EISA as enacted by Congress. We cannot comment on the motivations of proposed legislation.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
While the commenter (2146.1) supports EPA's efforts to continually reduce GHG emissions from transportation fuels, the commenter is concerned about the approach being considered for evaluations of indirect effects of biofuels. Not only is it unjustified to apply indirect effects solely to biofuels and not other fuels, but the critical issue of land use change and deforestation should be examined more holistically, taking into explicit account all the complex factors contributing to these changes globally. The commenter urges EPA to delay inclusion of potential indirect effects in the LCA of biofuels until further, specific studies can be undertaken by respected, scientifically-skilled institutions. (2146.1, pp.6-7) [[See Docket Number 2146.1, pp.6-7 for a detailed discussion of this issue]]

Our Response:

EPA's analysis does take into account the different factors contributing to land use change. However, it is important to note that while many factors impact the certainty in predicting total land used for crop production, making accurate predictions of many of these factors are not relevant to our analysis. For example different assumptions about economic growth rates, weather, and exchange rates will all impact future agricultural projections including amount of land use for crops. However, we are interested only in the difference between two biofuel scenarios holding all other changes constant. So the absolute values and projections for crops, etc. in the model projections are not as important as the difference the model is projecting due to an increase in biofuels production. This limits the uncertainty of predicting total land used change from biofuel production.

Furthermore, EPA believes that there is enough information available to include indirect impacts in this final rulemaking. EPA has used the best available models and substantially modified key inputs to those models to reflect comments by peer reviewers, the public, and emerging science. EPA has also modeled additional scenarios from those described in the NPRM. EPA recognizes that uncertainty exists with respect to the results, and has attempted to quantify the range of uncertainty. While EPA agrees that application of the models it has used in the context of assessing GHG emissions represents changes from previous biofuel lifecycle modeling, EPA disagrees that it has used faulty data, modeled unrealistic scenarios, or that its approach is otherwise scientifically indefensible. Although the results of modeling GHG emissions associated with international land use change are uncertain, EPA has attempted to quantify that uncertainty and is now in a better position to consider the uncertainty inherent in its approach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0897
Organization: Citizen
Comment:
One commenter (0897) appreciates EPA support for the creation and extension of the renewable ethanol standards. This commenter states that EPA's calculation on the land use CO_2 should favor ethanol production. The commenter believes that oil creates a large CO_2 footprint through processes that EPA did not take into account, such as the fuel used by the U.S. military to safeguard the transport of foreign fuel from the Middle East to the U.S. (P. 1)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-

products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

We also do not believe that emissions arising from military activities can be readily attributed to the protection of oil imports. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than merely protecting oil supplies. In the peer review of the energy security analysis that EPA commissioned, a majority of peer reviewers believed that U.S. military costs should be excluded absent a widely agreed methodology for estimating this component of U.S. energy security. Since military impacts were not considered for the energy security analysis in this final rule, they were also excluded from any lifecycle GHG analyses

Furthermore, increased domestic consumption of renewable fuels is expected to decrease oil demand and thus reduce oil imports. However, an incremental reduction in oil imports is not expected to cause an analogous reduction in U.S. military expenditures and activities. Hence, even if we were able to attribute GHG emissions to the protection of oil imports, it is unlikely that there would be a decrease in military-related GHG emissions as a result of this rule. More detail on this topic can be found in the Energy Security Analysis in Chapter 5 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

7.3 Fuel Specific GHG Emissions Estimates

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2133
Organization: The Brazilian Vegetable Oil Industry Association (ABIOVE) and the Brazilian Biodiesel Union (UBRABIO)
Comment:
The commenter (2133) requests the total exclusion of emissions attributed to the indirect effects of land use to Brazilian biodiesel, and that data on Brazilian soy presented in the report prepared by the University of Sao Paulo be used. This report concludes:
1. The application of a consequential approach to Life Cycle Assessment created confusion in the interpretation of the GHG emissions. It would be helpful if the results for domestic and international GHG balances were also presented, setting as boundaries the soybean production itself, aside from the impact that increased production might have on other crops and the resulting emissions.
2. International agricultural emission should be disaggregated into country-specific data for the main soybean producing countries.
3. Data for Brazil should include currently available sources with a proper representation of low N fertilizer application due to see inoculation, clean energy matrix, low fuel use in no-till farming and use of renewable fuel in agricultural machinery.
4. No-till farming and crop-integration can potentially increase soil carbon stocks, thus removing CO2 from the atmosphere. Soil carbon sequestration under conservationist management practices should be included in the GHG balance of bio-based products, including soybean-derived biodiesel [[Docket number 2133.1, p. 21]] [[See docket number 2133.1, pp. 14-21 for the University of Sao Paulo report.]]

Our Response:

1. Based on the definition of lifecycle GHG emissions specified in EISA, we determined that consequential lifecycle analysis was appropriate for this rulemaking. As discussed in RIA Chapter 2, there are many studies in the published literature that estimate attributional lifecycle GHG emissions from soy-based biodiesel production. However, to avoid confusion, we focused

solely on presenting consequential lifecycle analysis results which are directly relevant for this rulemaking.

To calculate GHG emissions impacts from crop production, we used data on agricultural inputs and energy use by crop and region. We specifically had this data peer reviewed by a panel of experts. The expert peer reviewers recommended several sources of data to augment our analysis. We used these recommendations to improve our estimates of crop-specific and country-specific GHG impacts from crop production. This data is discussed and presented in RIA Chapter 2.

2. Given the nature of EPA'sl lifecycle analysis, which considers all significant direct and indirect emissions sources, presenting the results for only one country, or a handful of countries, can be misleading because all of the impacts must be considered together. As discussed above, all of the country-specific data inputs, assumptions and results are discussed in the RIA and included in the public docket.

3. To estimate soil carbon emissions resulting from agricultural land conversions, we assumed medium inputs and full-tillage for new cropland. Following Table 5.5 in the IPCC AFOLU, in Brazil we used the soil land use (F_{LU}) parameter of 0.48 for long-term cultivated crops in a tropical temperature regime and moist/wet moisture regime. However, we also considered the +/- 46% error estimate in Table 5.5 to quantify the uncertainty in our calculations. The IPCC default soil management factor (F_{MG}) for no-till farming in tropical/moist regions is 1.22. This means that in Brazil, the assumption that all new cropland uses no-till farming methods would reduce our soil C change estimates for land converted to cropland by 22%. Thus, by considering the +/- 46% uncertainty factor for the F_{LU} parameter, our 95% confidence range encompasses the case where all new cropland uses no-till farming methods. Projecting future soil management practices internationally is an area for more work, and we intend to study this more as part of ongoing lifecycle analysis updates.

4. Soil carbon stocks from different cropping practices internationally are included as part of the range of uncertainty around our land use change results. Soil carbon changes from different cropping practices domestically are included explicitly in our modeling for all the different biofuel pathways considered.

7.3.1 Greenhouse Gas Emissions Reductions Relative to the 2005 Petroleum Baseline

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2012
Organization: Caribbean Basin Ethanol Producers Group
Comment:
The commenter (2012.1) requests that their organization be allowed to voluntarily transition from the use of fossil fuels to power their plant to an alternative energy such as bagasse to reduce our emissions of CO2. (2012.1, p.3)

Our Response:

EPA has modeled sugarcane ethanol production assuming the use of bagasse for providing process energy. We have not model facilities using other energy sources for sugarcane ethanol production. A fuel producer using production technology that utilizes other energy sources will need to petition the Agency and supply the necessary information to allow calculation of the lifecycle emissions impact of the fuel it is producing.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2071
Organization: Targeted Growth, Inc.
Comment:
The commenter states they have developed three new versions of potential feedstocks that should have much lower LCA GHG emissions, and would be inappropriately categorized by the current legislation; camelina, sugar corn, and algae. The commenter makes three suggestions:

A. That the Final Rule make a distinction between feedstocks that are currently in large cultivation (corn, soybeans, canola, sugar, and timber) and pre-commercial dedicated energy crops.
B. That pre-commercial dedicated crops not be subject to a formal LCA until they reach a threshold of 1 million acres of domestic cultivation; this will allow new crops to gain a commercial foothold and develop data at an appropriate scale that will allow for a more accurate analysis of that crops LCA GHG emissions from production.
C. That for new crops which reach the 1 million acre milestone, the EPA have an expedited process for conducting an LCA GHG emission analysis that is timely; such pathways should be established within a timely 90 days after the year in which the 1 million acre milestone has been met.

Our Response:

The final rule clearly makes a distinction between fuel produced from current crops and technology and that produced from emerging alternative feedstocks and technologies. EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2093
Organization: Targeted Growth, Inc.
Comment:
The commenter [[2093]] proposes that that EPA issue a final rule that supports the development of next generation feedstocks and brings transparency to the regulatory process. The final rule

should make a distinction between feedstocks that are already in large scale cultivation - corn, sugar, soybeans - and pre-commercial dedicated energy crops. Pre-commercial energy crops should not be subject to a lifecycle analysis. They should be considered in compliance with the rule's lifecycle greenhouse gas emission reduction requirements for biodiesel and cellulosic biofuels until they reach a threshold of 1 million acres of domestic cultivation. [[see docket #2093, p.2]]

Our Response:

The final rule clearly makes a distinction between fuel produced from current crops and technology and that produced from emerging alternative feedstocks and technologies. EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2111
Organization: Arcadia Biosciences, Inc.
Comment:
The commenter [[2011]] states that though it may be appropriate not to forecast improvements in the lifecycle GHG emissions over time based on yield and technological improvements, it would be inappropriate to assume that yield and technological improvements could not bring the lifecycle GHG emissions of corn ethanol or soy biodiesel down enough to qualify for the Advanced Biofuel or Biomass-Based Diesel definition.

Our concern is that the given RFS2 structure does not provide proper incentive for adoption of GHG reducing technologies in feedstock and biofuel production. Without incentives from the EPA through the Renewable Fuels Standard program, these technologies may not be adopted unless they provide an economic benefit to the farmer or producer. [[see #2011.1 p.3-4]]

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments.

EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that the percent reduction in GHG emissions is also arbitrary. If severe reductions do not allow the industry to rise to meet those standards, the law will fail far more completely than if the RFS standards are broadly inclusive to industry participation but the reductions are incremental. The conventional biofuel standards (starch-based ethanol) should include a 10 percent reduction in GHG emissions, while the advance renewable (biomass/cellulosic) fuels should include a 20 percent reduction. (2112.1, p.2)

The commenter believes that the reduction targets should be treated as a safety valve rather than a prescriptive absolute. The current fixed percent reductions should serve only as a policy mechanism to keep technologies from commercialization that utilizes more fossil fuels in the generation of biofuels than they create. Lowering the percent reduction goals will also relieve the responsibility on EPA for guessing about long term effects. (2112.1, p.2)

Our Response:

EPA notes that the four specific GHG thresholds as well as the requirements for EPA's greenhouse gas assessments are provided in the EISA statute.

Based on the analyses and approach described in the preamble, EPA is determining that ethanol produced from corn starch at a new (or expanded capacity from an existing) natural gas fired facility using advanced efficient technologies that we expect will be most typical of new production facilities will meet the 20% GHG emission reduction threshold compared to the 2005 baseline gasoline. We are also determining that biobutanol from corn starch meets the 20% threshold. Similarly, EPA is making the determination that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% GHG threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline. In addition, we have now modeled biodiesel and renewable diesel produced from algal oils as complying with the 50% threshold for biomass-based diesel. EPA is also determining that ethanol from sugarcane complies with the applicable 50% GHG reduction threshold for advanced biofuels. The modeled pathways (feedstock and production technology) for cellulosic ethanol and cellulosic diesel would also comply with the 60% GHG reduction threshold applicable to cellulosic biofuels.

Under EISA, EPA is allowed to adjust the GHG reduction thresholds downward by up to 10% if necessary based on lifecycle GHG assessment of biofuels likely to be available. Based on the results summarized above, we are not finalizing any adjustments to the lifecycle GHG thresholds for the four renewable fuel standard categories.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124

Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) noted that during the public hearings on the proposed RFS2 rule, several parties suggested that EPA should change the methodology for determining the greenhouse gas emission reductions of biofuels by changing the gasoline and diesel baselines. The commenter agrees with EPA's stated view that EISA clearly specifies the baseline. The commenter agrees with EPA's interpretation of this statutory provision, and EPA's conclusion that Congress did not authorize EPA to go beyond this definition. (2124.1, p.28)

Our Response:

EPA agrees with this comment. Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) noted that in order for the comparisons with biofuels to be accurate over the time period covered by the RFS2, the biofuel LCA results should be compared to the incremental fossil fuels to be replaced over that same time horizon. The commenter encourages EPA to compare reductions in greenhouse gas emissions attributable to renewable biofuels displacement of gasoline and diesel through 2022, in addition to the 2005 baseline defined. (2146.1, p.6)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an

analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2153
Organization: Syngenta Biotechnology, Inc.
Comment:
The commenter [[2153]] notes that technologies now on the cusp of commercialization and others under development will affect these variables and EPA's analyses. The final rule should

provide enough flexibility for EPA to review and revise these estimates and make program adjustments to reflect the quickly developing capabilities of evolving technology. Technology currently in development stands to increase yield and enhance nitrogen or water use efficiency, or by greater implementation of management practices such as conservation tillage, to better sequester carbon. Through the use of existing and future technology corn producers will continue to significantly increase yield and reduce the carbon footprint of agricultural production. The technologies in Syngenta's pipeline also include new seed treatments that protect emerging plants, biotech traits to control a wide spectrum of pests, drought tolerance and nitrogen utilization traits, and new chemistries capable of reducing plant stress. Thus, Syngenta believes that the yield projections through 2022 employed by EPA in RFS2 are overly conservative. [[#2153.1 p.2-3]]

Our Response:

The specific mandates for advanced biofuel and the phase in of these mandates over time are specified in the legislation. EPA does not have authority to accelerate the phase in of these mandates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Comment:
The commenter (2157) notes several issues which require EPA to update its modeling as it substantially underestimates the reduction of GHG emissions from biodiesel: (1) The baseline EPA assumes for biodiesel is too low, biodiesel production will be greater then mandate so there is no indirect land use impacts from biodiesel production, (2) EPA needs to update N_2O emissions from soybean production, include a glycerin co-product credit, and update the energy balance for biodiesel production, (3) Emissions calculated for the domestic agriculture sector may be overstated, the energy use for soybean production is too high, and transport energy may be double counted, (4) the baseline for petroleum should be based on updated information, and (5) EPA should give biofuels credit for the avoidance of increased use of marginal sourced of crude oil. [Each point is discussed in detail on (2157 p. 104).]

Our Responses:

(1): On the baseline issue, we disagree with this comment, even if biodiesel volumes would have reached the mandated volumes in 2022 there is still an impact with producing these volumes compared to a case without them. The threshold analysis mandated by EISA requires EPA to determine the impacts of the different biofuels production which requires us to consider two scenarios with differing volumes of biofuels. So regardless of what volume might or might not actually be produced, our threshold analysis would still be based on two different volume scenarios and production of any amount of biofuels would still have an impact. Furthermore, since our analysis normalizes the greenhouse gas emissions impacts on a per BTU basis, the effect of using different volumes in our calculations is minimized.

(2): For the final rule analysis EPA has updated the N_2O emission estimates for soybean production to be consistent with the latest IPCC guidance. We have also updated our analysis to include a co-product credit from glycerin production. Finally we have updated our energy balance estimates based on the latest published reports from USDA on biodiesel energy use.

(3): We disagree that the energy use for soybean production has been overestimated. Energy data (e.g., diesel fuel, gasoline, electricity, natural gas) included within the crop budgets in FASOM are based on USDA Agricultural Resource Management Survey (ARMS) data (http:www.ers.usda.gov/Data/ARMS/) and crop budgets developed by university extension offices. The differences with other sources of data are because the crop budgets included in the FASOM model include data on input use that varies by crop, management practices, and region. There is often considerable variation in the inputs used per acre, which implies that total input use and associated GHG emissions and other environmental impacts will be affected by changes in crop mix and management practices that result under the different scenarios considered. Furthermore, the energy use for transportation is not double counted in the modeling. The energy use for crop production is separate from the energy used to transport feedstocks.

(4) & (5): The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this

final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2190
Organization: Illinois River Energy, LLC.
Comment:

The commenter [[2190]] states that the model assumptions regarding agricultural productivity growth and biofuel processing efficiency improvements are simply unjustifiably pessimistic. [[#2190 p.2]]

Our Response:

There are many factors that go into the economic modeling but the yield assumptions for different crops has one of the biggest impacts on land use and land use change. Therefore, for our final rule analysis we ran a base yield case and a high yield case.

EPA's base yield projections are derived from extrapolating through 2022 long-term historical U.S. corn yields from 1985 to 2009. This estimate, 183 bushels/acre for corn and 48 bushels/acre for soybeans, is consistent with USDA's method of projecting future crop yields. During the public comment process we learned that numerous technical advancements--including better farm practices, seed hybridization and genetic modification--have led to more rapid gains in yields since 1995. In addition, commenters, including many leading seed companies, provided data supporting more rapid improvements in future yields. For example, commenters pointed to recent advancements in seed development (including genetic modification) and the general accumulation of knowledge of how to develop and bring to market seed varieties—factors that would allow for a greater rate of development of seed varieties requiring fewer inputs such as fertilizer and pest management applications. Therefore, in coordination with USDA experts, EPA has developed for this final rule a high yield case scenario of 230 bushels/acre for corn and 60 bushels/acre for soybeans. These figures represent the 99% upper bound confidence limit of variability in historical U.S. yields. This high yield case represents a feasible high yield scenario for the purpose of a sensitivity test of the impact on the results of higher yields.

Feedback we received indicated that corn and soybean yields respond in tandem and that a high yield corn case would also imply a higher yield for soybeans as well. The high yield case is therefore based on higher yield corn and soybeans in the U.S. as well as in the major corn and soybean producing countries around the world.

While we modeled a high yield scenario for this analysis we continue to rely primarily on the base yield estimates in our assessments of different biofuel lifecycle GHG emissions. The reasons outlined above could lead to higher rates of yield growth in the future, however, there are mitigating factors that could limit this yield growth or potentially cause reductions in yield growth rates. For example, the water requirements for both increased corn farming and ethanol production could lead to future water constraints that may in some regions limit yield growth potential. Furthermore, one of the long term impacts of potential global climate change could be a reduction in agricultural output of different impacted regions around the world, including the U.S. This could also serve to reduce yield growth. As with many aspects of this lifecycle modeling, as the science and data evolves on crop yields, the Agency will update its factors accordingly.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et.al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA needs to establish the appropriate boundaries for GHG determinations. EPA has repeatedly indicated that their hands are tied by the legislative language indicating that renewable fuel production in 2022 must achieve a 20% reduction in lifecycle GHG emissions compared to the average for gasoline or diesel sold and distributed as transportation fuel in 2005. EPA is being inconsistent in its response to this legislative request. EPA should either exercise its discretion in resetting the baseline year for greenhouse gas emissions for the relative comparison of all fuels to 2022 or include the emission savings from marginal sources of petroleum as an indirect credit to the biofuel. (2245.1, p.30)

Document No.: EPA-HQ-OAR-2005-0161-2339
Organization: Illinois Com Growers Association
Comment:
The commenter [[2339]] states EPA's proposal not only fails to calculate the full lifecycle GHG emissions of the displaced gasoline and diesel fuel in the baseline year, it also fails to credit renewable fuels with the reduction in the gasoline and diesel fuel lifecycle GHG emissions that will be achieved over time as those fuels are replaced. EPA admits that it has not included indirect land use impacts in its analysis of the petroleum lifecycle GHGs either domestic or international. [[#2339 p.6]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel

sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2504

Organization: American Frozen Food Institute
Comment:
The commenter [[2504]] states that EPA should restructure the RFS to accelerate the development of advanced biofuels. Modifying the food-to-fuel mandates and restructuring the RFS2 to give priority to advanced biofuels would limit the diversion of food to fuel. And that implementing the RFS2 proposal would pose economic harm by significantly increasing the cost of food. [[see #2504.1 p.1]]

Our Response:

The specific mandates for advanced biofuel and the phase in of these mandates over time are specified in the legislation. EPA does not have authority to accelerate the phase in of these mandates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2625
Organization: Citizen (*sample comment letter representing 400 comment letters received from an anonymous organization*)
Comment:
The commenter (2625) notes that, "All lifecycle analyses, including EPA's without international land use changes, show well over 50 percent reductions in emissions. There is ample support, therefore, for EPA to essentially grandfather existing facilities by deeming these facilities to be in compliance with the 50 percent reduction requirement." (2625 p. 1)

Our Response:

"Grandfathering" of facilities is as provided for in EISA; this limits grandfathering of fuel for compliance with the basic renewable fuel standard of 20% reduction compared to petroleum fuel; it does not apply to fuels meeting the 50% reduction target for advanced biofuels. Additionally, EPA has determined it is appropriate to assess the full lifecycle impacts of biofuels including international land use impacts as directed by EISA.

7.3.1.1 Corn Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA's substantial focus on corn ethanol in the Proposed Rule and DRIA appears to ignore the fact that the lifecycle emissions definition in the statute applies to both renewable fuels and the baseline petroleum. (2329.1, p.52)

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:

The commenter also noted that a traditional lifecycle analysis shows substantial reductions in GHG emissions from corn ethanol compared to petroleum. The commenter agrees with EPA's exclusion of biogenic carbon based on corn uptake from tailpipe emissions associated with ethanol combustion. (2329.1, pp.64-65)

Our Response:

We do not use GREET factors for corn tethanol, either growing or processing, we use FASOM and FAPRI inputs for scorn growing, including a high yield scenario, we use projections to 2022 for technology and efficiency improvements for corn ethanol process energy use.

Furthermore we do not calculate direct emissions specifically since our modeling includes indirect impacts of agriculture including livestock and crop shifting.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter noted that neither the FAPRI nor FASOM models included projections of the frequency of use of the following farm practices, which have been shown to reduce energy consumption on the farm, and in some cases, very significantly reduce N_2O emissions from agriculture:
-No till farming (reduces soil carbon and nitrogen loss, and reduces agriculture energy use)
-Conservation till farming (also reduces soil carbon and nitrogen loss, and reduces agriculture energy use)
-Winter cover and double cropping (reduces N_2O emissions and increases soil carbon).
The commenter believes that EPA should project agriculture emissions to 2022, estimating frequencies of the above practices on newly converted land. (2329.1, p.66)

Our Response:

Our domestic ag sector modeling does include different farming practices including no-till and conservation tillage. We project out to 2022 the use of these different tillage practices based on the economics involved.

Winter cover and double cropping are captured in our international Brazil module projecting out to 2022. As part of ongoing analysis we will look at feedstocks produced from winter and double cropping in terms of feedstocks for biofuels production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter believes that EPA should allow sources to submit their own facility-specific analysis to establish whether it can meet the GHG reduction requirements of RFS2. (2329.1, p.96)

Our Response:

EPA has established biofuel threshold decisions that apply nationally, to all facilities producing the same fuel, using the same feedstock and the same production technologies. EPA has also provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter feels that while ethanol facilities have continued to improve efficiencies, EPA did not reflect this in the proposed pathways.

Our Response:

EPA's analyses take into account expect improvements in facility performance over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter also believes that EPA's proposed treatment of processing distiller grains does not adequately reflect practices. Facilities should be able to adjust EPA's proposed percentages in its lifecycle analysis based on the amount of distiller grains it distributes as wet versus dry. Even thought the commenter disputes EPA's estimated percentages in Table VI.C.1-2, this adjustment may allow additional production processes to qualify that are otherwise under the 20 percent reduction requirement. The commenter believes that EPA should analyze and provide additional pathways, as few facilities dry their distiller grains or sell wet distiller grains 100 percent of the time. (2329.1, p. 98)

Our Response:

EPA has established biofuel threshold decisions that apply nationally, to all facilities producing the same fuel, using the same feedstock and the same production technologies. EPA has also provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

EPA also recognizes that the amount of drying of distiller grains will have an impact on the overall lifecycle results for corn ethanol. For the final rule EPA has provided a number of pathways for corn ethanol that qualify for the 20% GHG lifecycle threshold depending on the type of technology, process fuel, and percentage of distiller grain drying used.

Document No.: EPA-HQ-OAR-2005-0161-1989
Organization: Iowa Farm Bureau Federation
Comment:
By implementing the rule as proposed, EPA sets a dangerous precedent for states to follow without the same consideration for existing ethanol production. The result very well could be a series of state regulations for low-carbon fuels which refuse to acknowledge EPA-2 Renewable Identification Numbers (RINs), or 38-character numeric codes assigned to grandfathered producers or importers of renewable fuel as a basic currency for the RFS program's credits and trading. The resulting damage to the well-established ethanol industry compliance system would be based heavily on unsure and questionable analysis of ILU changes.

Our Response:

EPA has established these final rules in accordance with the mandates of EISA. As described in the final rule and referenced elsewhere in this summary and analysis of comment, EPA believes it has properly assed land use impacts including significant indirect land use changes which will results form ncreased demand of biofuel feedstock. Individual state actions regarding the acceptability of biofuels under state-specific programs are outside the scope of this rule. However, we note that for the final rule, EPA has determined several corn ethanol pathways that we believe represent anticipated technology that will meet the 20% threshold for renewable fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0981
Organization: Nebraska Center for Energy Sciences Research, Department of Agronomy and Horticulture, University of Nebraska-Lincoln
Comment:
The commenter (0981) states that empirical data concerning biorefinery operations for the LCA of corn-ethanol scarce. Because of industry growth and the lack of information concerning the performance of these biorefineries, the commenter recommends that EPA perform a survey of biorefinery efficiency across the U.S. ethanol industry for dry and wet mills, and use these actual

data as the basis for establishing the baseline for GHG emissions from current corn-ethanol systems. (pp. 7-8)

Our Response:

EPA has used the most up to date information on current biorefinery performance based in part on recent survey data. Through the proposal process, EPA described its energy assumptions for biorefineries and reflected in its final analysis updated information.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2002
Organization: Novozymes North America, Inc. (Novozymes)
Comment:
The commenter (2002) recommends that EPA modify the foregone carbon sequestration for the final rule to reflect the fact that old forests sequester less carbon than relatively young forests. [[Docket number 2002.1, p. 5]]

Our Response:

In the proposed rule, to estimate international annual forgone forest sequestration, we used IPCC default data for the growth rates of forests greater than 20 years old. The expert peer reviewers noted that these estimates could be refined with more detailed information from the scientific literature. Many of the public commenters were also concerned that EPA's approach overestimated foregone sequestration because it did not adequately account for natural disturbances, such as fires and disease. To address these comments, our analysis has been updated with peer reviewed studies of long-term growth rates for both tropical and temperate forests. These estimates are based on long-term records (i.e., monitoring stations in old-growth forests for the tropics and multi-decadal inventory comparisons for the temperate regions) and reflect all losses/gains over time. These studies show that the old-growth forests in the tropics that many once assumed to be in "steady state" (i.e., carbon gains equal losses) are in fact still gaining carbon. In summary, our analysis now includes more conservative foregone forest sequestration estimates that account for natural gains and losses over time.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2074
Organization: GreenShift Corporation
Document No.: EPA-HQ-OAR-2005-0161-2094
Organization: GreenShift Corporation

Comment:
The commenter (2074, 2094) provides the three most significant effects of extracting corn oil from any ethanol plant:

1. GHG emissions from ethanol production are actually 29 percent less than gasoline when corn oil is extracted, compared to the 19 percent EPA calculated in its draft impact statement on this RFS2 proposal.
2. Corn oil extraction after fermentation allows a dry mill ethanol pant to produce 11 percent more total fuel energy by manufacturing biodiesel from its com oil.
3. Additional corn oil extraction efficiency, coupled with corn varieties now available that have higher corn oil content (and the same starch content), have the potential to more than double these benefits. [[Docket number 2074, 2094, p. 1]]

The commenter also notes that the EPA assumptions for the electrical energy use and oil recovery potential of corn oil extraction are flawed. [[Docket number 2074, p. 2; 2094, p. 3-5]] The commenter concludes that operating with corn oil extraction, every ethanol plant can reduce GHG emissions by more than the 20 percent threshold, so that all corn ethanol will meet the definition of a renewable fuel. [[Docket number 2074, p. 4]] [[See docket number 2074, p. 2-4 for further discussion.]]

Our Response:

EPA has included both front-end corn oil fractionation, and back-end corn oil extraction as technologies available for dry mill corn ethanol plants as part of our life cycle GHG analysis. Our projections are that the majority of corn ethanol plants in 2022 will have either fractionation or extraction technology installed. We account for the energy use and co-product changes associated with removing corn oil from the process. The corn oil from extraction is assumed to be used as a biodiesel feedstock. The information provided in GreenShift's comments, as well as conversations between GreenShift and EPA has been taken into account to update the electrical energy use and corn oil recovery potential of corn oil extraction modeling.

Based on our final rulemaking analysis we have found that corn ethanol, including advanced technologies such as corn oil extraction/fractionation, reduce GHG emissions by more than the 20% threshold required for renewable fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2153
Organization: Syngenta Biotechnology, Inc.
Comment:
The commenter [[2153]] states that corn is one of the best understood crops in the world. The substantial infrastructure that is in place to harvest and store corn must not be overlooked. Some have estimated that dedicated energy crops such as switchgrass will require up to six times the current volume to achieve the same energy density as corn. Therefore, to reach national goals for cellulosic ethanol, the U.S. needs to develop the necessary harvesting and storage infrastructure necessary. While this is an admirable goal, such infrastructure development will require an increase in targeted investment and will take years. [[#2409.1 p.2]]

Our Response:

As part of its cost analysis, EPA considered the needed energy and related greenhouse gas impacts for growing, harvesting, gathering, shipping, storing and producing biofuel from energy crops. In doing this analysis we also developed some information on the likely cost impacts. However, as energy crop production and use for biofuel production is in its infancy, these assessments will likely need to be updated as commercial production starts to occur.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Using EPA's proposed LCA GHG emissions for corn-based ethanol, the commenter (2233) notes that GHG emissions from corn-based ethanol will increase significantly for at least the next 13 years and, everything else being equal, for the next 30 years, total cumulative GHG emissions from corn-based ethanol will be higher than at the beginning of the RFS2 program. It will not be until 2040 at the earliest that the corn-based ethanol portion of the RFS2 program begins to show some slight benefits. The commenter recommends that EPA submit this information to Congress and the Administration with a recommendation that the corn-based ethanol portion of RFS2 be removed. [[Docket number 2233.2, p. 45]]

Our Response:

The recommendation to provide information to Congress and to recommend corn-based ethanol be removed from the RFS2 rule are outside the scope of this rulemaking.

7.3.1.2 Imported Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1958
Organization: Institute for International Trade Negotiations, The Brazalian Institute for International Negotiations (ICONE)
Comment:
The commenter (1958) believes that the GHG emissions in the proposed RFS2 Draft Regulatory Impact Analysis (DRIA) as a result of an increasing demand for sugarcane ethanol overstate the emissions associated to direct and indirect land use changes. This commenter shows that a more accurate land use model for Brazil derives new per hectare CO_2-e emissions factors and, as a consequence, the reduction of GHG emissions of sugarcane ethanol compared to gasoline should be higher than the results presented by the draft analysis. Rather than 44 percent reduction for 100 year with 2% discount and 26 percent for 30 years with 0% discount as published in RFS2's DRIA, our analysis indicates 69 percent for 100 year with 2% discount and 60 percent for 30 year with 0% discount. The commenter strongly urges the EPA to revise its calculations, taking into account the methodology and the results presented in their comment letter and attachment.

[[Docket number 1958.1, p. 1]] [[See docket number 1958.1, pp. 1-31 and 1958.2, comment attachment for extensive discussion of the commenter's analysis and calculations on GHG emissions using the Brazilian Land Use Model (BLUM)]]

Our Response:

The Brazil module (an early version of which was used in the commentor's analysis) was developed by Iowa State University with input from Brazilian agricultural sector experts and we believe it is an improvement over the approach used in EPA's proposed rule. In the NPRM, we requested additional data for countries outside the U.S. We received comments encouraging us to use regional and country specific data where it was available. We also received comments encouraging us to take into account the available supply of abandoned pastureland in Brazil as a potential source of new crop land. The new Brazil module addresses these comments. Since the Brazil module contains data specific to six regions, this additional level of details allows FAPRI to more accurately capture real-world responses to higher agricultural prices. For example, double cropping (the practice of planting a winter crop of corn or wheat on existing crop acres) is a common practice in Brazil. Increased double cropping is feasible in response to higher agricultural prices, which increases total production without increasing land use conversion. The new Brazil module also explicitly accounts for changes in pasture acres, therefore accounting for the competition between crop and pasture acres. Furthermore, the Brazil module explicitly models livestock intensification, the practice of increasing the number of heads of cattle per acre of land in response to higher commodity prices or increased demand for land.

The commentor's analysis uses the Brazil model by itself based on the assumption that sugarcane ethanol production in Brazil has no effect or interactions with agricultural markets in other countries. We did not think this was a valid assumption, so instead of modeling Brazil in isolation we integrated the Brazil module into the FAPRI's global modeling framework. We used this modeling structure to analyze all of the renewable fuels assessed with FAPRI in this rulemaking. Our analysis with the international FAPRI models indicates the sugarcane ethanol production in Brazil can impact global commodity prices and agricultural activities in other countries. However, in the scenarios we analyzed the impacts of sugarcane ethanol production outside of Brazil were relatively modest. Although there are several differences in our approach compared the analysis done by the commenters, including the modeling changes described above, our final lifecycle results for sugarcane ethanol are similar to the results derived by the commenter. As discussed in preamble Section V, with a 30 year time period and 0% discount rate, we estimate that imported sugarcane ethanol gives a 61% reduction in lifecycle GHG emissions compared to the petroluem baseline, with a 95% confidence range of a 53%-70% reduction.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2204
Organization: Sierra Research, Inc.
Comment:

The commenter [[2204]] states they have identified the following errors and omissions in the analysis of sugarcane ethanol: 1. Ignoring direct and indirect N_2O emissions from crop residues; 2. Use of inappropriately low fertilizer rates; 3. Failure to account for energy inputs for dehydration of hydrous ethanol; 4. Failure to accurately assess transport of ethanol from Brazil to U.S.; 5. Failure to assess actual cane harvesting practices and processing in Brazil; and 6. Use of the unrealistic assumption that all excess electricity resulting from ethanol production in Brazil will displace fossil fuel combustion. The commenter cites extensive quantitative analysis on pages 3-27.

Our Response:

With respect to the first comment, it is correct that the proposal did not include N_2O emissions from the direct and indirect emissions from crop residues for cotton, palm oil, rapeseed, sugar beet, sugarcane, or sunflower. These were not included for these crops because default crop-specific IPCC factors used in the calculation were not available. Comments from our peer review process suggested that we include proxy emissions from these crops based on similar crop types that do have default factors. Therefore, for our final rule analysis we have included crop residue N_2O emissions from sugarcane production based on perennial grass as a proxy. See Section 2.4.3.2 of the RIA for more details.

With respect to the second comment, we have updated our fertilizer rates based on a more recent International Fertilizer Industry Association (IFA) report as suggested by our peer review. This report provides more up-to-date and consistent datasets for fertilizer rates than that used for the proposal.

With respect to the third comment, for the final rule we include the energy input required for ethanol dehydration regardless if it is dehydrated in Brazil or in a Caribbean country. All imported ethanol is assumed to be anhydrous once it enters the U.S. for consumption. See Section 2.4.7.5.5 of the RIA for more information.

With respect to the fourth comment, we have reassessed our assumptions on transportation of ethanol from Brazil to the U.S. Updated feedstock transport assumptions are based on suggestions from UNICA as well as Brazilian researchers as further discussed in Section 2.4.6 of the RIA. We have also updated our sugarcane ethanol transport assumptions as described in 2.4.8.3 for the final rule. For example, we now assume that back-haul emissions are negligible for ocean tankers transporting ethanol from Brazil to the United States. We have also estimated the average distance for ethanol transported by ocean tanker to various U.S. ports instead of assuming default assumptions of only two ports. We have updated our assumptions on the average distance ethanol is transported by truck, barge, and rail within the United States (from import facilities to petroleum blending terminals) based on a recent study conducted by Oak Ridge National Laboratory.

With respect to the fifth comment, we have updated our analysis to include the potential for mechanical harvesting and crop residue burning emissions. We assume for the final rule that there will be 100% mechanical harvesting and that the majority (not all) of sugarcane will be left unburned in the field by 2022. Please refer to Section 2.4.3.5 of the RIA for more information.

We account for the potential for increased diesel fuel consumption for mechanical harvesting as described in Section 2.4.3.3 in the RIA.

With respect to the final comment, we have updated our analysis to provide better documentation on our assumptions for the anticipated amount of surplus electricity generated by a sugarcane facility by the year 2022. This is further described in Section 2.4.7.5.6 of the RIA. In addition, for the final rule we assume that surplus electricity will displace natural gas based electricity. Several commenters agree that this method is appropriate. We believe the use of marginal grid electricity instead of average electricity is reasonable given that 1.) We are crediting on the basis of displacement 2.) Electricity produced at the sugarcane ethanol facility is always dispatched when a mill is operating and this allows for reduction of the use of other thermal power plants. See Section 2.4.7.5.6.1 of the RIA for more information.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2362
Organization: Canopy Prospecting, Inc. And Trinidad Dehydration Company, Limited
Comment:
The commenter (2362) is concerned about EPA's lifecycle analysis of cane-based ethanol from Brazil and that the draft rule does not take ethanol dehydrated in the Caribbean into account. If Brazilian sugarcane ethanol is determined to be an Advanced Biofuel, the commenter urges EPA to include Caribbean Basin Economic Recovery Act (CBI) dehydrated Brazilian ethanol as an Advanced Biofuel as well. [[Docket number 2362, pp. 3 and 4]] [[See docket number 2362.1, pp. 3-6 for further discussion of this issue.]]

Our Response:

We have included this pathway in our final rule analysis including the change in GHG emissions associated with CBI dehydration of Brazilian sugarcane ethanol. This pathway qualifies as an advanced biofuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2426
Organization: EthylChem, Ltd.
Comment:
The commenter (2426) urges EPA to avoid a regional approach to determining the GHG emissions associated with the dehydration of ethanol. Under the RFS2, renewable fuels from new facilities are required to reduce greenhouse gas (GHG) emissions from a baseline by certain specified percentages. In EPA's proposal, sugarcane ethanol is listed as having a 44% reduction in GHG emissions. If EPA makes the 10% adjustment in the specified threshold that it is considering, all sugarcane ethanol would qualify as an "Advanced Biofuel" regardless of where it was dehydrated. The commenter believes that such a region-neutral approach is the most rational approach. However, if EPA were to take a regional approach, the commenter argues that

the Agency must at least establish a process by which fuel from low GHG-emitting dehydrators (e.g., larger plants, plants using gas as a fuel, etc.) can be exempted. To do otherwise would penalize those that have invested in dehydration processes that minimize GHG emissions. [[Docket number 2426.1, pp. 1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2637.1
Organization: EthylChem, Ltd.
Comment:
The commenter (2637) is writing in regards to the dehydration of ethanol in the Caribbean before shipping to the U.S. The commenter states that since fuel type and fuel efficiency, and therefore GHG emissions, vary from plant to plant within a region, if EPA were to take a regional approach to adjusting GHG emission values, it must at least establish a process by which fuel from low GHG-emitting dehydrators (e.g., plants using gas as a fuel, larger facilities, etc.) receives a more favorable rating than that from other smaller facilities using fuel oil as an energy source. To do otherwise would penalize those that have invested in dehydration processes that minimize GHG emissions. (2637.1 Pgs. 1-2).

Our Response:

As part of the final rule LCA analysis EPA has considered Caribbean Basin ethanol dehydration. Based on our updated analysis imported ethanol would qualify for the Advanced category of fuels regardless of where or how it was dehydrated. As the rule only has specified thresholds for fuels to qualify the Agency does not have to distinguish between different producers or processes if they all fall within a given category. Therefore, we are not distinguishing fuels on a regional basis.

7.3.1.3 Cellulosic Ethanol

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that there is very large uncertainty in projected future GHG emissions of cellulosic ethanol due to the range in potential feedstocks and chemicals as well as yields and co-products, as well as the lack of any existing commercial operation. The commenter noted that EPA projected large improvements in performance to the 2022 time frame, but it is not clear these improvements will be realized. GHG emissions associated with enzyme production for cellulosic ethanol can be much larger than corn ethanol and a can be significant fraction of cellulosic ethanol GHG.The commenter believes that outlining current and possible future performance and tracking the progress over time would provide a better measurement of the LCA performance of cellulosic ethanol. (2124.1, p.47)

Our Response:

EPA has based its projected improvements for cellulosic ethanol and other emerging technologies on guidance from the DOE's laboratory, the National Renewable Energy Laboratory (NREL). NREL has many years of expertise in this area and works closely with other researchers and industry groups in the area of advanced biofuels. As such, we believe these projections are reflective of what is possible in a future 2022 time frame. Refer to the technical documents available in the docket and the RIA for more information. As research evolves and commercial operation begins, we will have the opportunity to continue to update our analyses as necessary.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter also noted that the spreadsheet on cellulosic ethanol indicates that cellulosic ethanol causes a large reduction in GHG emissions from international livestock production. The commenter stated that the mechanism for such a reduction is not clear. (2124.1, p.48)

Our Response:

Our analysis of switchgrass ethanol produced with enzymatic technology for the final rule estimates a 10 kg CO2e / mmBTU reduction in lifecycle GHG emissions, i.e., a 110% reduction compared to the petroleum baseline. We estimate that emissions from international livestock production are reduced by 0.25 kg CO2e/mmBTU. The mechanism for this small reduction is based our projection that switchgrass feedstocks will be grown on fertile lands, which can increase land rents and displace production of other crops. As a result livestock feed prices increase slightly, which causes a small reduction in global livestock output. More details are provided in RIA Chapter 2.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) states that there is a very large uncertainty in projected future GHG emission of cellulosic ethanol due to the range in potential feedstocks and chemicals as well as yields and co-products, as well as the lack of any existing commercial operation. EPA has projected large improvements in performance to the 2022 time frame, but it is not clear these improvements will be realized. [[Docket number 2130.1, p. 20]]

Document No.: EPA-HQ-OAR-2005-0161-2316
Organization: University of Minnesota
Comment:

My third [[2316]] comment concerns the statement in the Proposed Rulemaking that increased stover removal was also associated with higher rates of reduced tillage or no tillage practices which results in soil carbon increase. That conservation tillage practices increase soil carbon is a widely held belief, such as reviewed by West and Post (2002), but more recent research very strongly suggests that this phenomenon may not exist. Rather, earlier studies showing increased carbon sequestration under conservation tillage may have in fact been reporting an artifact of not sampling the soil profile deeply enough. I am including a more detailed explanation of this point in Appendix A. [[2316.1 p.2]]

Our Response:

Our analysis for the final rulemaking updated the soil carbon accounting in our domestic agricultural sector modeling. Changes in soil carbon are a function of several parameters including tillage practice, crop type, irrigation, etc. In terms of tillage practices, agricultural soils have traditionally been tilled to create a suitable seedbed, reduce weed competition, and remove restrictions to crop root growth. However, by loosening the soil, tillage breaks up soil aggregates and increases the exposure of soil organic matter to oxygen, which speeds oxidation and results in reduced soil carbon with an associated release of CO_2 into the atmosphere. The use of tillage alternatives that reduce soil disturbance and therefore reduce oxidation of soil organic matter will increase soil carbon sequestration. EPA understands there are studies to the contrary, that basically indicate no change in soil carbon with different tillage practices, however, we believe these new studies are inconclusive at this point. EPA understands this is an area for future research and will continue to examine this issue for future analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2478
Organization: ZeaChem Inc.
Comment:
The commenter (2478) discusses their ethanol process and states that the total lifecycle impacts of production and use of their cellulosic ethanol results in a 94% reduction in GHG emissions versus conventional gasoline. [[Docket number 2478.1, p. 2]] [[See docket number 2478.2 for the full LCA using the GREET model.]]

Our Response:

EPA has analyzed the lifecycle GHG impacts of cellulosic ethanol from several feedstock sources. These results vary on the basis of the feedstock source. The results are underlying calculations are described in the preamble section V and with additional detail in RIA chapter 2. We have found that all the pathways modeled achieve the 60% GHG reductions required for the cellulosic ethanol category. If a fuel producer believes they have a process that is significantly different from the ones included in our final rulemaking and that will result in establishing a new or different threshold designation (D code), they can petition the agency for inclusion of their specific pathway.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2395.1
Organization: Covanta
Comment:
The commenter (2395) indicates a life cycle analysis (LCA) performed on both a 30-year and 100-year with a 2% discount rate basis reveals that, for a wide range of biogenic fractions of MSW, the process generates a fuel meeting the reduction requirements of the proposed RFS. An LCA performed in accordance with international and scientific precedents, where future emissions are not discounted or limited to a finite time period, results in even greater net reductions. These results fully support a finding by EPA that post-recycled MSW warrants inclusion as a defined renewable feedstock in the RFS. (2395.1 Pg. 7-8).

Our Response:

As discussed in Section II.B.4.d of the Preamble, EPA has determined that the biogenic portion of post recycled MSW is eligible to produce renewable fuel and will largely be made up of cellulosic material. Therefore biofuel made from this waste-derived material will qualify as cellulosic biofuel.

Furthermore, separated food and yard wastes, including food and beverage wastes from food production and processing are another category of waste product that would not have any land-use change impact. These waste products can be used as feedstock for advanced biofuel production or cellulosic biofuel production.

7.3.1.4 Biodiesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) does not support the potential averaging approaches outlined by EPA as a means to qualify biodiesel as biomass-based diesel. The current life cycle analysis results indicate that biodiesel produced from vegetable oils does not meet the 50% GHG emission reduction threshold requirement as mandated by the Energy Independence and Security Act of 2007. Although EPA has the authority to lower that threshold to as low as 40%, vegetable oil based biodiesel would still not meet that threshold. Based on projected availability of qualifying fuel, the commenter believes that EPA should immediately reduce the biomass-based diesel standard to reflect what qualifying volumes will be available. If the standard is effective starting in 2011, the commenter believes that the biomass-based diesel standard should be no more than 0.8 billion gallons, the legislated target for 2011 volume. (2154.1, p.5)

Our Response:

EPA is not adopting averaging of biodiesel feedstock pathways for the final rule. We have determined that biodiesel for soy oil will meet the biodiesel threshold of 50%. Therefore averaging is not necessary nor is lowering the threshold performance standard.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter opposes EPA's option to combine/average biodiesels to reach the biomass-based diesel mandated volumes. If there is not enough biodiesel capacity to meet mandate, EPA can use general waiver authority. Also, the commenter believes that averaging would violate Congress's stated intention by allowing biofuels that do not meet the GHG thresholds on their own. [[Docket number 2233.2, p. 43]]

Our Response:

EPA is not adopting averaging of biodiesel feedstock pathways for the final rule. We have determined that biodiesel for soy oil will meet the biodiesel threshold of 50%. Therefore averaging is not necessary nor is lowering the threshold performance standard.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) believes that this section should specifically include animal fats in the evaluation and be included in Table VI.C.1-12 as a separate line item. (0994.1, p.17)

Our Response:

We agree and have included animal fats as meeting the lifecycle threshold of 50% for biomass-based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0999
Organization: Darling International Inc.
Comment:
The commenter (2151.1) supports U.S. EPA's determination that animal fats and waste grease feedstocks (including tallow from rendering) have no land use impacts and will achieve at least an 80% reduction in greenhouse gas ("GHG") emissions as compared to petroleum products.

(2151.1, p.4) [[See Docket Number 2151.3 for a independent evaluation of the expected GHG reductions associated with biofuels produced from waste fats and greases from a third party consultant, Gal Consultants.]]

Our Response:

We have continued to assume that animal fats and waste greases will meet the lifecycle threshold for biomass-based diesel for the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, EPA-HQ-OAR-2005-0161-1051, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, Aberdeen Development Corp., et al.
Comment:
The commenters noted that EPA's analysis, on calculating international land changes, looks at the incremental change in biodiesel production based on two scenarios. Review of the EPA reference case reveals the fact that the agency has penalized the biodiesel industry when calculating potential global land use change by establishing an artificially low production baseline. Underestimating biodiesel volumes results in an overestimate of indirect land use changes, penalizing the biodiesel industry.

The commenters also noted that EPA's approach does not accurately reflect increasing crop yields, which have allowed the agricultural industry to keep up with demand. The EPA analysis also penalizes the biodiesel industry by not fully considering new fats and oils technology that can increase the contribution biodiesel will make to the Biomass-based Diesel category in RFS2. The proposed rule only considers soybean oil, vegetable oil from ethanol plants, and rendered fats and waste greases in its analysis. Lipid sources such as camelina, winter canola, and algae are not factored into the feedstock supply.

The commenters noted that in Section VI.C.D of the preamble, it is stated that "the impact of any land-use change tends to be magnified with soybean biodiesel." The statement is justified by asserting that soybeans have a low gallon-per-acre yield compared to corn ethanol. The commenters believe that this statement is simply false. For this to be true, soybean oil used for biodiesel must require additional soybeans to be grown somewhere else in the world to replace the oil used for biodiesel. The commenters strongly urge EPA to correct this statement in its final rule.

Our Response:

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

EPA has considered data supplied by seed producers and others regarding its future projections of yield and has reflected these projections in its threshold assessments. In particular we have conducted sensitivity assessments using high yield cases and confirmed that high yields do not change the results of our analyses. However, we also plan to periodically update our analyses and should yield projections change, these changes would be captured in subsequent reassessments and appropriate updates to our threshold determinations.

For biodiesel produced from soy, we note that as described in the preamble and further in the RIA, the LCA has been considerably updated since the proposal to reflect comments received and updated information. However, our analysis still predicts that the use of soy bean oil to produce biofuel means that it will no longer be available for other markets. This unmet demand means that additional acres of soy beans will be planted both domestically and in other countries.

The final rule analyses also include analyses for algae-based biodiesel. It is noted in the preamble that since use of algae oil is early in its biofuel development, this analysis may need to be updated to reflect changes as this pathway approaches commercialization.

Regarding other biofuel feedstock sources not modeled for the final rule (including camelina and winter canola, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies.

Additionally, EPA's analysis considers oil sources other than soy beans in determining the impact of using soy oil for biodiesel production. This analysis is documented in the preamble section V and in additional detail in Chapter 2 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1052
Organization: Pennsylvania Energy Resources Group (ERG)
Comment:
The commenter (1052) has serious concerns over the lifecycle greenhouse gas methodology for biodiesel. There are multiple inaccuracies and assumptions which are flawed. Among the many items identified as such by the commenter are used of out of date data being used, ignoring world markets for feedstocks, coproducts and agricultural crop yield and production improvements. The commenter finds the inclusion of the language "the impact of any land use change tends to be magnified with soybean biodiesel" to be both inaccurate and problematic, adding that public policies must be driven by sound science, not political philosophy or assumption. [[Docket number 1052.1, p. 2]]

Our Response:

The Agency has updated and refined its modeling approach since proposal in several important ways, including a number of updates made in direct response comments from the public and peer reviewers. EPA is confident that its modeling of GHG emissions is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. Based on this analysis and approach, EPA has determined that biodiesel and renewable diesel from soy oil or waste oils, fats, and greases will exceed the 50% GHG threshold for biomass-based diesel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) noted that CARB is currently undertaking studies looking at the effect of low blends on the fuel efficiency of the biofuel versus a pure fuel at common blend levels. The commenter recommends that EPA review this data when it is available from CARB studies or use other data of NREL or U.S. EPA as a guide and adjust the life cycle emissions of at least biodiesel to account for its actual fuel efficiency at the most common blend levels (2%, 5%, 10% and 20%). (2048.1, p.6)

Our Response:

EPA will consider this information when it becomes available for any future updates to the analysis performed for this rulemaking. Currently there is no data to suggest using anything different from energy value of the fuel to compare emissions (i.e., no change in engine efficiencies).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
Review of the EPA reference case, which was used to calculate the increased levels of biofuels needed to meet RFS2, reveals the fact that the agency has penalized the biodiesel industry when calculating potential global land use change by establishing an artificially low production baseline. EPA's approach does not accurately reflect increasing crop yields, and does not fully consider new fats and oils technology.

Document No.: EPA-HQ-OAR-2005-0161-2079

Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) noted that in reviewing the EPA reference case, which was used to calculate the increased levels of biofuels needed to meet RFS2, they revealed the fact that EPA has penalized the biodiesel industry when calculating potential global land use change by establishing an artificially low production baseline. In looking at an incremental change, EPA's approach also does not accurately reflect increasing crop yields, which have allowed the agricultural industry to keep up with demand. The EPA analysis also penalizes the biodiesel industry by not fully considering new fats and oils technology that can increase the contribution biodiesel will make to the Biomass-based Diesel category in RFS2. (2079.1, p.8) (See Docket Number 2079.1, p.8 for a detailed discussion of this issue)

The commenter believes that the statement the impact of any land-use change tends to be magnified with soybean biodiesel is false. For this statement to be true, soybean oil used for biodiesel must require additional soybeans to be grown somewhere else in the world to replace the oil used for biodiesel. The commenter urges EPA to correct this statement in its final rule. (2079.1, p.9)

Our Response:

With regard to their relationship between land use and soybean biodiesel lifecycle GHG emissions, EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. As described in more detail below and in Section V of this preamble, EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. As discussed below, EPA has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. As discussed below, EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

The revised lifecycle assessment for soybean biodiesel predicts less overall indirect land use change (less land needed) and less impact from the land use changed that does occur (due to updates in types of converted land assumed). In addition, the latest IPCC guidance indicates reduced domestic soybean N_2O emissions, and updated USDA and industry data show reductions in biodiesel processing energy use and a higher co-product credit, all of which further reduced the modeled soybean biodiesel lifecycle GHG emissions. This has resulted in a significant improvement in our assessment of the lifecycle performance of soybean biodiesel as compared to the estimate in the proposal.

EPA's final analysis indicates that, based on currently available information and our current analysis over the range of scenarios considered, the performance of soy oil-based biodiesel exceeds the 50% threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter [[2104]] states that EPA did not account for glycerin as a co-product. Glycerin is a co-product of biodiesel production and when the emissions value is calculated it will decrease emissions by 15%. The biodiesel process produces one pound of glycerin for every ten pounds of biodiesel produced. This means that 0.74 pounds are produced for every gallon of biodiesel or 6.2 pounds per mm BTU of biodiesel. GREET calculates the GHG emissions associated with the materials that are embedded in the glycerin. These emissions are 2,735 g CO_2 eq/pound of glycerin. This amounts to 16,957 g CO_2 eq/mm BTU. [[#2104.1 p.6]]

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter [[2104]] states the EPA methodology inaccurately assesses the energy balance of biodiesel production. It takes less energy to produce a gallon of biodiesel than considered by EPA. EPA used a factor of 3.2 units of energy produced per unit of energy used. The updated factor should be a factor of 5.2 units of energy produced per unit of energy used. Updating this data point decreases the biodiesel emissions factor by 1.5%. [[#2104.1 p.6-7]]

Our Response:

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter also stated that specifically, the proposed rule only considers soybean oil, vegetable oil from ethanol plants, and rendered fats and waste greases in their analysis. Lipid sources such as canola (spring and winter) are not factored into the feedstock supply. [[#2104.1 p.7]]

Our Response:

EPA establishs in the final rulemaking a petition process whereby a party can petition the Agency to consider new pathways for GHG reduction threshold compliance. We welcome parties, both domestic and foreign, to utilize the petition process described below to request EPA to examine additional pathways. EPA will process these petitions as expeditiously as possible. A full description of the petition process can be located in the Preamble Section V.C.

EPA has focused our analysis on the fuels and feedstocks that we modeled as being used in the current or near term to meet the EISA mandates. That does not mean other fuels or feedstocks would not meet the requirements to be considered under the program. We have set up a process for fuels and feedstocks that do not specifically show up in the current rulemaking to petition the Agency for consideration.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter states that EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. [[#2104.1 p.8]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes

would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) notes several issues which require EPA to update its modeling as it substantially underestimates the reduction of GHG emissions from biodiesel: (1) EPA's methodology calculates N_2O emissions as it related to soybean production based on outdated information, (2) Credit for the glycerin co-product of biodiesel production from soybean oil should be included in the lifecycle analysis and (3) EPA should update the energy balance of biodiesel production. Each is discussed in detail on (2157 p. 99-103).

Our Response:

(1) The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O

emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

(2) Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

(3) The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
Additionally, the commenter (2157) notes that EPA should give biofuels credit for the avoidance of increased use of marginal sourced of crude oil, which have significantly higher GHG emissions. This is discussed in detail on (2157 p. 104-106).

Our Response:

For this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average

gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

We also do not believe that emissions arising from military activities can be readily attributed to the protection of oil imports. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than merely protecting oil supplies. In the peer review of the energy security analysis that EPA commissioned, a majority of peer reviewers believed that U.S. military costs should be excluded absent a widely agreed methodology for estimating this component of U.S. energy security. Since military impacts were not considered for the energy security analysis in this final rule, they were also excluded from any lifecycle GHG analyses

Furthermore, increased domestic consumption of renewable fuels is expected to decrease oil demand and thus reduce oil imports. However, an incremental reduction in oil imports is not expected to cause an analogous reduction in U.S. military expenditures and activities. Hence, even if we were able to attribute GHG emissions to the protection of oil imports, it is unlikely that there would be a decrease in military-related GHG emissions as a result of this rule. More detail on this topic can be found in the Energy Security Analysis in Chapter 5 of the RIA.

For the final rule, we performed an estimate of land use change emissions associated with oil extraction and production to determine if the value was significant enough to be included in our petroleum baseline calculation. As oil sands production incurs a greater degree of land use change versus conventional crude oil production, we made an estimate of the emissions from the conversion of Alberta forest for oil sands production. Using literature values, we found that land use change emissions for oil sands were negligible compared to the total well-to-tank values and did not change the overall petroleum baseline values. A more complete discussion of our analysis can be found in Chapter 2.5.7 of the RIA.

For the final rule, we are using the model developed by the National Energy Technology Laboratory (NETL) to determine the 2005 petroleum baseline. The NETL model provides a more accurate and comprehensive assessment of the petroleum baseline than the approach used in the proposed rule by utilizing site-specific data, such as country-specific crude oil extraction profiles and port-to-port travel distances for imported crude oil and petroleum products. The NETL model utilizes recent data to determine the GHG emissions from crude oil extraction and transport, refining, and finished product transport. Furthermore, NETL uses 2005 data for major oil sands producers to determine the emissions from oil sands extraction. More detail on the methodologies used by NETL can be found in Chapter 2.5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2212
Organization: Chris Gould Farms
Comment:
The commenter [[2212]] states that his crop yields have increased dramatically in the last five years and sound science indicates they will continue to do so.

Our Response:

EPA recognizes that crop yields will continue to increase over time. Modeling of the agriculture sector takes this increase into account, and yield projections are based on those of USDA. However, EPA's analysis shows that while yields continue to increase over time in all scenarios, an increase in demand for renewable fuel production will still result in land use change. For more information on how increasing crop yields are taken into account in the FASOM and FAPRI models, refer to Chapter 5 in the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
(1) The lifecycle GHG methodology for Biodiesel is Flawed and should not be used to regulate the biofuels industry – As was clearly set forth in EISA, the domestic concerns associated with importation of high carbon emitting foreign oil drove the Congressional dictate. Allowing

international externalities (i.e., indirect land use effects) cannot be allowed to undermine the clear purpose.

(2) EPA assumes increased U.S. biodiesel production will lead to land conversion in South America. If this assumption were correct, Brazilian soybean acreage would have increased from 2004 through 2008, a time in which U.S. biodiesel production increased 25 million to 690 million gallons. During this time, however, Brazilian soybean acres actually decreased by 1.5 million hectares. Clearly, this shows the inaccuracy of EPA's hypothesis and modeling.

(3) Energy balance data used by EPA is out of date

(4) EPA's methodology calculates N_2O emissions as it relates to soybean production based on outdated information.

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that EPA modeling substantially underestimates the reduction in GHG emissions from biodiesel and urges EPA to update the lifecycle analysis. The commenter points to three significant omissions in EPA's methodology and when updated and corrected, the lifecycle GHG emission reductions for biodiesel derived from virgin vegetable oils will have a lifecycle GHG reduction performance of greater than 60 percent (including direct emissions and significant indirect emissions such as significant emissions from land use changes). The commenter asks that these corrections be included in EPA's analysis of the lifecycle GHG emissions of biodiesel:
1. EPA's methodology calculates N_2O emissions as it relates to soybean production based on outdated information.

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change

effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
Credit for the glycerin co-product of biodiesel production from soybean oil should be included in the lifecycle analysis.

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
Co-product allocations of glycerin were not incorporated.

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
3. EPA should update the energy balance of biodiesel production.

Our Response:

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter believes that adjusting for the three issues above would result in a 62 percent reduction in GHG emissions for biodiesel compared to baseline petroleum diesel utilizing EPA's proposed methodology. [[Docket number 2249.2, pp. 101-106]]

Our Response:

EPA updated these factors as well as a number of other changes. New results for biodiesel are a 57% reduction in GHG emissions compared to petroleum fuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter also believes that EPA should give biofuels credit for the avoidance of increased use of marginal sources of crude oil, which have significantly higher GHG emissions. EPA's analysis does not account for the fact that biodiesel is reducing and delaying the need for diesel derived from high carbon sources of crude oil such as Canadian tar sands and Venezuelan extra heavy crude. EPA's lifecycle analysis is based on future production of biofuels, but the results are compared against baseline petroleum, which is defined as the "gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005." Based on this definition, EPA has focused on the mix of fuels in 2005 to determine the baseline against which biofuels are compared. EPA's approach fails to recognize the increasing inefficiency of petroleum production compared to the increasing efficiency of renewable fuels. [[Docket number 2249.2, p. 107]]

The commenter states that EPA should account for this key omission in at least two ways: first, EPA can focus on the marginal sources of petroleum in identifying the baseline and second, EPA

could credit biofuels with the avoidance of GHG emissions in replacing these marginal sources in the future. [[Docket number 2249.2, pp. 108-109]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2328
Organization: Petroleum Marketers Association of America (PMAA)
Comment:
The commenter (2328.1) fully supports EPA's efforts to discourage global deforestation which contributes to greenhouse gas emissions worldwide. The commenter believes that any lifecycle analysis used by the EPA to measure the effect of biodiesel production on greenhouse gas emissions and land use changes should more accurately reflect current soy crop and biodiesel production data. The commenter also believes that, for the immediate future, the continued reliance on soy crops for domestic biodiesel production is absolutely vital to achieving the renewable fuel mandates mandated in EISA and promoting the growth and acceptance of this homegrown renewable fuel to consumers nationwide. (2328.1, p.8)

Our Response:

As indicated in the preamble and as reflected in the final regulations, EPA has modeled soy-based biodiesel as complying with the biodiesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2353
Organization: Iowa Soybean Association
Comment:
The commenter states that Iowa's soybean yields have been increasing faster than the national average, due to our naturally rich soils, ample rainfall and improved genetics. At the Kimberley farm (site of the Iowa visit), soybean yield has improved from 30 bushels per acre to 55 bushels per acre over the past 25 years. New seed technologies show promise of doubling yields within the next 10 years. Any models used to calculate resource use based on average U.S. yields over the past 10 years would not reflect current productivity. [[#2353 p.2]]

Our Response:

It should be noted that EPA's analysis takes U.S. regional yield productivity differences into account. For example, our analysis shows that the Corn Belt region is much more productive in terms of corn and has higher corn yields than other regions in the U.S. Similarly, other crops have different yield potentials across different U.S. regions. For EPA's analysis, it is expected that the national average corn yield across all U.S. regions will reflect USDA projections.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2353
Organization: Iowa Soybean Association
Comment:
The commenter states that new farming technology, including GPS yield monitors, satellite imaging of fields and farm energy use assessment are in use at thousands of Iowa farms, reducing their carbon footprint. This technology allows precision application of herbicides and fertilizer, reducing farm input costs and optimizing productivity. [[#2353 p.2]]

EPA did not account for glycerin, which is a co-product of biodiesel production and decreases the calculated emissions for biodiesel by 15%. [[#2353 p.3]]

Our Response:

Glycerin is a co-product of biodiesel production. Our proposal analysis did not assume any credit for this glycerin product. The assumption for the proposal was that by 2022 the market for glycerin would be saturated due to the large increase in biodiesel production in both the U.S. and abroad and the glycerin would therefore be a waste product. We received a number of comments that we should be factoring in a co-product credit for glycerin as there would be some valuable use for this product in the market. Based on these comments we have included for the final rule analysis that glycerin would displace residual oil as a fuel source on an energy equivalent basis. This is based on the assumption that the glycerin market would still be saturated in 2022 and that glycerin produced from biodiesel would not displace any additional petroleum glycerin production. However, the biodiesel glycerin would not be a waste and a low value use would be to use the glycerin as a fuel source. The fuel source assumed to be replaced by the glycerin is residual oil. This inclusion of a co-product credit for glycerin reduces the overall GHG impact of biodiesel compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:

Also lipid sources such as camelina, winter canola, and algae are not factored into the feedstock supply, along with higher yielding oilseed technology. [[2357.1 p.5]]

Our Response:

For the final rule, EPA has determined that biodiesel produced from algae oil will comply with the advance biofuel GHG performance threshold. We have not modeled camlina as a biofuel feedstock. While we do not have sufficient information to model these camlina for the final rule, EPA has adopted a petition process, explained in preamble Section V, whereby biofuel producers can request EPA review of new feedstocks and process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2362
Organization: Canopy Prospecting, Inc. And Trinidad Dehydration Company, Limited
Comment:
The commenter urges EPA to consider a waiver of the Advanced biofuel baseline lifecycle GHG emissions reductions from a goal of 50% to an achievable 40% for the Caribbean Basin Economic Recovery Act (CBI) based dehydrators who have little to no control over indirect land use changes in Brazil. [[Docket number 2362.1, p. 2]]

Our Response:

For the final rule, EPA has modeled sugarcane ethanol as complying with the 50% advanced biodiesel threshold, including that fuel which is dehydrated in the Caribbean Basin. Therefore there is no need to reduce the threshold to 40%.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2409
Organization: Tennessee Department of Agriculture
Comment:
The commenter [[2409]] states that EPA's GHG emissions methodology used outdated assumptions in the direct emission calculations for nitrogen. The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. The Argonne National Laboratory and the California Air Resources Board use the IPCC data in their models. EPA, however, does not incorporate the IPCC's updated findings and thus attributes excess nitrogen emissions to soybean cultivation. Making the necessary adjustments to correct this error reduces the GHG score for soy biodiesel by more than 20 percent. [[#2409.1 p.2]]

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The main issue is that because the N_2O emission factors used in the proposal were based on the 1996 IPCC guidance for N_2O accounting they were overestimating N_2O emissions from nitrogen fixing crops. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2409
Organization: Tennessee Department of Agriculture
Comment:
The commenter also states that Administration (EIA) analysis that underestimates U.S. biodiesel production, which reached levels of 690 million gallons in 2008. In addition, multiple state policies and fleet requirements will be implemented between 2008 and 2022. These use requirements will increase the baseline volume of biodiesel that will be used regardless of the RFS2 program. Underestimating biodiesel volumes results in an overestimate of indirect land use changes, which penalizes the biodiesel industry. EPA's approach also does not accurately reflect increasing crop yields. The EPA analysis does not fully consider new fats and oils that can increase the contribution biodiesel will make to the Biomass-based Diesel category in RFS2. Lipid sources such as camelina, winter canola, and algae are not factored into the feedstock supply. [[#2409.1 p.2-3]]

Our Response:

As noted in the preamble and additionally in the RIA, EPA has significantly updated its soy-based biodiesel assessment for this final rule based on comments and new data. Regarding

the issue of how underestimating the volume of biodiesel produced will impact the LCA, this would not have a significant impact on the per-gallon LCA. We have also modeled the use of waste oils, fats and greases and included these pathways as eligible for advanced biofuel credit. Regarding other biofuel feedstock sources not modeled for the final rule (including camelina and winter canola, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes that EPA's characterization of the impact of land use changes from soy biodiesel is inaccurate. In Section VI.C.D of the preamble, it is stated that "the impact of any land-use change tends to be magnified with soybean biodiesel." The statement is justified by asserting that soybeans have a low gallon-per-acre yield compared to corn ethanol. This statement is simply false. For this to be true, soybean oil used for biodiesel must require additional soybeans to be grown somewhere else in the world to replace the oil used for biodiesel. Everywhere in the world, soybeans are grown primarily for the demand for their 80% protein meal. By-products do not drive supply responses and soybean oil for biodiesel does not drive planting decisions for farmers. If it did, then farmers would plant crops, other than soybeans, that produce more oil per acre. This economic reality invalidates EPA's link between use of soybean oil for biodiesel and magnified land use change impact. The commenter strongly urges EPA to correct this statement in its final rule. [[Docket number 2435.1, p. 5]]

Our Response:

As stated in other responses, we believe the quoted statement is being misinterpreted. This statement was a qualitative explanation for why land use changes projected by the agricultural sector models in the NPRM analysis may have been larger than the corn ethanol land use changes on a per BTU basis. We were not implying that soybeans were being planted exclusively for soybean oil. The agricultural sector models take into account the fact that soybeans are approximately 80% meal and 20% oil. Furthermore, the agricultural sector models assume that farmers choose to plant soybeans based on the expected net returns associated with the sum of both the oil and the meal ree streams. We believe this optimization approach accurately represents the soybean production markets.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:

The commenter (2549.1) believes that EPA inaccurately assesses the energy balance of renewable diesel. (2549.1, p.3)

Our Response:

As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

7.3.2 Treatment of GHG Emissions Over Time

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that EPA does not correctly account for the influence of time/discounting. For example, there is an absence of technical change in agriculture (yields, efficiency, etc.). EPA has no appreciation for the influence of technical change in agriculture. This phenomenon of constantly increasing output using fewer inputs is the essential underpinning of economic growth. (2112.1, p.10) (See Docket Number 2112.1, pp.10-12 for more discussion on this issue)

Our Response:

In the analysis for both the proposal and the final rulemaking, EPA does not show an increase of input application rates for agricultural production. This is in keeping with historical data from the USDA Economic Research Service as cited by the commenter, which shows crop yields increasing over time, while agricultural input rates have remained relatively constant. Although the rates remain level over time in the analysis, total fertilizer use does increase as a result of an increased demand for renewable fuels. However, this is entirely due to increases in crop production. For additional information on the agricultural modeling portions of the analysis, please refer to Chapter 5 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter adds that GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed, rather than the 30 years some have suggested. [[Docket number 1051.1, p. 3]]

Our Response:

The commenter argues that since liquid fuels are likely to be required for more than 30 years, the benefits of biofuels should be counted for 100 years, not 30. EPA sought comment on both 30 years and 100 years for assessing biofuel impacts. Based on comments received, EPA deter mined it is most appropriate to limit the assessment time period to 30 years as a most reasonable time frame after 2022 to expect soy-based biofuel to continue to be produced and used in the U.S.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1045
Organization: National Council for Air and Stream Improvement, Inc. (NCASI)
Comment:
One commenter (1045.1) believes that EPA should consider recent model-based analyses of climate response to carbon dioxide emissions (e.g., "The proportionality of global warming to cumulative carbon emissions" by H.D. Matthews et al. Nature Vol 459, 11 June 2009, p. 829-832). The commenter states that these analysis show that the amount of anthropogenic climate warming at some future target date (e.g., 100 years from now) depends mainly on the cumulative amount of emissions prior to the target date. In other words, the distribution of emissions in time over the next 100 years doesn't matter - it is the total amount of emissions that is important. An important implication of this result is that there should be no preference in policy or regulations for an "early emission reduction strategy" (EERS) over a "delayed emission reduction strategy" (DERS) if cumulative emissions are less for DERS than for EERS over the analysis period. (1045.1, p. 1)

EPA's LCA results indicate that development and deployment of advanced biofuels with indirect land use effects can be viewed as a DERS that leads to lower cumulative emissions over the long term relative to an EERS' "do nothing". The commenter believes that in this context, there should be no preference for "do nothing" and the appropriate discount rate is zero. The commenter further believes that a time frame of 100 years is most appropriate because the GHG mitigation benefits of replacing petroleum with advanced biofuels will accumulate throughout the 21st century and beyond. (1045.1, p. 1)

A counter argument is that an EERS puts society on a trajectory to reduce cumulative emissions over the next century. The commenter states that this counter argument is not relevant to EPA's LCA analysis of advanced biofuels because the "do nothing" EERS in this case does not put society on a trajectory to reduce cumulative emissions. (1045.1, p. 1)

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) generally supports EPA's approach to employ a 100 year time horizon and a 2 percent discount rate if the Agency insists on proceeding with ILUC effects estimates. (2101.1, P.4)

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) supports a 100 year time horizon with the proposed 2% discounting. Using a 30 year time horizon with no discounting does not promote the growth of the renewable fuels industry and does not further the goals of EISA. By using a 100 year time horizon with 2% discounting, the industry can continue to grow and make sound investments for the future. (2119.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2154
Organization: ConocoPhillips
Comment:
The commenter (2154.1) favors the use of 30 years for averaging and a zero discount rate which represents a more conservative and realistic approach than the 100 year, 2% discount factor approach proposed by EPA. The shorter time period gives more weight to the known, more immediate, effects of carbon release from clearing, burning and loss of soil sequestration while a zero discount rate values future impacts the same as current impacts. (2154.1, p.8)

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a biofuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

EPA received numerous of comments on whether lifecycle GHG emissions should be discounted through time. For example, as part of the EPA-sponsored peer review, while many of peer reviewers thought that current GHG emissions reductions should be more strongly weighted than future reductions, the peer reviewers were in general agreement that a discount rate should only be applied to a monetary unit, rather than a physical unit, such as an GHG emission. One peer reviewer suggested that it is scientifically justifiable to use discounting procedures for GHG emissions if the procedure is broadened to capture more than the "time value of money" and includes biophysical relationships such as the changing value of damages produced by atmospheric GHG stocks, the persistence of GHGs in the atmosphere and the initial GHG stock levels. Alternatively, another peer reviewer argued that the provision of EISA that deals with lifecycle GHG emissions didn't call for an economic assessment, therefore discounting of GHG emissions would not be appropriate. A majority of peer reviewers said that a 0% discount rate would be appropriate if EPA uses a short time horizon (13-30 years) to assess GHG impacts. The reasoning for not using discounting with shorter time periods is that for purposes of meeting the EISA GHG thresholds, a GHG emission now is not significantly different than a GHG emission 30 years from now.

In addition to the comments received in the peer review, EPA also received many comments in the public comment period. Commenters suggested that discounting is an essential part of long term cost benefit analysis but it is not necessary in the context of the physical aggregation of lifecycle GHG emissions called for in the EISA. Also, commenters expressed concerns that any discount rate chosen by the Agency would be based upon relatively arbitrary criteria.

After considering the comments on discounting from the peer review and the public, EPA decided not to discount (i.e., use a 0% discount rate) GHG emissions due to the many issues associated with applying an economic concept to a physical parameter. First, it is unclear whether EISA intended lifecycle GHG emissions to be converted into a metric whose underpinnings rest on principals of economic valuation. A more literal interpretation of EISA is that EPA should consider only physical GHG emissions. Second, even if the principle of tying GHG emissions to economic valuation approaches were to be accepted, there would still be the problem that there is a lack of consensus in the scientific community about the best way to translate GHG emissions into a proxy for economic damages. Some of the issues that arise are: how to factor in the atmospheric residence times of GHG emissions in the atmosphere, and the evolution of atmospheric concentrations of GHG emissions through time both with and without renewable fuels. As mentioned previously, there is also a lack of consensus as to the appropriate discount rate to apply to GHG lifecycle emissions streams through time. Also, since EPA has decided to base threshold assessments of lifecycle GHG emissions on a 30 year time frame, the issue of whether to discount GHG emissions is not as significant as if the EPA had chosen the 100 year time frame to assess GHG emissions impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2154

Organization: ConocoPhillips
Comment:

The commenter urges EPA to pre-empt states from establishing unique state requirements that utilize differing life cycle analysis approaches than EPA. For example, California chose to use 30 year averaging in their modeling efforts. Should EPA use a 30 year rather than a 100 year timeframe, it would help harmonize the California and EPA results (there would still be some differences due to remaining differences in models used and other assumptions). (2154.1, p.9)

Our Response:

EPA is finalizing this rule under the authority of the CAA as amended by EISA. We do not have additional pre-emption authority. As noted in the preamble and further in the RIA, EPA has based its final rule LCAs on modeling impacts for 30 years, rather than 100 years.

7.3.2.1 Time Horizon

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) supports EPA's proposal to use a 100-year time frame, rather than the 30 year time frame. One hundred years is the most appropriate option for three major reasons: (1) 100 years is a modest scope of time when the long-term impacts and atmospheric residence of GHG emissions are considered; (2) given that the focus is on emissions from the land and land is a permanent resource, a longer time period is justified; and (3) the 100-year time frame is consistent with other EPA and international, including IPCC, analysis of climate change impacts. (2320.1, p.61) [[See Docket Number 2329.1, pp.61-63 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, EPA-HQ-OAR-2005-0161-2079, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, AE Biofuels, Inc., et al.
Comment:
The commenters believe that the GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed, rather than the 30 years some have suggested.

Document No.: EPA-HQ-OAR-2005-0161-2134
Organization: Union of Concerned Scientists

Comment:
The commenter (2134.1) believes that the timeframe over which reduced emissions from substituting biofuels for gasoline are credited should be no longer than 30 years and perhaps even shorter because:
-The certainty with which the future production patterns for a given crop diminishes dramatically for forecasts longer than 20-30 years. There are many other critical projections used to determine what credit is appropriate, and many of these projections become highly speculative more than two or three decades in the future.
-The damage already being done by climate change and the potential tipping points in the near future require immediate action, and emissions reductions that accrue more than 20-30 years in the future will not occur in time to address these concerns, while land use emissions may exacerbate them. See attached document on the urgency of addressing climate change and references therein.
-Between 20 and 30 years is consistent with typical lifecycle analysis based on projected facility lifetime. (2134.1, p.1)

The commenter also believes that the 30 year timeframe without discounting is simple and adequate to achieve the goals of the RFS2. (2134.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) supports the use of the 100-year time period, consistent with the model used by the Intergovernmental Panel of Climate Change (IPCC) and with the language contained in EISA, whereby the global warming potential of GHG emissions is based on impacts over 100 years. (2146.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports the use of a 20 year time horizon, adding that it is virtually impossible to accurately predict which biofuels will be economically viable 50 to 100 years from now. [[Docket number 2233.2, p. 47]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) supports EPA's proposal to use a 100-year time frame for its lifecycle analysis. The GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed (or an even longer timeframe commensurate with the timeframe it takes to sequester the carbon in fossil fuels that biodiesel displaces). The commenter believes that the 100year time frame is consistent with other EPA and international analysis of climate change impacts [[Docket number 2249.2, p. 92]] [[See docket number 2249.2, pp. 92-95 for additional discussion of the commenter's support on this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2337

Organization: California Air Resources Board
Comment:
The commenter (2337.1) urges the use of no more than a 30 year time horizon.

Very significant reductions in GHG emissions are needed in the near term to diminish the potential for large and possibly irreversible damage from climate change. Achieving these reductions requires approaches which promote fuels that provide earlier benefits.

Furthermore, it is very difficult to project the mix of fuels and production methods over the next three decades, much less through the remainder of the century. The assumption that the production techniques used for fuels supplied to meet the RFS will continue for many decades to come is very uncertain. Requiring a shorter "payback" period is far more likely to produce net benefits. (Page 3)

Document No.: EPA-HQ-OAR-2005-0161-2089
Organization: National Association of Clean Air Agencies (NACAA)
Comment:
The commenter (2089.1) urges EPA to rely on the 30-year analysis so that appropriate market incentives are created for advanced biofuels that will result in true GHG benefits.

By highlighting in the proposal the results of its analysis of two of the time horizons- 30 years and 100 years- the agency illustrates that biofuel-induced land use changes (i.e., the conversion of land to produce renewable fuel feedstock) can result in overwhelming GHG emissions in the near term with respect to certain renewable fuels, such as corn ethanol, sugarcane ethanol and soy-based bio-diesel, and that it can take significant time (much more than a few years) for these adverse emissions impacts to be negated by replacing petroleum with biofuels. Although the GHG impacts under the 100-year scenario are far more positive, it is unrealistic to base renewable fuel policies and regulations on such a long-term analysis. (Page 4)

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that the impacts of time used in the RFS2 proposed rule fall woefully short of what is necessary to have an accurate picture of the impact of RFS over time. (2112.1, p.13)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) believes that shorter time periods give more weight to the known, more immediate, effects of carbon release from clearing, burning, and loss of soil sequestration. Use of longer time periods gives more weight to activities that are much more uncertain. The commenter believes that the 100 year period is a poor choice because: 100 years is much longer than the life of individual biofuel plants, there is considerable uncertainty about benefits in the out years of a 100-year period and benefits are credited that occur well beyond the period covered by the current regulation. A time period of 30 years or less and simple averaging is a

pragmatic approach that ensures that anticipated GHG benefits from the regulation are received. A thirty-year analysis period with no discounting is also consistent with recent CARB LCA. (2124.1, p.47)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) believe that the timeframe over which reduced emissions from substituting biofuels for gasoline are credited should be no longer than 30 years and perhaps even shorter. A 100 year time frame as proposed is impossible to justify. A 30-year time frame is more appropriate for the following reasons:

-The certainty of the numerous assumptions and predictions that underlie the analysis diminish drastically for projections out further than 20-30 years.
-The damage already being done by climate change and the potential tipping points in the near future require immediate action, and emissions reductions that accrue more than 20-30 years in the future will not occur in time to address these concerns, while near-term land use emissions may exacerbate them.
- Between 20 and 30 years is consistent with typical lifecycle analysis based on projected facility lifetime. (2129.1, pp.9-10)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) favors the use of 30 years for averaging because the shorter time period gives more weight to the known, more immediate, effects of carbon release from clearing, burning, and loss of soil sequestration. The commenter also supports periodic reevaluations and updates to the LCA (perhaps every three years) to adjust the analysis as technology and modeling evolve. [[Docket number 2130.1, pp. 3-4 and 19]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that if EPA's objective is to increase the certainty of achieving GHG emission reductions in the near term, then it should use the more conservative and shorter 30-year time period for the analysis. Shorter time periods give more weight to the known, more immediate, effects of carbon release from clearing, burning, and loss of soil sequestration. Use of longer time periods gives more weight to activities that are much more uncertain. The commenter believes that the 100-year time period is a poor choice because: 100 years is much longer than the life of individual biofuel plants, there is considerable uncertainty about benefits in the out years of a 100-year time period, and benefits are credited that occur well beyond the period covered by the current regulation. A longer time horizon also introduces a need for

discounting emissions, but there is no clear rationale for selecting an appropriate discount rate. [[Docket number 2393.1, pp. 50-51]]

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) supports EPA's 100 year averaging proposal as proposed. (2408.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
The commenter (2425) believes that the 100-year lifespan for the net present value (NPV) of GHG emissions should not be used because there are too many uncertainties to allow such a timeframe. Renewable fuels must show environmental benefits over a much shorter time horizon, corresponding with a timeline that is reasonable and where land and future fuel demand risks are controllable. [[Docket number 2425.1, pp. 5 and 8]]

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes that GHG emissions from biodiesel derived from virgin vegetable oils should be depreciated over 100 years, as EPA has proposed, rather than the 30 years some have suggested. Historical data indicate that land converted to agricultural production tends to continue in that purpose for at least a century. Additionally, dramatic innovation is not occurring in the engine manufacturing industry in a way that suggests that heavy duty liquid transportation fuels will no longer be needed in as little as 30 years, or any remotely similar timeframe. [[Docket number 2435.1, pp. 4-5]]

Document No.: EPA-HQ-OAR-2005-0161-2639.1
Organization: Poet Ethanol
Comment:
In conclusion, there is no empirical support for the use of a limited, 20- to 30-year time frame to measure the benefits of corn ethanol as an alternative fuel in lifecycle analyses for the RFS 2 proposal. The 100-year time horizon applied in the May 2009 Federal Register's analysis is far more appropriate.

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) supports EPA's 100 year treatment of emissions over time versus the 30 year alternative. [[Docket number 2072, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:

The commenter (2474) believes that EPA should use the proposed 100 year timeline vs. a 30 year timeline as some have suggested. (2474, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
Supports use of 100 year time frame. A 30-year production time frame for all fuels applied across the board is too short a time-frame to compare accurately petroleum fuels that have already been in the marketplace for 100 years with advanced biofuels that have yet to reach commercialization

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) encourages EPA to use a time horizon long enough to encompass all the impacts from the 2022 level of production and resultant emissions from indirect land use change (including all emissions from land clearing and sequestration foregone). (2508, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512.1) noted that specialists such as Winrock have noted that estimating beyond 30 years is often not scientifically rigorous - i.e., with a 95% confidence interval. Carbon policy currently allows for several options to choose from, allowing for a range of 20-60 years, and use of a discount rate to account for uncertainty. (2512.1, p.11)

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) recommends a time horizon of not more than 30 years. The commenter the following reasons:
1. The expected benefits assume that biofuels will substitute for petroleum-based fuels. If petroleum-based fuels and biofuels are eventually replaced instead by, for example, renewable electricity, the long-term benefits of building biofuel production capacity will not be realized.
2. The reliance on expected long-term emissions reductions ignores the fact that we are becoming increasingly concerned about the near-term stability of the climate system. Given this concern, a policy that relies on the expectation that reductions in the far future (i.e., more than 30 years in the future) will compensate for significant emissions in the next several years does not seem appropriate.
3. The analytic methods should reflect the normal tendency to value near-term benefits over long-term benefits.
4. Land use changes caused by biofuels production will have impacts unrelated to climate change that are significant, adverse, and irreversible. (2354.pdf, p.4)

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter also believes that EPA's analysis of improvement in plant and agricultural efficiency underestimates GHG emission from biofuel facilities before 2022 and introduces uncertainty through use of projected factors instead of validated data. The commenter believes it would be better to base the analysis on a near-term date using actual data and update as needed if data indicates improvement. [[Docket number 2130.1, p. 19]]

Our Response:

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans.

Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
[[*The following is from Growth Energy's late supplemental comment document (2635.1)*]]

The commenter (2383) believes adopting the recommendations offered in some public comment submissions to address uncertainty by arbitrarily truncating the analytic horizon or applying higher discount rates would be especially unfortunate in the broader context of policies intended to address climate change and other environmental challenges for which the effects are long-term and uncertain. [[Docket number 2635.1, p. 3]]

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical

biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter notes that one of the key issues in EPA's analysis is the time horizon employed in the analysis. The commenter believes it is useful to define two different horizons. One is the Project Horizon, the period over which the biofuel in question will be produced and hence generate emission reductions by displacing gasoline. The second is the Impact Horizon, the period over which emissions will be projected and analyzed. Although EPA's draft analysis identified these two types of time horizons, in practice its calculations treated them as being identical. The commenter believes that there is value in distinguishing the two types of horizons and that the two generally will not be equal in length. [[Docket number 2635.1, p. 5]] [[See docket number 2635.1, pp. 5-6 for further discussion of project and impact horizons]]

Our Response:

For the reasons discussed above, the Agency decided to use a 30 year frame for assessing lifecycle GHG emissions. We also did not set different time horizons for the project and impact horizons. In our analysis we adjust the mass values of the GHGs to account for their relative global warming potential (GWP). Specifically, we use the 100-year GWPs developed by the IPCC and published in the Second Assessment Report. Therefore, the climate impacts of each emission are, in effect, accounted for over 100 years.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter adds that the measure of radiative forcing proposed by O'Hare et al. - referred to as "fuel warming potential" or FWP - suffers from a major flaw as a result of the fact that its fixed horizon differentially truncates the tracking of GHGs emitted at different times. The FWP approach in O'Hare et al. applies a uniform end date in evaluating the radiative forcing of different emission streams. As a result, later emission reductions from biofuels receive relatively little weight simply because their impacts are considered for many fewer years than are the upfront emission increases from ILUCs. This distortion is particularly acute when the horizon used to compute the FWP measure is relatively short.

The commenter suggests that the problems caused by this kind of arbitrary truncation can be addressed in various ways. One is to use a very long evaluation horizon so that the impact of the

truncation effect is minimized. Another is to adopt a uniform horizon for how long the effects of emissions are tracked and evaluated from the time they are emitted; e.g., the radiative forcing effect is measured for a fixed number of years after the emissions occur, whether those emissions occur in year 1 or year 21. [[Docket number 2635.1, pp. 6-7]] [[See docket number 2635.1, pp. 6-7 for further discussion of Fuel Warming Potential]]

Our Response:

In the proposed rule the EPA sought comment on metrics to account for GHG releases over time. One of the methods that EPA specifically sought comment on was the fuel warming potential (FWP) method proposed by O'Hare et al. Two of the expert reviewers agreed that the FWP could be an appropriate metric. However, they also said that the current FWP method has limitations which should be corrected before it is applied. One of the strongest arguments for the FWP method is that it is more amenable than 100-year GWP for use with non-zero discount rates. This is because the 100-year GWP is based on undiscounted impacts, so applying non-zero discount rates to GWP-weighted emissions can introduce accounting inconsistencies. However, these potential problems are avoided because EPA is using a 0% discount rate to evaluate GHG emissions over time.

Based on the comments received, EPA has not adopted the FWP method in our analysis for this rule. We determined that aggregating GWP-weighted emissions is the best available for this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
Projections of emissions from indirect land use change (ILUC) should incorporate estimates of potential credits that will occur after production of the biofuel in question ceases. Estimating such credits is necessary to provide a complete accounting of emissions changes due to the use of biofuels. Such credits would include cases in which the land freed following the end of production of a particular biofuel may be used for purposes that otherwise would require ILUCs and cause increases in emissions of sequestered GHGs.

Presumably commenters that object to estimating post-production impacts would call for truncating the analysis because of uncertainty. However, uncertainty should be handled explicitly, not used as a reason to arbitrarily exclude uncertain effects. The commenter notes that if major uncertainty were used as a criterion for screening out effects, emission increases associated with ILUCs would not be considered at all given what we understand are the substantial uncertainties associated with their calculation.

Our Response:

In the proposed rule EPA sought comment on whether two separate time horizons should be established, i.e., the project horizons and the impact horizon. EPA also sought comment on whether we should account for emissions or credits that could occur between the end of the project horizon and the end of the impact horizon. For the reasons discussed above EPA decided to use a 30 year frame, and not to distinguish between the project and impact time frames. One result of this decision is that we did not evaluate potential emissions or credits that would occur after production of the biofuel in production ceases.

In the proposed rule EPA sought commenter on whether sequestration from land reversion following the end of production of a particular biofuel should be considered in our analysis. A majority (3) of the expert peer reviewers responded that reversion should not be counted. Two of the peer reviewers offered conditional support: one advised EPA to consider land reversion impacts only if it had reason to believe that croplands dedicated to biofuels would be reverted; the other suggested that EPA try different scenarios to test if land reversion has a significant effect.

The reviewers that objected to counting post-production land reversion offered a number of justifications to support their position. All of them said that there is no reason to assume that land would in fact revert following biofuel production. Instead, it is more likely that land would be kept in crop production for food or that the land would be developed. One of the reviewers recommended that EPA consider post-project salvaged carbon as part of a second independent land use change that occurs once the biofuel project terminates. Another reviewer noted that even if land were reverted, the benefits of sequestration would be attributed to the grazing, forestry, or conservation payment activities associated with the new land use, not to biofuel production.

Dr. Fargione interpreted EISA to mandate reduced emissions during the project time frame, and therefore concluded that emission reduction calculations should be based only on land use change and foregone sequestration that occur during the project time frame. Indeed, EISA specifies that lifecycle GHG emissions shall include the "full fuel lifeycle, including all stages of fuel and feedstock production and distribution," but the Act does not specifically mention post-project activities as part of the lifecycle. Thus, Dr. Fargione argued, the only accounting required following the project time horizon is based on fate of the emissions already released (and their radiative forcing and residence time in the atmosphere). According to Dr. Fargione, one potential exception to this would be if EPA were to include long-lived forest products, as these emissions are not dependent on assumptions about future land use change. (As discussed in preamble Section V, EPA has determined that long-lived wood products from international land conversion are not a significant factor).

Based on comments from the expert reviewers and the public, and for the reasons discussed above, EPA decided that 30 years is a reasonable time frame over which to evaluate lifecycle GHG emissions. As part of this determination, EPA decided that the most reasonable approach is to expect that a particular biofuel pathway should achieve GHG reductions commensurate with the required reduction thresholds, as specified in EISA, during a 30 year time period, and not to give credit for potential post-project sequestrations.

7.3.2.2 Discount Rate

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) opposes the use of any discount rate higher than zero percent. The commenter noted that EPA is not conducting a risk assessment or a valuation of benefits, it is attempting to assess physical emissions attributed to biofuel production. A discount rate is an economic consideration that is more appropriate when considering the value of the benefits of a regulation. While peer reviewers largely agreed that there should be no discount rate for shorter time frames, there is insufficient support to require a higher discount rate for the 100-year time frame. (232.1, p.63)

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, EPA-HQ-OAR-2005-0161-1049, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, Prairie Pride, Inc.
Comment:
The commenters believe that EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use, adding that discounting is an economic consideration and should not be applied to physical emissions.

Emissions will cost more in the future and not less, so discounting them to say they are worth less in the future is likely incorrect.

Document No.: EPA-HQ-OAR-2005-0161-2516.1
Organization: Imperium
Comment:
Because Congress asked EPA to assess physical amounts not to render a valuation estimate, EPA should not use a discount rate.

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) urges EPA to eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions.

Emissions will cost more in the future and not less, so discounting them to say they are worth less in the future is incorrect. Biofuel production has shown a steady trend of decreasing carbon

emission and increasing carbon sequestration and payback for land conversion. [[Docket number 1051.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:
The commenter states that EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions. Emissions will cost more in the future and not less.

Document No.: EPA-HQ-OAR-2005-0161-1987
Organization: Cornell University
Comment:
The commenter attached an academic paper [[1987]] argues that lifecycle analysis that assumes 0% discount rates and a constant price of carbon are biased and distort policy recommendations. Specifically, the paper says, "LCA is based on GHG balance calculations, i.e., comparing overall GHG emission with overall GHG uptake over periods of time (e.g., 30 years), and such balances interpreted as economic benefits or costs only if (i) the (environmental) price of carbon is constant over time and (ii) the social discount rate (SDR) is zero. Both conditions are inappropriate: the price of carbon increases over time as long as atmospheric GHG concentration increases (with its ensuing climate change induced threats); and a positive (though not necessarily constant) discount rate is required to determine intergenerational tradeoffs when economic growth is expected to persist (even at a reduced rate). Existing sustainability standards (with or without iLUC) are therefore biased and distort the ensuing policy recommendation. In this paper we develop a cost-benefit test for biofuel production which relaxes these assumptions and allows for a changing carbon price and a positive SDR, thereby offering a genuinely sustainable standard for biofuel production."

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions. (2079.1, p.9)

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes that EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions. Emissions will cost more in the future and not less, so discounting them to say they are worth less in the future is incorrect. Biofuel production has shown a steady trend of decreasing carbon emission and increasing carbon sequestration and payback for land conversion. [[Docket number 2435.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2466

Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:
The commenter (2472) supports EPA's 2% discount rate treatment of emissions over time versus the 0% discount rate alternative. [[Docket number 2072, p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) favors the use of 30 years for averaging and a zero discount rate as a more conservative approach. The shorter time period gives more weight to the known, more immediate, effects of carbon release from clearing, burning and loss of soil sequestration while a zero discount rate values future impacts the same as current impacts. The commenter believes 100 years of assumed use for a given biofuel and its pathway is simply assuming too much about future decisions beyond our control. (2124.1, p.24)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute
Comment:
The commenters (2129.1) noted that while discounting is an essential part of long term cost benefit analysis, it is not necessary in the context of the physical aggregation called for in the RFS, especially over a relatively short time frame. Longer timeframes introduce a great deal of unnecessary complexity and uncertainty, without meaningfully improving the accuracy or completeness of the result. The commenters believe that the discounting method proposed by EPA is inadequate because the proposed 2% discounting rate is a risk free rate that does not reflect, among other things, the significant risk that future climate benefits through avoided emissions may fail to materialize. The 30 year timeframe without discounting is simple and adequate to achieve the goals of EISA. (2129.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) favors the use of a zero discount rate because it values future impacts the same as current impacts. [[Docket number 2130.1, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-2134
Organization: Union of Concerned Scientists
Comment:
The commenter (2134.1) believes that discounting is not necessary or appropriate in the context of the physical aggregation called for in the RFS2 for the following reasons.
-Discounting is appropriately applied to economic rather than physical quantities. It is not obvious that the economic impact of emissions is constant over time, especially over 100 years, so the proposed discounting approach is inadequate.
-The discounting rate being discussed is a risk free rate that does not reflect, among other things, the real risk that future climate benefits through avoided emissions fail to materialize.
-There is no technical consensus or guidance in the law on the appropriate social cost of carbon to use in the regulation and questions of intergenerational equity and etc. need not be introduced into what is ostensibly a technical analysis.
- A short time frame makes the result less sensitive to the discount rate, so these difficult questions can more reasonably be neglected by limiting the analysis to a relatively short time frame. (2134.1, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) believes that it is unclear that accounting methodologies can or should be used to evaluate impact of physical elements such as greenhouse gases. The commenter recommends a 0% rate be applied by EPA. (2146.1, p.6)

Document No.: EPA-HQ-OAR-2005-0161-2634
Organization: Citizen (*sample of 155 comment letters received from mass comment campaign sponsored by Prairie Pride Inc.*)
Comment:
The commenter (2634) notes that, "EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions. Emissions will cost more in the future and not less, so discounting them to say they are worth less in the future is likely incorrect." (2634 p. 2)

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Comment:
The commenter (2157) notes that because Congress asked EPA to assess physical amounts not to render a valuation estimate, EPA should not use a discount rate. Discounting is an economic consideration and should not be applied when attempting to assess physical emissions. A use of

a discount rate in this case in unwarranted. It is not clear whether a market-based rate of time preference is appropriate in this case. (2157 p. 92-93). Further discussion and various scenarios are discussed on (2157 93-95).

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports the use of a scientifically determined discount rate to value the relative importance of current versus future reductions in GHG emissions; however, EPA uses a very unscientific argument to support the selection of the arbitrary 2% rate. In addition, the commenter argues that it is inconsistent for EPA to propose using a discount factor for a 100 year time period and then to propose that no discount factor be used for shorter time periods. The commenter adds that if EPA incorporates the use of a discount rate, it must determine this rate on a scientific basis. Using an appropriate climate change model would give EPA the information needed to calculate the effective discount rate. [[Docket number 2233.2, pp. 47-48]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) does not support use of a discount rate; Congress asked EPA to assess physical amounts, not to render a valuation estimate. The commenter urges EPA to eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. As EPA's analysis shows, the choice of a discount rate can have significant effects on the results of a lifecycle analysis. A discount rate, however, is a policy assessment of costs and benefits, which is inapplicable here. EPA is not being asked to "value" emissions reductions over time, but to assess what those reductions actually will be. Discounting is an economic consideration and should not be applied when attempting to assess physical emissions. A use of a discount rate in this case is unwarranted. [[Docket number 2249.2, p. 95]] [[See docket 2249.2, pp. 95-98 for a comprehensive discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that EPA should eliminate the arbitrary 2 percent discount rate. (2474, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2491
Organization: International Council on Clean Transportation (ICCT)

Comment:
The commenter (2491) believes that the EPA is correct in recognizing that not all GHG released over different time periods are equal. The GHG released now will likely to have more impact on climate change than GHG released after 50 or 100 years. Therefore, it is a scientifically good approach to discount GHG emissions if we consider a policy horizon of more than 50 years. However, due to future uncertainties regarding how biomass will be grown and processed, the complexity involved in GHG estimations for land use changes (both direct and indirect) and possible policy changes, the commenter believes that the 100year time frame may not be realistic for estimating GHG emissions. It might be better to use a 30year time period with 0% discount rate for calculating WTW GHG emissions of biofuels. [[Docket number 2491.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) recommends that EPA lay out those emissions as accurately as possible on their true time path, adjust them for their climate change potential, and discount those adjusted emissions back to present terms using a non-zero discount rate that reflects the uncertainty in the estimate of the damages. (2508, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512.1) noted that discount rates provide a level of assurance to all calculations and allow for uncertainty and risk. The VCS standard includes a table for discount rates according to land use type and low, medium or high risk. (2512.1, p.12)

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:

The commenter (2466) suggests that use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%). (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:
The commenter states that EPA should eliminate the arbitrary 2 percent discount rate applied to the carbon payback of biofuel use. Discounting is an economic consideration and should not be applied to physical emissions. Emissions will cost more in the future and not less.

Our Response:

EPA received numerous of comments on whether GHG lifecycle emissions should be discounted through time. For example, as part of the EPA-sponsored peer review, while many of peer reviewers thought that current GHG emissions reductions should be more strongly weighted than future reductions, the peer reviewers were in general agreement that a discount rate should only be applied to a monetary unit, rather than a physical unit, such as an GHG emission. One peer reviewer suggested that it is scientifically justifiable to use discounting procedures for GHG emissions if the procedure is broadened to capture more than the "time value of money" and includes biophysical relationships such as the changing value of damages produced by atmospheric GHG stocks, the persistence of GHGs in the atmosphere and the initial GHG stock levels. Alternatively, another peer reviewer argued that the provision of EISA that deals with lifecycle GHG emissions did not call for an economic assessment, therefore discounting of GHG emissions would not be appropriate. A majority of peer reviewers said that a 0% discount rate would be appropriate if EPA uses a short time horizon (13-30 years) to assess GHG impacts. The reasoning for not using discounting with shorter time periods is that for purposes of meeting the EISA GHG thresholds, a GHG emission now is not significantly different than a GHG emission 30 years from now.

In addition to the comments received in the peer review, EPA also received many comments in the public comment period. The commenters suggested that discounting is an essential part of long term cost benefit analysis but it is not necessary in the context of the physical aggregation of lifecycle GHG emissions called for in the EISA. Also, commenters expressed concerns that any discount rate chosen by the Agency would be based upon relatively arbitrary criteria.

After considering the comments on discounting from the peer review and the public, EPA decided not to discount (i.e., use a 0% discount rate) GHG emissions due to the many issues associated with applying an economic concept to a physical parameter. First, it is unclear whether EISA intended lifecycle GHG emissions to be converted into a metric whose underpinnings rest on principals of economic valuation. A more literal interpretation of EISA is that EPA should consider only physical GHG emissions. Second, even if the principle of tying GHG emissions to economic valuation approaches were to be accepted, there would still be the problem that there is a lack of consensus in the scientific community about the best way to

translate GHG emissions into a proxy for economic damages. Some of the issues that arise are: how to factor in the atmospheric residence times of GHG emissions in the atmosphere, and the evolution of atmospheric concentrations of GHG emissions through time both with and without renewable fuels. As mentioned previously, there is also a lack of consensus as to the appropriate discount rate to apply to GHG lifecycle emissions streams through time. Also, since EPA has decided to base threshold assessments of lifecycle GHG emissions on a 30 year time frame, the issue of whether to discount GHG emissions is not as significant as if the EPA had chosen the 100 year time frame to assess GHG emissions impacts

EPA is finalizing its assessments based on an analysis assuming 30 years of continued emission impacts with a 0 discount rate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) agrees with the idea of an expert peer review regarding the issues surrounding time horizons and discount rates. (2466.1.pdf, p.10)

Our Response:

A peer review of this specific issue was undertaken between the proposal and final rule. We have incorporated the comments received from the peer reviewers into our final rule analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) believes EPA's "Discount" analysis greatly undervalues the GHG reductions provided by biofuels. Dr. W. Kip Viscusi, one of the nation's foremost economists, analysis shows that the reductions in the present value of the longer-term GHG reductions produced by RFS2 are partially, and in some cases completely, offset once proper account is taken of the escalating social cost of carbon. The upshot is that the "discount rates" shown in the NPRM, which range from two to seven percent, would all need to be adjusted downward after accounting for the social cost of carbon. Those adjustments would readily place the majority of current U.S. corn ethanol biorefineries in compliance with the 20 percent GHG emissions reduction targets specified for new corn biorefineries in section 211(o)(2)(A)(I), if the nominal "discount rate" is set at three percent or below three percent being the discount rate applied by EPA in other recent GHG analyses. If EPA does not make the adjustments in "discount rates" recommended by Dr. Viscusi, it must present its reasons for not doing so. If EPA accepts the need for adjustments to reflect the future social cost of carbon, but believes a different valuation

than the default valuation proposed by Dr. Viscusi should be used, it also needs to explain its reasoning, and it must permit public comment on its alternate selection. [[Docket number 2383.1, p. 52]] [[See docket number 2383.1, p. 52-53 and 2359.1 for further discussion of this issue.]]

Our Response:

As part of the EPA-sponsored peer review we received numerous of comments on whether GHG lifecycle emissions should be discounted through time, while many of peer reviewers thought that current GHG emissions reductions should be more strongly weighted than future reductions, the peer reviewers were in general agreement that a discount rate should only be applied to a monetary unit, rather than a physical unit, such as an GHG emission. One peer reviewer suggested that it is scientifically justifiable to use discounting procedures for GHG emissions if the procedure is broadened to capture more than the "time value of money" and includes biophysical relationships such as the changing value of damages produced by atmospheric GHG stocks, the persistence of GHGs in the atmosphere and the initial GHG stock levels.

The social cost of carbon is an economic valuation of a physical quantity of GHG emissions. As discussed in preamble Section V, in this final rule EPA is not applying economic concepts to physical GHG emissions for the purposes of determining which biofuels comply with the lifecycle GHG thresholds specified in EISA. Therefore, we did not include the social cost of carbon in our lifecycle GHG emissions calculations.

After considering the comments on discounting from the peer review and the public, EPA decided not to discount (i.e., use a 0% discount rate) GHG emissions due to the many issues associated with applying an economic concept to a physical parameter. First, it is unclear whether EISA intended lifecycle GHG emissions to be converted into a metric whose underpinnings rest on principals of economic valuation. A more literal interpretation of EISA is that EPA should consider only physical GHG emissions. Second, even if the principle of tying GHG emissions to economic valuation approaches were to be accepted, there would still be the problem that there is a lack of consensus in the scientific community about the best way to translate GHG emissions into a proxy for economic damages. Some of the issues that arise are: how to factor in the atmospheric residence times of GHG emissions in the atmosphere, and the evolution of atmospheric concentrations of GHG emissions through time both with and without renewable fuels. As mentioned previously, there is also a lack of consensus as to the appropriate discount rate to apply to GHG lifecycle emissions streams through time. Also, since EPA has decided to base threshold assessments of lifecycle GHG emissions on a 30 year time frame, the issue of whether to discount GHG emissions is not as significant as if the EPA had chosen the 100 year time frame to assess GHG emissions impacts.

7.4 GHG Thresholds

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0953

Organization: Great River Energy
Comment:
The commenter (0953) noted that in the examples illustrated in EPA-420-F-09-024 "EPA Lifecycle Analysis of Greenhouse Gas Emissions from Renewable Fuels", it appears that the closest proxy to determining the net benefit of CHP is comparing "Corn Ethanol - dry mill biomass" at 39%/18% Lifecycle GHG reduction with "Corn Ethanol - dry mill biomass with CHP" at 47%/26% Lifecycle GHG reduction. The commenter is disheartened that the net CHP benefit is so small. There are virtually no technology improvements that can be made to overcome the indirect land use penalty associated with conventional ethanol and soy biodiesel. The commenter believes that neither of these examples would qualify as an "Advanced" (50% reduction threshold) or "Cellulosic" biofuel (60% reduction threshold). (p.1)

Our Response:

As noted in the preamble and the regulations for this final rule, EPA has identified a number of technically feasible pathways for both corn ethanol and biodiesel which will allow the fuel to meet or exceed the 20% and 50% thresholds, respectively, for these products. We note that under EISA, ethanol from corn starch is not eligible for compliance with the advanced biofuel standard. A number of pathways have also been determined as meeting the cellulosic biofuel standard of 60%.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1000
Organization: Environmental Consultant
Comment:
The commenter (1000) believes that Section VI of the preamble for the proposed regulation incorrectly states that EISA establishes GHG thresholds for each category of renewable fuels. (P.1)

Our Response:

EPA disagrees with the commenter. As explained in the NPRM and the final rule, EISA requires that the lifecycle GHG emissions of a qualifying renewable fuel be less than the lifecycle GHG emissions of the 2005 baseline average gasoline or diesel fuel that it replaces. Four different levels of reductions are required for the four different renewable fuel standards.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2316
Organization: University of Minnesota
Comment:
The commenter [[2316]] states: My second comment concerns the appropriate analytical time horizon. I propose that the most appropriate duration to use is 15 years, or the regulatory duration

of the Renewable Fuel Standard in the Energy Independence and Security Act of 2007 (EISA). The proposed 30-year horizon is fixed to an assumed biorefinery production lifetime, but ultimately the impact of EISA is determined by the period over which it provides financial incentive to build and operate biorefineries, not by how long such facilities may stand. Any decisions to build and run biorefineries have been and will be made by investors with the knowledge that recovery of any capital and operating costs from EISA payments will occur prior to or during 2022. Likewise, any carbon debt associated with land conversion, which itself comes at a cost to society, should be attributed to EISA's impact on decisions to build and operate biorefineries, which will all be made prior to 2022. [[2316.1 p.1]]

Our Response:

In the proposed rule, EPA highlighted two time periods of 30 years and 100 years for consideration in GHG lifecycle analysis. The Agency discussed the relative advantages of these, and other, time periods. The expert peer reviewers discussed a number of justifiable time periods ranging from 13 to 100 years. The reviewers said that longer time frames, such as 100 years, were only appropriate if the Agency used positive discount rates to value future emissions. Almost all of the peer reviewers specifically said that a time frame of 20 to 30 years would be justifiable based on the average life of a biofuel production facility. The reviewers and the public commenters provided several arguments for the application of a 30 year time frame. A 30 year time period is appropriate because future emissions are less certain and more difficult to value, so the analysis should be confined insofar as possible to the foreseeable future. Another argument is that a near-term time horizon is consistent with the latest climate science that indicates that swift and deep reductions of heat-trapping gasses are needed to avoid catastrophic changes due to a warming climate. One of the reviewers said that while "there is no unassailable basis for choosing a very specific timeframe" the expected average lifetime of a biofuel production facility is the "most sensible anchor" for the choice of a timeframe. Alternatively, a number of commenters argued that a 100 year time frame is the appropriate time period for GHG lifecycle emissions analysis principally since this is the time period over which climate change impacts are likely to occur.

Based upon the comments received from the peer review and public between after the RFS2 proposal, EPA has decided to use a 30 year frame for assessing the lifecycle GHG emissions. There are several reasons why the 30 year time frame was chosen. The use of the life of a typical biofuel plant seems reasonable as a basis for the timeframe for assessing the GHG emissions impacts of a renewable fuel. Also, the 30 year time frame focuses on GHG emissions impacts that are more near term and, hence, more certain.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2364
Organization: Tyson Foods, Inc.
Comment:
The commenter (2364.1) supports reducing the GHG threshold for biomass-based diesel and advanced biofuel to 40 percent. (2364.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2365
Organization: Neste Oil Holding, Inc
Comment:
The commenter (2365.1) noted that there is still no scientifically undisputable methodology for precisely quantifying the ILUC effect of biofuels. The commenter believes that EPA should accommodate these uncertainties by reducing the GHG reduction requirement for advanced biofuels and biomass-based diesel from 50% to 40% - as the Congress intended. (2365.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) believes that EPA should maintain the statutory definitions of lifecycle greenhouse gas emissions thresholds in order to promote the second generation biofuels market and facilitate global trade. (2099.1, p.22) (See Docket Number 2099.1, pp.22-23 for more discussion on this issue)

The commenter also believes that due to the sufficient feedstock available to meet the EISA standards, EPA must not lower the GHG emission performance threshold in the categories of advanced biofuel and biomass-based diesel. (2099.1, p.23) (See Docket Number 2099.1, pp.23-24 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that all of the GHG Reduction thresholds should be reduced by the maximum amount that the proposed rule provides for, or 10%, for all fuels in the RFS2. (2079.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) supports lowering the requirement to 40% until the GHG emission science, including indirect land use change (ILUC) is more fully developed and the biofuel industry is better established. (2549.1, p.7)

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2425

Organization: PetroAlgae
Comment:
The commenter (2425) encourages EPA to establish a default list of fuels meeting the GHG thresholds based on a 2022 performance assessment. If a company does not agree with the LCA factor, they should have the right to submit a specific LCA for their fuel/operation. This process will accelerate the acceptance and issuance of RINs and will avoid a large level of LCA reviews by EPA. [[Docket number 2425.1, p. 6]]

Our Response:

EPA provides in the final rulemaking a petition process by which those fuel pathways that have not yet been modeled EPA modeling can be evaluated to determine compliance with one or more of the renewable fuel categories.

We are establish a process whereby a biofuel producer can petition the Agency to also consider additional new energy saving production facility designs or co-product pathways as eligible pathways in addition to those specifically listed in today's regulations. We expect the petitioner will describe the alternative production facility technology applied and supply data establishing the amount of energy savings that will result from the use of the alternative technology. Similarly, for alternative co-products, we will expect the petitioner to document the energy required to produce the co-product and the intended use of the co-product (e.g., DGS as a replacement for corn and soy meal as animal feed is a current example). EPA will use the data supplied via the petition and technically evaluate whether the information is sufficient and allows EPA to determine the new pathways would indeed qualify. If we make such a technical determination, then the fuel producer will be allowed to generate RINs for fuel produced using such additional pathway(s). It will not be necessary to update the regulations to specifically list such additional pathways prior to their being used for this program.

As technology develops, new feedstocks emerge, and information becomes available, we anticipate including emerging pathways and new feedstocks in periodic regulatory updates to this final rule. Including these new feedstock and fuel pathways will involve the same petition process as described above. Biofuel producers who would like to get their fuel or feedstock included would have to provide information on their process as outlined above. Furthermore if a new feedstock is being utilized, information regarding that feedstock would also be required. Information would include at a minimum, type of feedstock and source, data on market value of the feedstock and current uses if any. Other information required would include input requirements of chemicals (fertilizer, pesticides, etc.) and energy use by type of energy. Yield information would also be required for both the current situation as well as anticipated changes over time.

For inclusion of new fuel and feedstock pathways, it may be important to seek public comment on the modeling. We would therefore intend to utilize the annual rulemaking process already planned for establishing the renewable fuel standards applicable for the following year, to also provide an opportunity to propose and finalize the inclusion of these emerging pathways on our list of eligible biofuels, as appropriate.

See section V.C of the Preamble describing the petition process details.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2512
Organization: Conservation International
Comment:
The commenter (2512.1) agrees that the proposed thresholds for lifecycle GHG emissions reductions are reasonable, although the commenter feels that biofuels produced at existing plants should meet the same minimum requirements, rather than being "grandfathered" in. The commenter recommends thresholds be re-evaluated periodically and improved over time. (2512.1, p.2)

Our Response:

As stipulated by EISA, renewable fuel from existing facilities is exempt from the lifecycle GHG emission reduction threshold of 20% up to a baseline volume for that facility that will be established at the time of registration. As discussed in preamble Section II.B.3, the exemption from the 20% GHG threshold applies only to renewable fuel that is produced from facilities which commenced construction on or before December 19, 2007, or in the case of ethanol plants that use natural gas or biodiesel for process heat, on or before December 31, 2009.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways are likely to be updated. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As specified by EISA, if EPA revises the analytical methodology for determining lifecycle greenhouse gas emissions, any such revision will apply to renewable fuel from new facilities that commence construction after the effective date of the revision.

7.4.1 Advanced Biofuel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that the final rule must provide appropriate incentives for advanced biofuel development while maintaining responsible environmental standards for those fuels. (2110.1, p.4)

The ommenter recommended that EPA be flexible in its LCA so as to recognize the evolving science.

Our Response:

EPA has indicated in the preamble its intention to continue to develop improvements to lifecycle assessment of biofuels and to periodically update its analyses, consistent with EISA. Additionally, EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) is in favor of leaving the advanced biofuel threshold at the 50% GHG reduction level. The key to the RFS2 is to promote the use of alternative feedstocks that reduce GHG. By lowering the level, it would incentivize other feedstocks. However, if the indirect land use change penalty lowers grain or sweet sorghum feedstock GHG reduction levels below 50%, then the advanced biofuels threshold should be lowered to 40% as allowed by EISA. (2119.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) does not support the proposed adjustment in the advanced biofuel GHG reduction threshold to allow sugar ethanol to quality as advanced biofuel. [[Docket number 2130.1, p. 9]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) supports the reduction of the advanced biofuels threshold to 40%, but adds that by proposing to lower the threshold level to only 44%, EPA implies far more modeling accuracy than there really is. [[Docket number 2233.2, p. 53]]

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) believes that EPA should recalculate the GHG intensity value for advanced fuel given the assumption that 70 percent will come from crop residue. EPA should also refigure the water quality impacts resulting from greater erosion and water quality reduction when crop residues are removed. (2348, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) requests that EPA recalculate the GHG intensity value for advanced fuel given the assumption that 70% will come from crop residue. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, pp. 3-4 for further discussion of this issue.]]

Our Response:

EPA has done an analysis of advanced and cellulosic fuels from a number of different feedstocks including crop residues. We have developed specific GHG lifecycle results for the different types of feedstocks separately, including one for crop residues vs. other feedstocks used for cellulosic or advanced biofuel production.

We do not project significant levels of residue removal in the regions modeled as part of our water quality analysis so their impacts are not considered.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) notes that legislatively, EPA has the authority to adjust the thresholds for each class of Renewable Biofuels by up to 10% and believes that EPA should use this authority to actively qualify as many biofuels for each category. [[Docket number 2374.1, p. 2]]

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy

Comment:
The commenter (2383) states that if EPA attributes any significant indirect emissions impact to conventional biofuels, it must set a 10 percent threshold for corn ethanol from new facilities. The statute does not limit EPA's authority in the manner suggested by the NPRM. EPA is not directed to adjust the 20 percent requirement to allow only "at least a few of the best" corn ethanol processes at new biorefineries to participate in the program. To the contrary, the statute mandates that adjustments "shall" enable participation by a range of different natural gas fired corn-based ethanol plants. [[Docket number 2383.1, p. 54]] [[Also see docket number 2381.1, declaration of Lautt.]]

The commenter also states that there are no grounds to treat ethanol from sugarcane as an advanced biofuel. The NPRM proposes to relax the requirement for 50 percent emissions reductions from sugarcane but this analysis is improper in numerous respects. [[Docket numbers 2383.1, p. 55-56, 2204.1, declaration of James M. Lyons, and 2380.1, p. 2]]

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that the GHG reduction thresholds contained in the RFS2 mandates create a powerful incentive to produce low carbon fuels, but believes the agency should establish additional incentives to encourage production of low carbon fuels, beyond threshold levels, by establishing a lifecycle GHG reduction RIN multiplier. The commenter believes that the current proposal lacks incentives for biofuel producers and regulated parties to develop and utilize biofuel with greater lifecycle GHG reduction characteristics. The commenter provides guidelines to establish incentives in the form of a GHG reduction RIN multiplier. [[Docket number 2393.1, pp. 3-4]]

Our Response:

EPA has adopted regulations which differentiate fuels on, among other things, the basis of their compliance with the thresholds as determined by full lifecycle analysis as directed by EISA. All fuels achieving a threshold receive the same credit for generating RINs under this program. It is not clear whether EPA would have the authority under section 211(o) to adopt the kind incentive program suggested by the commenter. In any case, it would not be appropriate at this time to do so, in part because it would call for making more precise determinations of lifecycle GHG emissions than the single determination of compliance or non-compliance with

the Act's GHG thresholds. The lifecycle analyses performed by EPA for this rulemaking were not intended to serve that function.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
EPA has proposed to adjust the required reduction threshold for "advanced biofuels" from 50% to 44%. The commenter states that the 44% reduction value is based on the 100-year time period; on the 30-year time period this fuel pathway would not qualify. The same value is also based on the 2% discount rate, without which the fuel pathway would qualify as a 61% reduction. [[Docket number 2393.1, p. 56]]

Our Response:

EPA has adopted final rules which include determining compliance assuming 30 years of GHG emission impacts, with no discount. Based on this analysis, a number of fuel pathways meet the 50% GHG threshold for advanced biofuels. Therefore we have determined it is unnecessary to adjust the threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) supports reducing the GHG threshold of the advanced category to 40%. When correct NOx credits are applied, and EPA reduces the advanced threshold to 40-44%, soybean oil biodiesel appropriately qualifies as an advanced biofuel and for the biomass based diesel category. (2511.1, p.5)

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2472
Organization: Valero Energy Corporation (Valero)
Comment:

The commenter (2472) supports making the hurdle for advanced biofuel a 40% reduction versus a 50% reduction. [[Docket number 2072, p. 2]]

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:

The commenter also believes that the definition of Advanced Biofuel needs to be expanded where it states: "...as long as it meets the proposed 40 - 44% GHG emission reduction as it relates to the gasoline, diesel fuel or jet fuel that it displaces or replaces." The commenter also supports the idea of reducing the GHG reductions emissions to 40% to allow sugar cane ethanol to be categorizes as an Advanced Biofuel.

Our Response:

EPA has not finalized adjustments to the Advanced Biofuel threshold since it has determined several pathways are capable of meeting the 50% threshold and therefore no adjustment is necessary.

7.4.2 Biomass-based Diesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1029, EPA-HQ-OAR-2005-0161-1043, et al.
Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, C.I.B., University of Georgia Engineering Outreach Service, et al.
Comment:
The commenters noted that the U.S. biodiesel industry has been steadily growing over the past several years with 690 million gallons in production in 2008. Existing feedstock sources are already available to meet this production level. As such, no land use changes, and therefore no significant emissions from those changes, can be associated with existing production. All lifecycle analyses, including EPA's without international land use changes, show well over 50

percent reduction in emissions. The commenters also noted that there is ample support for EPA to grandfather existing facilities by deeming these facilities to be in compliance with the 50 percent reduction requirement.

The commenters also noted that fairness and good policy dictate that EPA's regulations should not undermine investments made prior to the implementation of RFS2 regulations. EPA's proposed rule does not meet these standards. By eliminating substantial portions of U.S. biodiesel production from the Biomass-based Diesel category, EPA has undermined existing investments and has created disincentives for continued investment in U.S. biodiesel production and distribution.

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. As detailed in the preamble and RIA, EPA has used the most up to date models, data and other information in its LCA. These indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2000
Organization: Galva Holstein Ag, LLC.
Comment:
The commenter [[2000]] states that EPA should reduce the biomass-based diesel fuel GHG threshold to 40 percent, and recommends that for biomass-based diesel not meeting the advanced GHG reduction threshold, an energy content-based factor of 1.5 be continued. [[see docket#2000 p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that the existing production of biodiesel should be deemed to meet the 50 percent greenhouse gas emission reduction requirement for biomass-based diesel. (2079.1, p.6) (See Docket Number 2079.1, p.6-7 for a detailed discussion of this issue)

Document No.: EPA-HQ-OAR-2005-0161-2087
Organization: Ag Partners
Comment:
The commenter [[2087]] states that EPA should reduce the biomass-based diesel fuel GHG threshold to 40 percent, and recommends that for biomass based diesel not meeting the advanced GHG reduction threshold, an energy content based factor of 1.5 be continued. [[see docket#2087 p. 1]]

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests that reducing the GHG level to 40% on a temporary basis only since blending with other feedstocks will be difficult for EPA to measure and demonstrate compliance. [[Docket number 2106.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) does not support an adjustment to the biomass-based diesel minimum GHG emissions reduction threshold, nor any of the averaging approaches outlined by EPA as a mechanism to qualify biodiesel that would otherwise not qualify as biomass-based diesel. If the final lifecycle analysis does not qualify vegetable oil-sourced biodiesel as biomass-based diesel, EPA should not resort to averaging techniques to artificially qualify such biofuels. The commenter believes that EPA should initiate a general waiver process to reduce the biomass-based diesel requirement to the level of available biodiesel or renewable diesel that does qualify as biomass-based diesel, taking into account geographical and seasonal factors. (2124.1, p.26)

If EPA proceeds with an averaging approach to qualify vegetable oil-sourced biodiesel as biomass-based diesel, the commenter urges EPA to utilize a n averaging mechanism that allows both producers and obligated parties to average the appropriate ratio of RINs. (2124.1, p.26)

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) does not support an adjustment to the biomass-based diesel GHG reduction threshold, nor any of the averaging approaches outlined by EPA as a mechanism to qualify biodiesel that would otherwise not qualify as biomass-based diesel [[Docket number 2130.1, p. 9]] [[See docket number 2130.1, pp. 9-10 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) believes that if the final EPA analysis of the GHG reduction of any biodiesel pathway fails to meet the 50 Percent GHG reduction requirement for Biomass-based Diesel and Advanced Biofuel, then the Agency should use its authority as provided by Congress and adjust the 50 percent GHG reduction requirement downward to 40 percent to ensure U.S. biodiesel can meet the Biomass-based Diesel and Advanced Biofuel requirements, as intended by Congress. [[Docket number 2249.2, p. 12]]

The commenter notes that the Proposed Rule restricts feedstock for Biomass-based Diesel to only animal fats and restaurant grease and points out that vegetable oils account for approximately 60 percent of the feedstock that is available to meet the RFS2 Biomass based Diesel targets, and disqualifying these sustainable oils from the program will significantly inhibit

the domestic industry's ability to meet the RFS2 volume goals established by law. [[Docket number 2249.2, p. 13]]

[[See docket number 2249.2, p. 13 for additional discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) notes that EPA and EIA both predict that there will not be sufficient quantities of fuels to meet the 50%, or even the 40% thresholds; however, 40% is the lowest level that EPA can set for the biomass-based diesel threshold. The commenter supports this revised level. [[Docket number 2233.2, p. 54]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
EPA has asked for comment on whether to adjust the required reduction threshold for "biomass-based diesel" from 50% to 40%. Additionally, EPA has proposed to allow producers to mix biomass-based diesel fuels with varying reduction levels in order to meet a yearlong average of a 40% reduction from the product. The commenter opposes the use of averaging to enable currently available bio-mass based diesel fuels "fit" the EISA requirement. The commenter expresses support for lowering of the threshold to 40%, provided that EPA determines that there are no feedstock pathways that can meet the 50% threshold. However, EPA does not have the authority to allow averaging. E PA instead should immediately waive future volumes of biomass-based diesel to levels that do not exceed those possible to be produced from biomass suitable to meet the allowable GHG threshold for advanced biofuels.

Document No.: EPA-HQ-OAR-2005-0161-2420
Organization: Magellan Midstream Partners
Comment:
The commenter (2420.1) is concerned that EPA's proposed GHG threshold for biodiesel produced from soybean oil will not qualify under the biomass-based diesel category. The commenter noted that by limiting the market potential for soy-based biodiesel, EPA may be promoting drivability problems for unsuspecting diesel motorists particularly in the northern tier of the United States. This action may also eliminate a number of operating biodiesel plants from participating in the biomass based diesel program which will make it difficult for obligated parties to meet their RVO. The commenter urges EPA to carefully consider the technical data submitted by affected parties to determine if soy-based biodiesel will meet the biomass based diesel standard. (2420.1, pp.2-3)

Document No.: EPA-HQ-OAR-2005-0161-2425
Organization: PetroAlgae
Comment:
Referring to the proposed 50% LCA threshold for biomass-based diesel that can be modified on a case-by-case basis and the adjustments that can be made to this threshold only if it is determined the threshold is not commercially feasible for fuels made from a variety of feedstock

material, the commenter (2425) requests this definition to be clarified and explains that for certain smaller facilities, the economies of scale do not allow for the most energy efficient production rate. These facilities are still critical in the production of biomass-based diesel and should be allowed leniency with respect to the LCA threshold. [[Docket number 2425.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2474
Organization: North Carolina Department of Transportation
Comment:
The commenter (2474) believes that EPA should adjust the 50 percent reduction requirement for biomass-based diesel to 40 percent. (2474, p.2)

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2174
Organization: Illinois Soybean Association
Comment:
The commenter (2174) believes that the 50% GHG level that biodiesel must meet is arbitrary. Existing ethanol plants are exempt and do not have to meet any GHG reduction threshold. The statute does not require EPA to include international indirect emissions in their lifecycle analysis for biofuels. (2174, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2348
Organization: StateLine Cooperative
Comment:
The commenter (2348) believes that EPA should reduce the biomass-based diesel fuel GHG threshold to 40 percent. The commenter also recommends that for biomass based diesel not meeting the advanced GHG reduction threshold, an energy content based factor of 1.5 be continued. (2348, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) supports reducing the biomass-based diesel fuel GHG threshold to 40%. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, p. 2 for further discussion of this issue.]]

Our Response:

The 50% threshold was established by Congress. EPA disagrees with commenter's interpretation of the statute. EPA's rationale and methodology is explained in detail in the final rule.

7.5 Assignments of Pathways to Renewable Fuel Categories

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that EPA can not replicate the archaic technology matrix used in this proposed rule for the dozens of technologies using dozens of feedstocks that are being developed. (2112.1, p.13)

Our Response:

As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) is thankful that EPA allows biofuels from foreign sources such as Malaysia. The commenter noted that on page 24917, it was stated that the agriculture crops for renewable transportation fuels will mostly be grown in the U.S. The report alludes that whatever little imports will mainly be for the three advanced biofuel categories but not the residual renewable fuels category which has lower GHG savings requirements. The commenter requests that the contribution from foreign sources be reflected in this category. Tables V.A. 1-1 and

V.A. 2-1 should therefore also show the contribution from other non advanced biofuel other than corn ethanol. (2016.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) is concerned about the statement that the agriculture crops for renewable transportation fuels will mostly be grown in the U.S. The report alludes that the imports will mainly be for the three advanced biofuel categories but not the residual renewable fuels category which has lower GHG savings requirements. It was predicted that all non-advanced biofuel will be from corn ethanol (U.S.) and the commenter (2361) requests that the contribution of non advanced biofuel from other countries allowed to be imported into the U.S. (2361.pdf, p.1)

Our Response:

The lifecycle analysis of fuels is based on the characteristics of the fuel pathway rather than whether it is domestically produced or imported. The economic models project that a large volume of feedstocks will be produced in the U.S.; however, domestic and imported fuels are eligible for all four renewable fuel categories if they meet the lifecycle greenhouse gas reduction thresholds and the definition of renewable biomass. EPA also provides a petition process for fuel pathways not yet analyzed.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should promote the use of landfill gas, which may be transported through common carrier pipelines. EPA should include the use of methane from animal wastes and landfill gas, including methane transported through common carrier pipelines, as part of the pathways in the final rule implementing the RFS2 program. (2329.1, p. 99-100)

Our Response:

As part of the final rulemaking EPA has included a pathway for biogas from landfills, sewage and waste treatment plants, and manure digesters to qualify as an advanced biofuel.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) noted that if in finalizing the rule EPA changes a particular biofuel's qualification in a manner that in essence "demotes" its "D-code" assignment, EPA should

provide notice and allow an opportunity to comment before finalizing. The commenter believes that EPA should also allow for notice and comment before finalizing a new pathway assessment or revised assessment that demotes the previously-assigned "D" code for a fuel. (2471.1, p.11)

Our Response:

Any updates to the rulemaking and fuel's D-code assignment will go through a proposal and final rulemaking process. Furthermore, any changes to a fuel pathway D-code would only apply to new facilities, constructed after the change, all existing facilities would be grandfathered under the original D-code rating.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2376
Organization: Country Sanitation Districts of Los Angeles County
Comment:
The commenter [[2376]] states that waste-to-fuel advanced technologies such as those listed above have potential to produce significant volume of renewable fuels that could help EPA achieve the RFS2 volume mandates of 36 billion gallons of renewable fuel by 2022. However, the emerging waste-to-fuel industry needs additional incentives to improve the economic feasibility of such projects. Credit trading systems for renewable fuels such as the trading system in RFS will help the emerging waste to- fuel industry gain economic stability and promulgate long-term investments. Therefore, we again request that waste-derived renewable fuels be included in RFS2 in order to participate in the credit trading system. [[2376.1 p.6]]

Our Response:

As discussed in more detail in Section II.B.4.d of the Preamble, EPA has determined that the biogenic portion of post recycled MSW is eligible to produce renewable fuel and will largely be made up of cellulosic material. Therefore biofuel made from this waste-derived material will qualify as cellulosic biofuel.

Furthermore, separated food and yard wastes, including food and beverage wastes from food production and processing are another category of waste product that would not have any land-use change impact. These waste products can be used as feedstock for advanced biofuel production or cellulosic biofuel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) states the Agency failed to assign Algae and a "D" code for Algae in the proposed rule. The commenter requests clarification from EPA as to how it considers this

feedstock. In other words is this considered virgin plant oil? Or will it have its own LCA? How will water consumption factor into the equation? The commenter also states that the Agency fails to recognize the diversity of the Biomass Feedstocks for Biomass Based Diesels that are grown in the U.S. as rotation crops as a traditional farming practice. More importantly, most of these feedstocks can not be grown or are not grown in areas of global concern and should not be subjected to ILUC of those areas. The premise one acre of renewable biomass that is grown in the U.S. will force another acre in the rain forests of the world to vanish for the purposes of renewable fuels are severely misunderstood! Recent studies conducted by Greenpeace clearly identified the actual destruction of rainforest is a direct result poor livestock management practices. In addition, EPA should recognize, as required in EISA, the value of consulting the Department of Agriculture regarding those farming practices to accurately depict the LCA of those operations. [[Docket number 1044.1, pp 9-10]]

Our Response:

For the final rule, EPA has determined that biodiesel produced from algae oil will comply with the advance biofuel GHG performance threshold and included a specific pathway in the rulemaking for biodiesel from algae.

EPA also provides D-codes for secondary annual crops planted on existing crop land – such as winter cover crops. These secondary crops are assumed to have no land use impact since they are planted on land otherwise used for primary crop production. GHG emissions would only be associated with growing, harvesting and transporting the secondary crop and then processing into biofuel. See Preamble Section V.C for details.

We have not specifically modeled other biomass based diesel feedstocks. However, EPA has adopted a petition process, explained in preamble Section V, whereby biofuel producers can request EPA review of new feedstocks and process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new feedstock sources.

In conducting the lifecycle assessment of biofuels for this rulemaking EPA worked closely with USDA and the models used incorporated USDA data in terms of farming practices.

7.5.1 Assignments for Pathways Subjected to Lifecycle Analyses

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2075
Organization: Sustainable Oils, LLC (SO)
Comment:
The commenter (2075) requests that the Final Rule make a distinction between feedstocks that are currently in large cultivation (corn, soybeans, canola, sugar, and timber) and pre-commercial dedicated energy crops. [[Docket number 2075.1, p. 3]]

The commenter notes that EPA proposes to assign various combinations of feedstock, fuel type, and production process to one of four categories of fuels eligible for compliance under RFS2. Or, alternatively, it will determine that the combination is not eligible due to a failure to meet required thresholds. Thus the commenter believes that the NPRM is inherently backward-looking and is based on the existence of historical data related to prior biofuel cultivation and processing technologies. Camelina would be lumped in with soybean-based biodiesel. [[Docket number 2075.1, pp. 2-3]]

Additionally, EPA plans to update its analyses at three-to-five year intervals. The Proposed Rule may be adequate for existing commercialized biofuels with historical data sets and known technologies. However, innovative next generation biofuels simply will fly under the EPA's radar. They will not be designated as compliant renewable fuels from the point of view of this NPRM. Next generation feedstocks will not be developed and commercialized in a timely manner. If the EPA process for approving new pathways is not timely, and a three-to-five year interval is not timely, the commenter believes that regulatory uncertainty will lethally inhibit the substantial private investment needed to create the improved feedstocks which, in turn, are needed to create a commercially viable biofuel industry. Contrary to Congressional intent, this NPRM will stifle innovation. [[Docket number 2075.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA needs to define a mechanism by which the designated fuel pathways are routinely updated to ensure they reflect the most current GHG comparisons. (2245.1, p.30)

Document No.: EPA-HQ-OAR-2005-0161-2365
Organization: Neste Oil Holding, Inc
Comment:
The commenter (2365.1) believes that EPA should consider allowing companies to present specific fuel pathways. If specific fuel pathways which employ sustainable and carbon mitigation processes are to be encouraged, they must be recognized and given credit under the RFS. (2365.1, p.3)

Our Response:

For the final rule, EPA has established a petition process whereby biofuel producers can request EPA review of new process technologies or operating practices if it is expected they

could qualify for a new or different threshold assessment (D code). Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2119
Organization: National Sorghum Producers
Comment:
The commenter (2119.1) noted that grain sorghum is not corn starch, and if meeting the greenhouse gas (GHG) requirements of the rule, should be assigned a separate pathway and classified as an advanced biofuel. (2119.1, p.2)

The commenter also believes that sweet sorghum should also have its own pathway in the final rule. (2119.1, p.4)

The commenter believes that energy sorghum should have its own dedicated pathway in the final rule. By having dedicated pathways for both energy sorghum and switchgrass, risk will be lowered as biorefineries can work with producers in an area to produce the feedstock with the best agronomic package for that region. (2119.1, p.6)

Our Response:

This final rule establishes a pathway for biofuel produced from switchgrass. As stated in the preamble to the final rule, EPA anticipates analyzing grain sorghum ethanol as a biofuel feedstock within the next 6 months. For other fuels not modeled for this rule, EPA has established a petition process whereby biofuel producers can request EPA review of new process technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
The commenter (2374) believes that EPA should allow producers on a case-by-case basis to verify the carbon intensity of their specific process and feedstocks, and immediately certify to the new values. This certification process should be responsive to new innovations in production allowing for immediate benefit of their emissions reduction. By quickly rewarding innovation with improved performance metrics, the EPA will incentivize producers to continually improve their carbon footprint. [[Docket number 2374.1, p. 1]]

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways, including from soy oil, are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) noted that several aspects of the fuel pathways need to be addressed including: yield data, fuel baselines including petroleum and indirect effects of petroleum lifecycle, co-product credits and emissions debits for petroleum co-products, time discounting and linkages of models. The commenter advocates that EPA needs to use real data where real data exists. This information should be modeled to determine the effectiveness of the predictions of the models. Models carrying the significance of this regulation need to be verified, the regulations should not be based on speculation, modeling and assumptions indefinitely. (2511.1, p.6)

Our Response:

As detailed in the final rule preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA. Our analyses indicate that indirect impacts including international land use impacts are significant and should appropriately be included in accordance with good practice and the requirements of EISA.

For the final rule, EPA has updated its assessment of crop yields both domestically and internationally. We have calculated lifecycle emission performance assuming both base yields derived from projecting into the future longer term historical trends and also assuming a marked increase in future yields based on industry and other comments

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) noted that given the large carbon emissions due to ILUC, some biofuels may have to choose a 20% reduction category instead of an advanced biofuel where the carbon emissions reduction is 40 to 50%. (2549.1, p.4)

Our Response:

As noted in the preamble to the final rule, EPA believes it has appropriately determined the ILUC impact of a wide range of biofuels. Further, a number of pathways have been determined to meet the advance biofuel threshold performance of 50%.

7.5.2 Assignments for Additional Pathways

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1044
Organization: GEN-X Energy Group Inc.
Comment:
The commenter (1044) offers the following remarks related to proposed §80.1426 table 1: This section represents the pathways available to the renewable fuel producers. The commenter firmly opposes this section as it does not accurately identify pathways for biodiesel or renewable diesel feedstocks and presumes that all virgin vegetable oils and waste oils are the same. The commenter provided an excel spreadsheet listed as exhibit A to this document that accurately depicts various feedstocks. The commenter proposes a review of this information and that EPA correctly place certain vegetable oil feedstocks in the correct pathways. In addition, algae was not identified as mandated by the language of the EISA. [[Docket number 1044.1, p. 6]] [[NOTE: Exhibit A (excel spreadsheet) referred to above is not available on FDMS.]]

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways, including from soy oil, are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) suggests that EPA further evaluate at least two conversion pathways or modified pathways. In the first case, the commenter suggests that the renewable diesel conversion pathway is significantly different from conventional transesterification methods to produce a renewable diesel substitute and therefore it should be evaluated separately with a special focus on the source of hydrogen used in hydrotreating. In the second case, where extensive pretreatment and fat stripping equipment is added to existing transesterification plants

to handle high FFA feedstocks, there can be a materially higher yield loss resulting in carbon conversion losses and hence a reduced GHG reduction from the base feedstock. [[Docket number 2106.1, p. 6]]

Our Response:

For the final rule, EPA has analyzed a number of biodiesel pathways as complying with the advance biofuel GHG performance threshold. EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2302
Organization: UC Berkeley - Energy Biosciences Institute
Comment:
The commenter [[2302]] strongly suggests that EPA create a transparent mechanism for the evaluation of emerging conversion technologies including submission and review. Such technological advances may result in significantly different lifecycle assessments. [[#2302 p.5]]

The commenter also suggests that for: 1) thermochemical gasification followed by Fischer-Tropsch synthesis; and 2) catalytic racking/depolymerization followed by catalytic fuel synthesis, that EPA add these to the table as additional lines rather than attempting to combine multiple possible pathways into a single line item to avoid ambiguity. [[#2302 p.5]]

Our Response:

Biofuels producers who believe that their production process is significantly different than those included in the list of pathways are eligible to petition EPA. The petition must include information necessary to allow EPA to determine the life cycle green house gas emissions of the fuel. This is further discussed in the preamble Section V.C. Please see Section 7.5.2.5 of this Summary and Analysis of Comments document for EPA's full response regarding the petition process for additional pathways.

For inclusion of new fuel and feedstock pathways, it may be important to seek public comment on the modeling. We therefore intend to utilize the annual rulemaking process already planned for establishing the renewable fuel standards applicable for the following year, to also provide an opportunity to propose and finalize the inclusion of these emerging pathways on our list of eligible biofuels, as appropriate.

The fact that the EISA requirements define specific categories of fuels with lifecycle GHG thresholds means that EPA does not have to define a specific lifecycle GHG value for each individual gallon of fuel. If different types of biofuel pathways each meet the requirements of a certain pathway there is no need to distinguish between them.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
With a market-minded view of the regulations, the commenter (2486) believes that it is imperative that the process for proposing new or modified fuel pathways must be highly efficient. [[Docket number 2486.1, p. 2]] [[See docket number 2486.1, p. 2 for additional details of this issue.]]

Our Response:

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies or feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2395.1
Organization: Covanta
Comment:
The commenter (2395) believes renewable fuels generated from waste biomass, including the biogenic fraction of MSW, do not lead to land use change. (2395.1 Pg. 6-7).

Our Response:

For the final rule analysis EPA determined that biofuel from separated yard and food wastes (which may contain incidental and post-recycled paper and wood wastes) satisfy biofuel thresholds. Separated food waste is largely starch-based and thus qualifies for the advanced biofuel standard of 50% reduction. EPA believes that renewable fuel produced from feedstocks consisting of wastes that would normally be discarded or put to a secondary use, and which have not been intentionally rendered unfit for productive use, should be assumed to have little or no land use emissions of GHGs. The use of wastes that would normally be discarded does not increase the demand for land. For example, the use in biofuel production of food waste from a food processing facility that would normally be placed in a landfill will not increase the demand for land to grow the crops that were purchased by the food processing facility.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2487
Organization: Abengoa Bioenergy Corporation

Comment:
The commenter (2487) believes that RFS2 rules as written provide little incentive for individual facilities to reduce their greenhouse gas (GHG) footprint. By providing a limited number of "pathways" for GHG classification purposes, and no opportunity for individual facilities to provide a distinct lifecycle analysis for unique facilities which have (or wish to) incorporate GHG reduction technologies, there is no opportunity to benefit from these improvements. The commenter states that the opportunity to submit individual lifecycle analyses is critical for non-corn facilities which might qualify as an Advanced Biofuel after making process modifications to improve GHG reductions that are not recognized in the existing pathways. [[Docket number 2487, p. 1]]

In connection with the suggestion above, the commenter adds that it is critical that the methods of calculating the GHG footprint of each facility be transparent and reproducible by individual participants. EPA's models and calculations are neither, and therefore put the industry in the position of having to comply with limitations that cannot be estimated or anticipated in advance. [[Docket number 2487, p. 1]]

Our Response:

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies. We note however, that for this rule, it is only necessary to meet the threshold; no additional credit is available for fuels produced at facilities which exceed the threshold. As detailed in the preamble and RIA, EPA has used up to date models, data and other information to assess the GHG impacts of biofuels. Throughout the development of EPA's lifecycle analysis, the Agency has employed a collaborative, transparent, and science-based approach. EPA's lifecycle methodology, as developed for the RFS2 proposal, required breaking new scientific ground and using analytical tools in new ways. The work was generally recognized as state of the art and an advance on lifecycle thinking, specifically regarding the indirect impacts of biofuels. We believe we have in a technically appropriate manner, implemented the mandates of EISA

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
With regard to the dedicated perennial energy grasses for use in the production of renewable biofuels, the commenter (2408.1) believes that EPA should recognize the wide variety of these types of feedstocks. To the extent possible, EPA should be as flexible and broad in its definition of these new types of feedstocks. Where appropriate, EPA should consider the inclusion of the term "other energy grasses" to qualify as a feedstock for use in the production of RFS2 fuels. [[See Docket Number 2408.1, p. 4]]

Our Response:

We recognize that there is a wide variety of perennial energy grasses. More description is provided in Chapter 1 of the RIA. In terms of evaluating "other energy grasses" as meeting the GHG thresholds, we believe other perennial grasses likely to compete as feedstock sources will have similar land use and agricultural inputs as switchgrass (the energy grass modeled) and are therefore confident the results from switchgrass can be extended to miscanthus and other perennial grasses. However, we note that the energy crop industry is just starting to develop and therefore as favored perennial grasses start to emerge, additional analyses may be warranted

7.5.2.1 Ethanol from Starch

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:
The commenter (1036.1) noticed upon review of the fuel pathway tables (VI.E.1-1, VI.E.2-1, VI.E.4-1), as well as the proposed Table 1 to 80.1426 (Applicable D codes for Each Fuel Pathway for use in Generating RINs), that Sweet Sorghum ethanol has been "unintentionally" omitted from the look up tables. The commenter is requesting that Sweet Sorghum ethanol be classified with Sugarcane Ethanol on all look up tables; this is because the facilities that are used for Sweet Sorghum ethanol are Brazilian Sugarcane processing plants tailored to handle the slightly different feedstock. (1036.1, p.3)

Our Response:

We did not model the use of sweet sorghum as a feedstock. For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2343
Organization: Osage Bio Energy
Comment:
The commenter (2343) states that the proposed language to assign winter barley (and other non-corn starch) the same fuel pathway as corn prevents projects utilizing those feedstocks from ever achieving Advanced Biofuel status. The legislative mandate contained in EISA 2007 identifies barley as an eligible Advanced Biofuel feedstock. However, Proposed Rule language contained in Section VI.E.3.a seeks to apply a first-generation corn pathway to barley ethanol. According to the language and corresponding lookup table VI.E.4-1, it appears that all ethanol-from-grain

starch processes would be assigned the same pathway as corn, even with lifecycle greenhouse gas emissions less than 50% of baseline. The commenter requests that EPA eliminate or modify the Proposed Rule language, uphold the spirit of the law provided for in EISA 2007, and make accommodations for the benefits of winter barley as an ethanol feedstock. [[Docket number 2343, pp. 1 and 5]] [[See docket number 2343, pp. 1-5 for further discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2547
Organization: Pennsylvania Department of Agriculture
Comment:
The commenter (2547) noted that Section VI.E.3 of the proposed rule references barley as an ethanol feedstock. It appears under the proposed rule, that all ethanol-from grain starch processes would be assigned the same pathway as corn, making it ineligible for benefits as an Advanced Biofuel. Barley as an Advance Biofuel has the potential to provide substantial benefits. The potential benefits of increased barley production are significant. It is in a unique position to increase biofuel feedstock without disrupting current production, and at the same time offers significant environmental benefits. (2547, p.1)

Our Response:

EPA has not analyzed barley as a feedstock for this final rule. For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies or feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources. However, we have determined that winter cover crops will provide feedstock which will allow biofuels to be produced that comply with the advance biofuel standard since they have negligible or no impact on land use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that in the proposed rule, a natural gas dry mill that dries 100% Distillers Grains (Dgs) has a GHG reduction of 16% (100 yr 2% discount) while a natural gas dry mill that produces only wet Dgs has a GHG reduction of 27% (100 yr 2% discount) in comparison to the petroleum baseline as shown in Table VI.C.1-2. The commenter believes the all-or-nothing approach is inappropriate and recommends including a pathway selection in the lookup table where a portion of the feed is dried. A facility could reduce their lifecycle GHG emissions by switching from drying all their feed to only drying a portion of the feed to increase the 16% reduction to the 20% reduction requirement specified in the RFS2 regulations for corn-based ethanol. The commenter also noted that since many pathways in existence today are not included in the lookup table, EPA should clarify how facilities with pathways that do not exactly match those in the rule will be handled. (2360.1, p.2)

The commenter also recommends that EPA expands the wet mill pathways with mixed fuel options as well as process improvement options such as CHP and membrane separation along with a facility type that has wet feed, as is described for the dry mill cases. It is not reasonable to exclude facilities from the program that don't completely match up with EPA's stated pathways when their lifecycle GHG reductions would otherwise qualify them for inclusion. (2360.1, p.2)

Our Response:

EPA has determined that a facility drying no more than 65% of their distillers grain (and using natural gas, biomass or biogas as process energy sources) will meet the GHG threshold. Additionally, the application of advanced technologies will also allow corn ethanol to meet the 20% threshold standard. The pathways for which corn ethanol will meet or exceed the 20% threshold are detailed in the preamble and in the regulations. EPA also has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2075
Organization: Sustainable Oils, LLC (SO)
Comment:
The commenter (2075) requests that pre-commercial dedicated crops not be subject to a formal LCA until they reach a threshold of 1 million acres of domestic cultivation. This will allow new crops to gain a commercial foothold and develop data at an appropriate scale that will allow for a more accurate analysis of that crop's LCA GHG emissions from production. The commenter also requests that for new crops which reach the 1 million acre milestone, EPA have an expedited process for conducting an LCA GHG emission analysis that is timely. Such pathways should be established within a timely 90 days after the year in which the 1 million acre milestone has been met. [[Docket number 2075.1, p. 3]]

Our Response:

EPA appreciates the need to have accurate data. However, it should not necessary to reach a threshold of 1 million acres of domestic cultivation before accurate assessment of the agricultural production including inputs affecting GHG assessment can be determined. We also expect that agricultural production will occur in advance of using the feedstock for commercial biofuel production allosing additional time to appropriately assessment feedstock production. For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should clarify that ethanol from grain sorghum qualifies as an Advanced biofuel. Grain sorghum is not corn starch, and, if it meets the GHG requirements of the rule, should be assigned a separate pathway and classified as an advanced biofuel. (2329.1, p. 101)

Our Response:

As stated in the preamble to the final rule, EPA intends to analyze grain sorghum as a biofuel feedstock within the next 6 months.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2333
Organization: Pennsylvania State Senate
Comment:
The commenter (2333) noted that In Section VI.E.3.a of EPA's Proposed Rule, there is a reference to the use of barley as an ethanol feedstock. From the language in the noted section, it appears that all ethanol-from-grain starch processes would be assigned the same pathway as corn as reflected in the lookup table VI.E.4-1, regardless of lifecycle greenhouse gas performance. If assigning barley plants the same pathway as corn makes them ineligible for benefits associated with being an Advanced Biofuel, the commenter believes that the lifecycle benefits of winter barley will not be accurately reflected. In fact winter cover crops such as barley grown on fallow crop land, commonly rotated in a double crop cycle with summer soybeans provide incremental food and energy without displacing land or existing crops. The commenter also noted that growing winter barley for food and fuel has environmental and economic benefits that differentiate it from corn as an ethanol feedstock. (2333, p.1)

Our Response:

EPA has not analyzed the use of a priamary crop of barley to produce ethanol. However, EPA provides in the final rulemaking a petition process by which those fuel pathways that have not yet been modeled can be evaluated to determine compliance with one or more of the renewable fuel categories. Preamble Section V.C describes the petition process details.

With regards to barley grown as a secondary, winter cover crop, EPA does provide D-codes for secondary annual crops planted on existing crop land – such as winter cover crops. While different from crop residues, these secondary crops also have no land use impact since they are planted on land otherwise used for primary crop production. GHG emissions would only be associated with growing, harvesting and transporting the secondary crop and then processing into biofuel. In the case of secondary crops that might be used for cellulosic biofuel

production, they would also have no land-use change impact, and consequently modeling conducted for corn stover is also being extended to these crops. See Preamble Section V.C for details.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2113
Organization: Chesapeake Bay Commission
Comment:
The commenter (2113) requests to reclassify non-corn starch based ethanol as Advanced Biofuels as originally defined in the Energy Independence and Security Act of 2007. (2113.pdf, p.1)

The commenter (2113) is concerned about categorizing all non-corn starch ethanol, including barley-based ethanol, as a Renewable Fuel and not as an Advanced Biofuel. The classification would unfairly burden this promising new and emerging industry. The commenter (2113) provides several reasons to why barley based ethanol in particular should be categorized as an Advanced Biofuel including lifecycle greenhouse gas benefits, reduction in nutrients runoff by planting winter crops and a boost in income without disrupting the food and feed chain. (2113.pdf, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2086
Organization: Pennsylvania State University
Comment:
The commenter [[2086]] states that EISA 2007 specifically includes barley starch as a feedstock option in the definition of Advanced Biofuel. In Section VI.E.3 .a of the rule, there is a reference to the use of barley as ethanol feedstock. It appears that all ethanol-from-grain starch processes would be assigned the same pathway as corn as in table VI.E.4-1, regardless of GHG performance. If assigning barley plants the same pathway as corn makes them ineligible for benefits associated with being an Advanced Biofuel, the lifecycle benefits of winter barley will not be accurately reflected.

The commenter states that winter cover crops such as barley grown can be grown on fallow crop land too drought prone for corn, or commonly rotated in a double crop system with soybeans to provide incremental food and energy without displacing land or existing crops nearly as much as corn. Additionally, according to the Chesapeake Bay Commission 2007 report, winter cover crops could reduce nitrogen runoff by 17.1 million lbs per year. Dr. Thomas O'Donnell from the Global Emissions Exchange states that winter cover crops such as barley can help reduce carbon emissions by 6/10 ton per acre per year and qualify for carbon credits with no-till practices. Growing winter barley for food and fuel has environmental and economic benefits that differentiate it from corn as an ethanol feedstock. [[2086.1 p.1]]

Our Response:

EPA has not analyzed barley as a feedstock for this final rule. For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies or feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources. However, we have determined that winter cover crops will provide feedstock which will allow biofuels to be produced that comply with the advance biofuel standard.

7.5.2.2 Renewable Fuels from Cellulosic Biomass

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2022
Organization: Lignol Innovations, Inc.
Comment:
Referring to production process requirements for fuel ethanol from feedstocks, the commenter (2022) believes that process heat should not be required to be obtained from lignin, but alternatively should be allowed from woody biomass residues, such as agricultural crop residues, forestry slash, bark, tree limbs, forestry thinning, lumber mill residues, pulp and paper mill wastes, demolition wastes, gas from anaerobic digestion systems, etc. The commenter states that this type of woody biomass waste is routinely used as boiler fuel for steam and power production to support pulp and paper mill operations. [[Docket number 2022.1, p. 1]]

The commenter notes that that lignin is the only significant renewable source of aromatic ring chemical structures—currently the entire aromatic chemicals industry is dependent on benzene obtained from crude oil. Given the projected magnitude of the cellulosic ethanol and advanced fuels industry that will be needed to fulfill the RFS2 mandate and extrapolating that to the quantity of lignin that will be produced from biorefineries processing wood and woody biomass, it can be projected that this lignin could replace much of the crude oil-derived aromatic chemicals needed by the chemicals and materials industry [[Docket number 2022.1, p. 2]] [[See docket number 2022.1, pp. 2-3 for further discussion of this issue.]]

Our Response:

EPA has determined in this rule that cellulosic biofuel made from a range of feedstock sources and using a range of processes will comply with the cellulosic biofuel GHG performance threshold. We do not require that biofuels only be made from the pathways modeled. Additional pathways can be used by biofuel producers including using lignin for other valuable products rather than burning it for energy at a biofuel facility or using it to add feedstock for biofuel production. EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2171
Organization: Mascoma Corporation
Comment:
The commenter (2171) requests that EPA more clearly define cellulosic ethanol pathways in order to ensure maximum flexibility in developing successful commercial projects including making clear that cellulosic biofuel companies that sell lignin as a co-product of the biofuels process will receive proper credit in the lifecycle calculation and is an approved pathway to generate cellulosic RINs. The commenter also asks EPA to establish a mechanism to allow new fuels and/or fuels produced from new feedstocks to generate RINs while awaiting approval of a formal fuels pathway. [[Docket number 2171.1, p. 5]]

Our Response:

EPA has determined in this rule that cellulosic biofuel made from a range of feedstock sources and using a range of processes will comply with the cellulosic biofuel GHG performance threshold.

Additionally, EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2342
Organization: Burack Environmental Law Offices
Comment:
The commenter (2342) is requesting modification of the following pathway in Table 1 of proposed §80.1426 (Table VI.E.4-1 in the preamble at 74 FR 25054):
Fuel Type: Ethanol
Feedstock: Cellulose and hemicellulose from corn stover, switchgrass. Miscanthus. Wheat straw, rice straw, sugarcane bagasse, forest waste, yard waste, or planted trees
Production process requirements:
-Enzymatic hydrolysis of cellulose
-Fermentation of sugars
-Process heat derived from lignin,

The commenter's requested modification is to broaden the universe of materials that may be used to produce process heat for ethanol production, to include appropriate materials other than lignin. (2342, p.1)

Our Response:

Table V.C-6: D-Code Designations in the Final Rule preamble has been updated since the proposal. For cellulosic ethanol the table now broadly covers any process type using cellulosic biomass from agricultural residues; slash, forest thinnings and forest product residues; annual cover crops; switchgrass and miscanthus; cellulosic components of separated yard wastes, celluloisic components of separated food wastes and cellulosic components of separated municipal solid waste.

7.5.2.3 Biodiesel

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0994
Organization: Griffin Industries
Comment:
The commenter (0994.1) supports the proposal to allow blends of waste grease and soy oil to be blended to create a feedstock that will qualify the Biodiesel product as Biomass-based Diesel. The commenter supports the reduction of this biofuel category to 40% GHG reduction to minimize the market disruption of these fats and oils when they are moved from animal feed to Biodiesel production. (0994.1, P.19)

The commenter also supports the first blend proposal because most major Biodiesel Producers have the capability to convert waste greases and animal fats directly to Biodiesel. This option is the simplest method for the Obligated Party. The commenter believes that other Biomass-based Diesel feedstocks will want to have their feedstock qualify for this blending program. If these other feedstocks have different GHG reductions than the waste greases, EPA will have to develop a blend table for use with these different feedstocks. Under Option 1, this keeps the responsibility with the Biodiesel Producer, producing one product that meets Biomass-based Diesel requirements, and does not burden the Obligated Party to find and purchase the right mix of Biodiesels to qualify as a 2 (or 4 in the 6 Code system). (0994.1, p.19)

The commenter does not support the second alternative. Without creating D codes (as proposed in the third alternative) this approach is not workable and probably not enforceable. The commenter also does not support the third alternative since this still places an undue burden on the Obligated Parties. If other Biomass-based Diesel feedstocks are allowed to be used for this blend scenario, the Obligated Party's burden becomes greater since there may be different blend ratios. The commenter requests that in the whole discussion on blending that animal fats be designated with waste greases, as both have the 80% GHG reduction and therefore are identical blending components. EPA may want to consider all other Biomass-based Diesel feedstocks to qualify as a blend component for soy oil to meet the 50% GHG reduction. The other vegetable oils (in place of soy oil) should also be considered in this blending proposal. (0994.1, p.19)

Document No.: EPA-HQ-OAR-2005-0161-1001, EPA-HQ-OAR-2005-0161-1005, EPA-HQ-OAR-2005-0161-1010, EPA-HQ-OAR-2005-0161-1011, EPA-HQ-OAR-2005-0161-1012, EPA-HQ-OAR-2005-0161-1025, EPA-HQ-OAR-2005-0161-1043, et al.

Organization: Kurzman Clean Tech Research & Kurzman Capital, LLC, Cotner Consulting Services, CC Gas Systems, LLC, Atlantic BioFuels, Glenwood Farms, Law Offices of David Wilcox, University of Georgia Engineering Outreach Service, et al.
Comment:
The commenters believe that the proposed Biodiesel pathway is unworkable. The proposed pathway is not workable in practice and should be viewed by the EPA as a barrier to compliance. Vegetable oils account for approximately 70 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and the RFS2 volume goals simply cannot be met if vegetable oils are disqualified from the program. The agency should fully consider the fact that feedstock supplies in the U.S. will inherently produce an industry wide feedstock mixture that, even utilizing the unfavorable GHG reduction values assigned by EPA, would meet the established thresholds for Advanced Biofuels.

The commenters believe that EPA should use its authority as provided by Congress and adjust the 50 percent reduction requirement for Biomass-based Diesel downward to 40 percent to ensure U.S. biodiesel can meet the biomass-based diesel requirements, as intended by Congress.

Document No.: EPA-HQ-OAR-2005-0161-1029
Organization: C.I.B.
Comment:
The commenter (1029) believes that the proposed biodiesel pathway is unworkable. EPA should use its authority and adjust the 50 percent reduction requirement downward to 40 percent to ensure U.S. biodiesel can meet the biomass-based diesel requirements, as intended by Congress. (1029, p.3)

Document No.: EPA-HQ-OAR-2005-0161-1051
Organization: Aberdeen Development Corp.
Comment:
The commenter (1051) believes that the proposed biodiesel pathway is unworkable from a practical perspective. After concluding biodiesel from virgin vegetable oils does not qualify for the program, the agency attempts to restore it, in part, by creating a pathway for compliance purposes whereby virgin vegetable oils can be combined with waste oils in a 52-48 percent ratio. Instead, the commenter states that the EPA should recognize that U.S. feedstock supplies naturally produce a feedstock mix that, even when using EPA's low GHG values, meets the thresholds for Advanced Biofuels.

Moreover, to the extent necessary, EPA should use its authority and adjust the 50 percent reduction requirement downward to 40 percent to ensure U.S. biodiesel can meet the biomass-based diesel requirements, as intended by Congress. [[Docket number 1051.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-1669
Organization: Environmental Intelligence, Inc.
Comment:
The commenter (1669.1) believes that the proposed pathway of using a 52-48 feedstock ratio of biodiesel feedstocks is not workable in practice. (1669.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2013, et al.
Organization: SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC, et al.
Comment:
The commenters state that multi-feedstock biodiesel production facilities are able to blend high fatty acids (animal fats/waste corn oil) with low fatty acid (soybean oil) feedstock at the beginning of the esterification process. The commenters' recommendation is to aggregate high and low blends yearly to meet the GHG threshold. The commenters believe that biodiesel production facilities and obligated parties should be allowed to demonstrate that a minimum number of waste grease-based biodiesel RINs is used to meet the biomass-based diesel standard in comparison to the number of soybean oil-based biodiesel RINs.

The commenters conclude that given the fuel pathway EPA is proposing for soy biodiesel and considering how the California Air Resources Board has proposed the fuel pathway for soy biodiesel with its Low Carbon Fuel Standard (LCFS); a very peculiar marketing scenario for soy biodiesel is emerging. ARB does not require a minimum GHG reduction threshold for fuel; the only requirement is to meet or fall under a yearly carbon intensity (CI) target for fuel. Therefore, soy biodiesel can meet these CI reduction targets beginning in 2010 with a blend of B2. A soy biodiesel blend of B2 can be sold in California and meet the LCFS, but will not have a RIN attached. However, it will qualify for a LCFS carbon credit. The commenters believe this consequence illustrates well intended policy to reduce GHG emissions, but causes confusion and uncertainty in the marketplace.

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
The commenter (2079.1) believes that the proposed biodiesel pathway is not workable in practice and should be viewed by the EPA as a barrier to compliance. Vegetable oils account for approximately 70 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and the RFS2 volume goals simply cannot be met if vegetable oils are disqualified from the program. This outcome is not consistent with either sound science or sound energy policy. Instead, EPA should fully consider the fact that feedstock supplies in the U.S. will inherently produce an industry wide feedstock mixture that, even utilizing the unfavorable GHG reduction values assigned by EPA, would meet the established thresholds for Advanced Biofuels. (2079.1, pp.9-10)

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) supports EPA's proposal to average biodiesel GHG performance for the purposes of achieving the GHG threshold. (2099.1, p.21)

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2392.1
Organization: The Boeing Company
Comment:
The commenter (2392) states that the EPA plans to update its analyses at three-to-five year intervals may be adequate for existing commercialized biofuels with historical data sets and known technologies. They will, however, not work for the next generation of biofuels because these fuels will not be designated as compliant renewable fuels from the point of view of the proposed rule. This will mean that next generation feedstocks will not be developed and commercialized in a timely manner. If the EPA process for approving new pathways is not timely, and a three-to-five year interval is not timely, regulatory uncertainty will lethally inhibit the substantial private investment needed to create the improved feedstocks which, in turn, are needed to create a commercially viable biofuel industry. Contrary to Congressional intent, EPA's proposed rule will stifle innovation. (2392.1 Pgs. 6-8).

Our Response:

For those fuel pathways that are different than those pathways EPA has listed in today's regulations, EPA is establishing a petition process whereby a party can petition the Agency to consider new pathways for GHG reduction threshold compliance. The petition process is meant for parties with serious intention to move forward with production via the petitioned fuel pathway and who have moved sufficiently forward in the business process to show feasibility of the fuel pathway's implementation. The Agency will not consider frivolous petitions with insufficient information and clarity for Agency analysis. EPA will process these petitions as expeditiously as possible, taking into consideration that some fuel pathways are closer to the commercial production stage than others. In all events, parties are expected to begin this process with ample lead time as compared to their commercial start dates.

EPA anticipates that for some petitioned fuel pathways with unique modifications or enhancements to production technologies of pathways otherwise modeled for the regulations listed today, EPA may be able to evaluate the pathway as a reasonably straight-forward extension of our current assessments. We expect such a determination would be pathway specific, and would be based on a technical analysis that compared the applicant fuel pathway to the fuel a pathway(s) that had already been analyzed. In these cases, EPA would be able make a determination without proceeding through a full rulemaking process. In such cases, we would expect to make a decision for that specific pathway without conducting a full rulemaking process. We would expect to evaluate whether the pathway is consistent with the definitions of

renewable fuel types in the regulations, generally without going through rulemaking, and issue an approval or disapproval that applies to the petitioner. We anticipate that we will subsequently propose to add the pathway to the regulations.

If EPA determines that a petitioned fuel pathway requires significant new analysis and/or modeling, EPA will need to give notice and seek public comment. For example, we anticipate that pathways with feedstocks or fuel types not yet modeled by EPA will require additional modeling and public comment before a determination of compliance can be made. In these cases, the determination would be incorporated into the annual rulemaking process established in today's regulations.

When EPA makes a technical determination is made that a petitioned fuel pathway qualifies for a RFS volume standard, a D-code will be assigned to the fuel pathway. We anticipate that renewable fuel producers and importers will be able to generate RINs for the additional pathway after the next available update of the EPA Moderated Transaction System (EMTS) that follows a determination. EPA expects to update the EMTS quarterly, as long as necessary. Renewable fuel producers will be able to register the fuel pathway through the EPA Fuels Programs Registration System two weeks after the date of determination, but as described above, will not be able to generate RINs until the quarterly EMTS update.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1026
Organization: Gradek Energy
Comment:
The commenter (1026.1) is concerned with the provisions in the proposed rule that do not address the retention of waste oil feedstock, which may undermine, rather than advance, Congress intent in generating sufficient supply of renewable fuel and reducing GHG emissions. The removal of waste oil recovered from wastewater, from the definition of renewable feedstock is an issue that will have important consequences in the RFS Act as well as environmental impact. The Energy Independence and Security Act of 2007 (EISA), defines waste gas that would be flared or vented as a form of recoverable waste energy, in that useful thermal energy may be harnessed from that waste stream which would displace a conventional fuel source and it is a hydrocarbon based fuel that is in a gaseous state. In contrast waste oil which is in a liquid form and would be suitable for displacing conventional transportation fuel is not designated as a recoverable waste energy source. This form of inconsistency obviously needs to be corrected. The avoided GHG emissions and pollution achieved with the recovery of the waste energy from the waste oil exceeds 85% of the lifecycle GHG emissions for gasoline or diesel. (1026.1 p.1)

The emission reductions from the inclusion of waste oil as a renewable fuel source which is immediately available are substantially greater than the impact of corn starch biofuels because of:
-The avoided emissions from the biogenic degradation of the waste oil amount to:
-One barrel of waste oil which undergoes anaerobic digestion in a wastewater stream has a MCF of 70% and will potentially generate 123 Kgs. of CH4 or the equivalent of 2.6 tons of CO_2.

-One barrel of waste oil which undergoes anaerobic digestion in a landfill has a MCF of 10% and will potentially generate 365 Kgs. of CO_2.
-One barrel of waste oil which undergoes aerobic digestion in a landfill has a carbon conversion factor of 100% and will potentially generate 478 Kgs. of CO_2.
-Carbon neutral resource (waste stream), providing for a lower carbon intensity fuel.
-No additional infrastructure needed for refining, distribution and transportation to market as it is blended with conventional crude fuels. (1026.1, p.2)

The transformation of oil wastes into an energy resource benefits all stakeholders by:
-Increasing recoverable reserves in the U.S. domestic production by eliminating the oily wastes.
-Alleviating environmental impact associated with disposal and storage of these wastes.
-Reducing U.S. oil imports is an energy security benefit:
-Obtaining higher liquid yield from crude import volumes.
-Obtaining higher liquid yield from domestic crude production volumes. (1026.1, p.2)
-Avoiding increased emissions in land use change impact
-448 Million tons of CO_2 eq. required acreage for energy crops in the U.S.A.
-Impact reflecting the shift of crop production internationally to meet biofuels demand in U.S.A.
-Reducing the pressure on international commodity prices for corn, soybean, canola, rapeseed
-Help alleviate hunger in under developed countries which cannot afford higher food costs.
-More than one-third of corn production in the U.S.A. in 2008 was being used to produce ethanol and about half the vegetable oils produced in the European Union were being used for biodiesel fuel.
-IFRPI's IMPACT, projects that real prices of maize and oilseeds in 2020 will be 26and 18 percent higher respectively, compared with a scenario that keeps biofuels production at 2007 levels.
-Growth in world demand for food will mirror population growth, progressively declining from 2.2% a year in the last decades of the 20th century, to 1.6% in 2015, 1.4% in 2015-30, and 0.9% in 2030-50.
-Reduce the consumption of water for production of energy crops
-Under current production conditions, it takes an average of roughly 2,500 liters of water to produce 1 liter of liquid biofuels.
-Agriculture accounts for 70% of freshwater withdrawals from rivers, lakes and aquifers.
-3% of the irrigation water in the U.S. is used for biofuels production.
-Reduce the impact on water from the increased fertilizer usage for energy crops
-Decrease the phosphorus load in water runoff which causes blue algae blooms (eutrophication) in freshwater bodies.
-Eliminate significant nitrogen load increase in water runoff (estimated increase of 8.8 million pounds).
-Facilitate compliance of regulatory obligations for the domestic refining industry.
-Reduce the impact of water contamination from disposal of oily wastes
-Groundwater concentration of leaching contaminants.
-Reduce health risks associated due to leaching in soil and groundwater table. (1026.1, p.3)

The commenter noted that consideration has to be given to retaining the inclusion of waste oil from wastewater treatment as an alternative renewable fuel feedstock as its benefits clearly address the objectives set out by the Clean Air Act and the Energy Security Act. It also ensures a

level playing field for compliance between foreign and domestic producers of renewable fuels. (1026.1, p.3)

Our Response:

For the final rule, EPA has determined that fuels made from waste biogenic oils will qualify as meeting the advance fuel category GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter [[2104]] states the EPA methodology inaccurately assesses the energy balance of biodiesel production. It takes less energy to produce a gallon of biodiesel than considered by the EPA. EPA used a factor of 3.2 units of energy produced per unit of energy used. The updated factor should be a factor of 5.2 units of energy produced per unit of energy used. Updating this data point decreases the biodiesel emissions factor by 1.5%. [[#2104.1 p.6-7]]

Our Response:

The EISA mandates setting up fuel GHG thresholds do not require the EPA to do site specific GHG analysis but rather determine for specific fuel pathways if they meet the thresholds for the different fuel categories. Therefore, we have developed an average energy use value for biodiesel production. As part of the final rule we updated the energy use assumptions for biodiesel production to be in line with the latest energy balance reports from USDA and the University of Idaho. Therefore, the final rule assumes lower energy use for biodiesel production compared to the proposal analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter also states that specifically, the proposed rule only considers soybean oil, vegetable oil from ethanol plants, and rendered fats and waste greases in their analysis. Lipid sources such as canola (spring and winter) are not factored into the feedstock supply. [[#2104.1 p.7]]

Our Response:

EPA has not modeled canola for this final rule. For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its

analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2104
Organization: US Canola Association
Comment:
The commenter states that EPA's analysis compares estimated, future direct and indirect GHG emissions for biodiesel to direct (only) emissions for petroleum. [[#2104.1 p.8]]

Our Response:

The reason the system boundaries used for threshold assessment in the proposed rule and the final rule did not include a marginal analysis of petroleum production was due to the definition of "baseline lifecycle greenhouse gas emissions" in Section 211(o)(1)(C) of the CAA. The definitions of the different renewable fuel categories specify that the lifecycle threshold analysis be compared to baseline lifecycle greenhouse gas emissions, which are defined as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel. Furthermore, as the EISA language specifies that the baseline emissions are to be only "average" lifecycle emissions for this single specified year and volume, it does not allow for a comparison of alternative scenarios. Indirect effects can only be determined using such an analysis; therefore there are no indirect emissions to include in the baseline lifecycle greenhouse gas emissions.

However, for this final rule, we did consider the potential indirect impacts of petroleum use. We performed an analysis to determine the marginal crude that would be displaced by biofuels use. Using well-to-tank GHG values for crude extracted from various countries, we were able to determine an approximate "marginal petroleum baseline" by applying the factors to the countries where crude production increased. We found that the marginal baseline was, for an average gallon of gasoline, not statistically different than the average baseline value used in this final rulemaking. More details on this analysis can be found in the memo, "Petroleum Indirect Impacts Analysis" in the RFS2 docket at EPA-HQ-OAR-2005-0161.

We also considered whether the displacement of petroleum fuels could displace petroleum co-products. When crude oil is refined to produce gasoline and diesel, petroleum co-products, such as residual fuel oil and petroleum coke, are also produced. An increase in the

demand for renewable fuels could impact the energy system's utilization of petroleum co-products due to the ripple effects of price impacts. We expect that an increase in domestic renewable fuels demand will lead to a decrease in domestic crude oil consumption due to lower demand for gasoline and diesel; however, this is unlikely to significantly impact demand for petroleum co-products unless the price for these co-products is significantly affected. Refiners respond to demand for fuels, and they may choose to produce a larger percentage of petroleum co-products per barrel of crude then they had in the past in response to lower gasoline or diesel demand. This increased supply and possible lower refinery costs could translate into a slight decrease in co-product cost and therefore marginally impact demand.

Increased renewable fuel use domestically is expected to also have the effect of lowering the world crude oil price and therefore increase international demand for petroleum-based fuels and increase GHG emissions. This increase in demand outside of the U.S. due to price changes would partially negate the decrease in GHG emissions domestically from reduced petroleum fuel demand due to biofuels.

Further discussion of our analysis of the indirect impacts of petroleum use can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

For determining the overall GHG impacts of the rule, we did consider the projected mix of crude oil and finished product in 2022 that would be displaced by renewable fuels. Further discussion of this analysis can also be found in Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2106
Organization: Endicott Biofuels II, LLC
Comment:
The commenter (2106) believes that any averaging or mingling of feedstocks raises compliance problems for EPA. The challenges associated with accurately monitoring feedstock consumption combined with the strong producer incentive in the form of achieving enhanced GHG values will potentially lead to abuse in the system. A similar compliance issue occurs where multiple finished products are comingled or blended for enhanced GHG values. For these reasons, the commenter believes it is best to not allow averaging of GHG values across mingling of feedstocks or across facilities owned by the same company. [[Docket number 2106.1, p. 5]]

The commenter also suggests that EPA strongly consider setting more aggressive targets for biomass based diesel beginning in 2013 to provide the necessary pricing signals to the market to incent advancement of new technologies. The commenter's analysis based upon a compilation of NREL, USDA, U.S. Bureau of Labor & Statistics, and National Renderer's Association data concludes there is enough energy dense fats and oils neutral and non-neutral materials to support over 2 billion gallons of biomass based diesel already in the marketplace in the U.S. If foreign sources are included, the total is much higher. Technology exists today to convert these feedstocks into high quality methyl esters. The commenter also suggests that the only barrier to utilization of these feedstocks is price differential to crude oil and that the 30% suggested

restriction is overly conservative. Therefore, we suggest the EPA target significantly greater than 1 billion gallons of biomass-based diesel in 2013 and beyond. [[Docket number 2106.1, p. 6]]

In addition, the commenter suggests that with a sufficient supply of low GHG based feedstocks and available proven technology exists to convert those feedstocks to methyl esters, it is neither necessary nor desirable to reduce the biomass based biodiesel GHG threshold to 40%. [[Docket number 2106.1, p. 6]]

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

Regarding standards for 2013 and beyond, EPA is not taking action on these standards as part of this final rule. As required by EISA, EPA will establish these standards as part of future rulemaking actions.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2392.1
Organization: The Boeing Company
Comment:
The commenter (2392) suggests EPA take steps to fully evaluate emerging advanced second generation energy crop feedstocks, like camelina, jatropha, halophytes, and algae and avoid categorizing them with first generation food crop feedstocks for the purposes of statutory definitions of qualifying biodiesel including RFS2. (2392.1 Pgs. 3-6).

Our Response:

For this rulemaking lifecycle GHG analysis EPA focused on the fuels and feedstocks that are either being used currently or that we anticipated would be used in the near term. For the final rule analysis we did not specifically model camelina, jatropha, or halophytes as feedstocks for biofuel production. We do however have an algae pathway as part of our final rule analysis and show that it would qualify under the lifecycle GHG requirements. For the feedstocks not modeled we have yet to categorize them with respect to which compliance with the thresholds.

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249.2) does not support EPA's proposed alternative 52/48 pathway to meet the 50 percent GHG reduction requirement. The commenter believes that the proposed pathway is impractical. Vegetable oils account for approximately 60 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and the RFS2 volume goals may be difficult or perhaps impossible to meet if vegetable oils are disqualified from the program. The commenter states that there currently are not sufficient waste oils to produce enough biodiesel to meet the RFS2 volume mandates, and may not be sufficient supply available to biodiesel facilities to be used in the ratio suggested by EPA. [[Docket number 2249.2, pp. 13-14]]

The commenter states that if in the final regulations vegetable oils do not meet the GHG reduction to qualify as Biomass-based Diesel or Advanced Biofuels, then a method does need to be developed to allow for the blending of vegetable oils into the Biomass-based Diesel produced from waste oils that do meet the GHG reduction requirement and still count as Biomass-based Diesel. The commenter proposes allowing the blending of RINs by the obligated parties. EPA notes this as a possible option for comment in the Proposed Rule. 74 FR 25053. But, EPA notes that this approach would require a system with six D codes instead of four. The commenter does not believe that additional D codes are necessary as RINs are adequately coded under the current proposal to show compliance. [[Docket number 2249.2, p. 14]] [[See docket number 2249.2, pp. 14-15 for further discussion of the commenter's proposed approach]]

The commenter believes that EPA should expand the possible pathways for biodiesel to account for varying feedstocks used by facilities. The commenter maintains that all vegetable oils should qualify as Biomass-based Diesel and as a D code "2" RIN. The biodiesel industry uses a plethora of oil based feedstocks, many of which are not described in the Proposed Rule. In the event all virgin vegetable oils do not qualify for the Biomass-based Diesel program, then additional sources [[see docket number 2249.2, p. 16 for list of additional sources.]] should be incorporated into EPA's pathways, providing flexibility to biodiesel facilities to utilize a mixture of these feedstocks. In addition, the commenter believes that Biodiesel from Fatty Acid Distillate Streams (FADS) should be considered a waste or recycled oil for purposes of RIN assignment and EPA should clarify the status of FADS in the final rule. [[Docket number 2249.2, p. 15-16]]

The commenter states that EPA should allow producers to present a lifecycle analysis based on facility-specific configurations to address both pathways that have not been analyzed by EPA and to establish that the facility can meet the 50 percent GHG requirement based on its specific processes. This would provide facilities incentives to continue to become more efficient and invest in new technologies to limit their GHG emissions, promoting further reductions. The commenter further states that the opportunity should also be provided for facilities to submit

updated lifecycle analysis where it undergoes an improvement to change its pathways. [[Docket number 2249.2, p. 15-16]]

For renewable fuels that are not in the lookup table (proposed Table 1 to 40 CFR 80.1426) the commenter requests that EPA develop and document a process for the treatment of new fuels and processes not specifically addressed by the lookup table, and that EPA agree to respond within 180 days of submission. This documentation will allow renewable fuel producers to estimate the length of time necessary to add a particular pathway to the regulations. Additionally, the commenter requests that EPA allow any new biodiesel, regardless of feedstock, to be able to generate a RIN with a D code of "4" until EPA accepts the new pathway. In this way, the biodiesel industry can continue to work toward newer and better feedstocks, but would not be hamstrung by any delay in approving a new pathway. [[Docket number 2249.2, p. 16-17]]

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2357
Organization: Iowa Biodiesel Board
Comment:
The commenter [[2357]] states the proposed pathway is not workable in practice and should be viewed by the EPA as a barrier to compliance. [[2357.1 p.6]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) opposes allowing producers to average biomass-based diesels. If EPA decides to proceed with an averaging approach to qualify vegetable oil sourced biodiesel as biomass-based diesel, the commenter urges EPA to utilize an averaging mechanism that allows both producers and obligated parties to average the appropriate ratio of RINs. This will provide the greatest degree of flexibility, and flexibility will be needed to overcome geographical and seasonal differences. [[Docket number 2393.1, pp. 40-41]]

Document No.: EPA-HQ-OAR-2005-0161-2435
Organization: R.W. Heiden Associates LLC
Comment:
The commenter (2435) believes that the proposed biodiesel pathway is not workable in practice and should be viewed by EPA as a barrier to compliance. Vegetable oils account for approximately 70 percent of the feedstock that is available to meet the RFS2 Biomass-based Diesel targets, and the RFS2 volume goals simply cannot be met if vegetable oils are disqualified from the program. This outcome is not consistent with either sound science or sound energy policy. Instead, the agency should fully consider the fact that feedstock supplies in the U.S. will inherently produce an industry wide feedstock mixture that, even utilizing the unfavorable GHG reduction values assigned by EPA, would meet the established thresholds for Advanced Biofuels. [[Docket number 2435.1, p. 5]]

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
Referring to achieving GHG thresholds with blending soybean oil and waste oil, the commenter (2510) states that it is correct that to maintain a constant mixture, or blend, of recycled oils/fats with virgin plant oils every day. Due to seasonal differences on availability, affordability, and use acceptance, this should be looked at on an annual basis, not a portion thereof. RINs used to meet biomass standards should have the flexibility to allow for availability of product as it is subject to change over time. [[Docket number 2510.1, p. 6]]

Document No.: EPA-HQ-OAR-2005-0161-2549
Organization: Triton Energy LLC
Comment:
The commenter (2549.1) believes that the proposed pathway of using a 5248 feedstock ratio of biodiesel feedstocks is not workable in practice. (2549.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2612
Organization: Citizen (*sample comment letter representing 478 comment letters received from mass comment campaign sponsored by American Soybean Association*)
Comment:
The commenter (2612) identified 8 "vital flaws and concerns with the RFS2 proposed rule," including: "6) Biodiesel Pathway - The proposed pathway of using a 52-48 feedstock ratio of biodiesel feedstocks is not workable in practice." (2612 p. 2)

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2016
Organization: Malaysian Palm Oil Board (MPOB)
Comment:
The commenter (2016.1) is thankful that EPA allows biofuels from foreign sources such as Malaysia. The commenter noted that on page 24917, it was stated that the agriculture crops for renewable transportation fuels will mostly be grown in the U.S. The report alludes that whatever little imports will mainly be for the three advanced biofuel categories but not the residual renewable fuels category which has lower GHG savings requirements. The commenter requests that the contribution from foreign sources be reflected in this category. Tables V.A. 1-1 and V.A. 2-1 should therefore also show the contribution from other non advanced biofuel other than corn ethanol. (2016.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2361
Organization: Indonesian Palm Oil Commission
Comment:
The commenter (2361) is concerned about the statement that the agriculture crops for renewable transportation fuels will mostly be grown in the U.S. The report alludes that the imports will mainly be for the three advanced biofuel categories but not the residual renewable fuels category which has lower GHG savings requirements. It was predicted that all non-advanced biofuel will be from corn ethanol (U.S.) and the commenter (2361) requests that the contribution of non advanced biofuel from other countries allowed to be imported into the U.S. (2361.pdf, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2110
Organization: Chevron
Comment:
The commenter (2110.1) believes that EPA should develop a credible, sustainable pathway in RFS2 for palm oil-derived biofuel. The commenter noted that EPA gave limited consideration in the NPRM to the possibility that palm oil-derived biodiesel or renewable diesel will find its way to the U.S. and be used for compliance with the RFS. The commenter strongly recommends that EPA consult with industry and create a sustainable pathway at its earliest convenience instead of categorically placing such material off limits for RFS compliance. (2110.1, p.4)

Our Response:

The lifecycle analysis of fuels is based on the characteristics of the fuel pathway rather than whether it is domestically produced or imported. The economic models project that a large volume of feedstocks will be produced in the U.S.; however, domestic and imported fuels are eligible for all four renewable fuel categories if they meet the lifecycle greenhouse gas reduction thresholds and the definition of renewable biomass.

EPA anticipates modeling the palm oil biodiesel pathway after this final rule and including the determinations in a rulemaking within 6 months. In addition, EPA also provides a petition process for other fuel pathways not yet analyzed.

7.5.2.4 Renewable Diesel Through Hydrotreating

What Commenters Said:

Document No.: **EPA-HQ-OAR-2005-0161-2408**
Organization: **Advanced Biofuels Association**
Comment:
The commenter also suggests that EPA utilize flexible ranges so as to afford the opportunity for newer technologies to demonstrate and comply with the greenhouse gas ("GHG") reduction requirements under the rule. (2408.1, pp.1-2)

Our Response:

For the final rule, EPA has adopted a petition process whereby biofuel producers can request EPA review of new process technologies and feedstock sources. Additionally, EPA has indicated its intention to periodically update its analyses to reflect new data and information including the development of new technologies and feedstock sources.

7.5.2.5 Lifecycle Analysis Petition Process

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) believes that it is critical for EPA to clearly define a process for updates in the light of, and to address developments in, among other areas:
-alternative or improved fuel pathways
-alternative or improved farming practices
-new feedstocks
-evolving LCA methodology
-emerging (international) policies (2146.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2370
Organization: NGVAmerica
Comment:
The commenter (2370.1) noted that EPA's notice acknowledges the potential for biomethane to play a role as a transportation fuel. Biomethane is included under the RFS Program because it falls under the definition of advanced biofuel. EPA, however, has apparently concluded the use of biomethane as a transportation fuel is not sufficient at this time to warrant additional analysis

of the greenhouse gas emission benefits of biomethane. The commenter believes that there is sufficient interest in this growing fuel to warrant taking the time to include the benefits of biomethane in this rulemaking effort. (2370.1, p.2) (See Docket Number 2370.1, pp.2-6 for a detailed discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2482
Organization: Methanol Institute
Comment:
The commenter requested that EPA maintain a role for biomethanol and include this as a pathway.

Document No.: EPA-HQ-OAR-2005-0161-2401
Organization: Clean Energy
Comment:
The commenter (2401) urges EPA to quantify the emission reduction benefits of biogas produced from renewable sources for transportation purposes and consider advanced biofuels and cellulosic biofuels classifications for RIN generation. [[Docket number 2401.1, p. 1]] [[See docket number 2401.1, pp. 1-2 for discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) strongly encourages EPA to rigorously evaluate and publish the full lifecycle emissions for all renewable fuels. The commenter (2354) states that this information will be useful in developing state-specific biofuel blending mandate and a regional low carbon fuel standard. (2354.pdf, p.4-5)

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:
The commenter (1036.1) noted that since fuel pathways and applicable D codes have such a strong economic effect on ethanol sales from smaller producers (less than 100MGY), generalized fuel definition GHG reductions and D codes will put many companies at a severe competitive disadvantage because of the RIN generation and sales associated with those broad classes of fuel. The commenter suggests that a process can choose to prove through the EPA's modeling (when completely finalized) they can produce GHG reductions in upwards of 60%; which would grant said process plant the ability to us a D code of 1 for use with the associated RINs. (1036.1, p.2)

The commenter believes that the current wording and broad GHG definitions are "unintentionally subsidizing" the cellulosic fuel class by ignoring project/process specific fundamentals such as production costs, best management practices, and electricity sales via by-product combustion from other advanced biofuels. The commenter recommends that the fuel pathway tables (VI.E.1-1, VI.E.2-1, VI.E.4-1) remain as is to be used as general look up values, but Table III.B.2-1 should reflect fuel classes such as Class I, Class II etc...that corresponds to the appropriate GHG lifecycle reductions. If such an approach is not acceptable, than the commenter suggests a provision be added where a fuel producer can apply for a D code higher

than the recommended D code from their fuel pathway as long as work is completed with the EPA on a "case-by-case" basis to confirm through the GHG models such a reduction is indeed feasible. (1036.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) recognizes the limited resources and the tremendous variability and range of renewable fuels technologies which are currently exploring their commercial applicability under the proposed RFS2 rules. The commenter urges that EPA create an expedited process that would allow individual technologies utilizing specific feedstocks to be able to demonstrate their various greenhouse gas reduction capabilities.

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter also believes that EPA's treatment of new fuels and pathways does not adequately protect investment or recognize the improved efficiencies of new facilities. (2329.1, p.100) [[See Docket Number 2329.1, p.100-101 for a more detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2115.1
Organization: Corn Plus
Comment:
The commenter (2115) states that because they utilize a production process that reduces GHG emissions in additional respects, we request that EPA also consider these components and establish a fuel pathway for DDS Fuel in Table 1 to §80.1426 that recognizes the benefits of our process. The proposed fuel type we propose is "Dewatered Distiller Solubles." The feedstock is "corn mash." The production process requirements are "Dry mill plant- Process heat derived from biomass- Additional energy requirements met from 25% minimum on site renewable energy power generation- 25% minimum distillers wet grains." We would propose that the D code for this pathway is 3, corresponding to the fuel's proper categorization as advanced biofuel ("Advanced Biofuel").

Document No.: EPA-HQ-OAR-2005-0161-2099
Organization: Honeywell International, Inc.
Comment:
The commenter (2099.1) believes that EPA should include green gasoline by example in the definition of advanced biofuel. (2099.1, p.14)

Document No.: EPA-HQ-OAR-2005-0161-2004
Organization: NxENRG
Comment:
The commenter (2004.1) requests that EPA expressly acknowledge the eligibility of our fuel, methanol, as being eligible to be an advanced biofuel under 42 USC §7545(o)(1)(A)(ii)(VI): "Butanol and other alcohols produced through the conversion of organic matter from renewable

biomass." The commenter requests that renewable methanol be specifically approved for the following reasons:
1. Conversion of syngas to methanol is a proven commercial scale technology that has been successfully utilized for over 60 years,
2. Methanol is a proven transportation fuel used in over 15,000 cars in California in the 1990s that were manufactured by U.S. automakers,
3. Yield of fuel per ton of feedstock is higher and thus total Btu energy yield per ton exceeds ethanol when utilizing thermochemical gasification technology,
4. The Open Fuels Standard, a Bill currently in congressional sub committees includes methanol as an M85 blend with gasoline, putting it on an equal footing with ethanol in the Bill. (2004.1, p.3)

Our Response:

EPA recognizes that we did not analyze all pathways that might be feasible through 2022. For those fuel pathways that are different than those pathways EPA has listed in today's regulations, EPA is establishing a petition process whereby a party can petition the Agency to consider new pathways for GHG reduction threshold compliance. The petition process is meant for parties with serious intention to move forward with production via the petitioned fuel pathway and who have moved sufficiently forward in the business process to show feasibility of the fuel pathway's implementation. We welcome parties to utilize the petition process described below to request EPA to examine additional pathways. For full detail on the petition process, see the Preamble Section V.C and §80.1416.

In addition, EPA also plans to continue to model additional pathways we expect will be commercially available in the U.S. as soon as sufficient information is available to complete a quality lifecycle assessment.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2519
Organization: Canada, Foreign Affairs and International Trade
Comment:
The commenter (2519) believes it is important to note that lifecycle emissions of Canadian biofuel production may be different from those in the U.S., and that certain Canadian feedstocks (i.e., wheat and canola) are not included in the EPA proposed measure. Therefore, the commenter states that it would not be appropriate to apply U.S. emission factors to Canadian production. The commenter would welcome the opportunity to work with the U.S. to develop emission factors for fuel production pathways specific to Canada. [[Docket number 2519.1, p. 1]]

Our Response:

The application of the lifecycle analysis methodology is neutral to country of origin.

Fuels with the same feedstock, fuel production technology, as a pathway that has been analyzed will be treated the same as the relevant modeled pathway (i.e., corn ethanol, butanol, biodiesel from soy, waste and algae, sugarcane ethanol, and cellulosic including stover and switchgrass).

EPA recognizes that we did not analyze all pathways that might be feasible through 2022. For those fuel pathways that are different than those pathways EPA has listed in today's regulations, EPA is establishing a petition process whereby parties, both domestic and foreign, can petition the Agency to consider new pathways for GHG reduction threshold compliance. The petition process is meant for parties with serious intention to move forward with production via the petitioned fuel pathway and who have moved sufficiently forward in the business process to show feasibility of the fuel pathway's implementation. We welcome parties, both domestic and foreign, to utilize the petition process described below to request EPA to examine additional pathways. For full detail on the petition process, see the Preamble Section V.C and §80.1416.

7.6 Total GHG Emission Reductions

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2149
Organization: Dynamic Fuels, LLC
Comment:
The commenter (2149.1) supports reducing the GHG threshold for biomass-based diesel and advanced biofuel to 40 percent. (2149.1, p.5)

Our Response:

Based on analyses conducted for this final rule, EPA has determined that several pathways are available for the biodiesel industry which meet or exceed the advance biofuel GHG threshold. Therefore there is no need to reduce the 50% threshold. Additionally, we are not allowing averaging of biodiesel from vegetable oils with those produced from waste oils, fats and greases as this is not necessary to allow compliance with the biomass-based diesel GHG performance threshold.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2156
Organization: Georgia Forestry Commission
Comment:
The commenter (2156) agrees that GHG emission reductions using woody biomass from forests meet the 60% reduction necessary for the cellulosic fuels, as suggested by EPA. The commenter suggests that since biomass production from managed forests does not result in the loss of forests to dedicated crops, there should be no indirect effect on land use. Other analyses of the differences between biomass production from managed forests and biomass production from

short rotation woody crops (switch grass, hybrid poplar, etc.) should be done prior to any change in the proposed D values. (2156.1.docx, p.5)

Our Response:

EPA did not have time to analyze the LCA GHG impacts of biofuel produced from managed forest feedstock, but intends to do so within 6 months of this final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter believes that basing LCA GHG benefits on a single future calendar year (2022) broadens the uncertainty of EPA's estimates. The commenter cites several reasons for their position, including: use of 2022 for biofuels versus 2005 baseline for petroleum; the fact that 2022 is the year in which biofuel volumes are at maximum levels; and that larger marginal impacts of RFS2 biofuel volumes occur prior to 2022.[[Docket number 2233.2, pp. 48-49]]

Our Response:

We continue to focus our final rule analyses on 2022 results for two main reasons. First, it would require an extremely complex assessment and administratively difficult implementation program to track how biofuel production might continuously change from month to month or year to year. Instead, it seems appropriate that each biofuel be assessed a level of GHG performance that is constant over the implementation of this rule, allowing fuel providers to anticipate how these GHG performance assessments should affect their production plans. Second, it is appropriate to focus on 2022, the final year of ramp up in the required volumes of renewable fuel as this year. Assessment in this year allows the complete fuel volumes specified in EISA to be incorporated. This also allows for the complete implementation of technology changes and updates that were made to improve or modeling efforts. For example, the inclusion of price induced yield increases and the efficiency gains of DGs replacement are phased in over time. Furthermore, these changes are in part driven by the changes in earlier years of increased biofuel use.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
The commenter (2408.1) EPA initially should take full advantage of the statutory authority granted to it by Congress and reduce the requirements by the full 10 percent. Such action would enable the producers and the science to have the maximum flexibility and time to develop and

perfect technologies and feedstocks so as to not only meet the initial GHG reduction requirements but also to lay the template for enhanced reductions in the future. (2408.1, p.3)

Our Response:

EPA is not finalizing any adjustments to the lifecycle GHG thresholds as the Agency has determined that such adjustments are not necessary given the threshold determinations explained in the final rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2419
Organization: Cargill Incorporated
Comment:
The commenter (2511.1) noted that the American Soybean Association and the National Biodiesel Board have raised substantial arguments with merit regarding the data on the nitrogen fixation of soybean row crops and on the lack of co-product credit for glycerin. Soybeans are not given the proper NOx credit from emissions, which skew the GHG emission reduction calculation. The 2006 Guidelines for National Greenhouse Gas Inventories by the Intergovernmental Panel on Climate Change (IPCC) concludes that nitrogen fixed in soil by soybeans should not be considered a GHG emission. The commenter noted that EPA did not incorporate the IPCC's updated nitrogen findings and thus attributes excess nitrogen emissions to soybean cultivation. (2511.1, p.5)

Our Response:

The proposal analysis calculated N_2O emissions from domestic fertilizer application and nitrogen fixing crops based on the amount of fertilizer used and different regional factors to represent the percent of nitrogen (N) fertilizer applied that result in N_2O emissions. The proposal analysis N_2O factors were based on existing DAYCENT modeling that was developed using the 1996 IPCC guidance for calculating N_2O emissions from fertilizer applications and nitrogen fixing crops. We identified in the proposal that this was an area we would be updating for the final rule based on new analysis from Colorado State University using the DAYCENT model. This update was not available at time of proposal.

The N_2O emission factors used in the proposal overestimated N_2O emissions from nitrogen fixing crops, because they were based on the 1996 IPCC guidance for N_2O accounting. As an update in 2006, IPCC guidance was changed such that biological nitrogen fixation was removed as a direct source of N_2O because of the lack of evidence of significant emissions arising from the fixation process itself. IPCC concluded that the N_2O emissions induced by the growth of legume crops/forages may be estimated solely as a function of the above-ground and below-ground nitrogen inputs from crop/forage residue. This change effectively reduces the N_2O emissions from nitrogen fixing crops like soybeans and nitrogen fixing hay from the 1996 to 2006 IPCC guidance.

Therefore, as part of the update to new N_2O emission factors from DAYCENT used for our final rule analysis we have updated to the 2006 IPCC guidance which reduces the N_2O emissions from soybean production. This has the effect of reducing lifecycle GHG emissions for soybean biodiesel production.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2486
Organization: Primafuel, Inc.
Comment:
Regarding legislative intent, the commenter (2486) believes that inclusion of GHG regulations in the renewable fuel standard was intended to reduce the overall GHG emissions of the transportation sector, not simply to regulate the renewable fuels component of the transportation fuels mix. As such, regulatory rules which serve to reduce the GHG emissions of renewable fuels, while causing an increase in GHG from other fuels or even sectors of the economy would almost certainly violate the intent of EISA 2007 and RFS2. [[Docket number 2486.1, p. 3]]

Our Response:

EISA requires that the lifecycle GHG emissions of a qualifying renewable fuel must be less than the lifecycle GHG emissions of the 2005 baseline average gasoline or diesel fuel that it replaces—four different levels of reductions are required for the four different renewable fuel standards. Compliance with each threshold requires a comprehensive evaluation of renewable fuels, as well as the baseline for gasoline and diesel, on the basis of their lifecycle emissions. As mandated by EISA, the greenhouse gas emissions assessments must evaluate the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions form land use changes) related to the full lifecycle, including all stages of fuel and feedstock production, distribution and use by the ultimate consumer.

EPA also analyzed the overall GHG emission impacts of this rulemaking in parallel with the lifecycle analysis performed to develop the individual fuel thresholds. The same sources of emissions apply such that this analysis includes the effects of three main areas: a) emissions related to the production of biofuels, including the growing of feedstock (corn, soybeans, etc.) with associated domestic and international land use change impacts, transport of feedstock to fuel production plants, fuel production, and distribution of finished fuel; b) emissions related to the extraction, production and distribution of petroleum gasoline and diesel fuel that is replaced by use of biofuels; and c) difference in tailpipe combustion of the renewable and petroleum based fuels.

Based on the range of results for the international land use change emissions the overall annualized average emission reductions of the rule could range from -136 to -140 million metrics tons of CO2-eq. emissions.

7.7 Lifecycle GHG Thresholds

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:
The commenter (1036.1) recommends that under Table III.B.2-1 of the NPRM, the "Advanced Biofuel" reduction threshold of 50% be reduced to 44%. This would align with the GHG lifecycle modeling that has been completed thus far for Brazilian Sugarcane imports (EPA-HQ-OAR-2005-0161-0938.3). Considering that sugarcane ethanol (or "sugar juice ethanol") is the only commercially viable pathway that can meet the requirements for the "Advanced Biofuel" classification volumes in the near term; the EPA and "public interests" would be putting this program at a great disadvantage by keeping the GHG reduction threshold at 50%. Domestic "sugar ethanol" projects have much greater GHG reductions than the Brazilian import cases due to International Land Use Change reductions however; the volumes required by RFS2 cannot be met by domestic projects for approximately four to five years considering the construction constraints due to the current credit market. (1036.1, pp.1-2)

Our Response:

Based on comments from UNICA and Brazilian researchers we have updated our imported sugarcane ethanol lifecycle analyses which have effectively improved the lifecycle GHG performance for imported sugarcane ethanol beyond 50%. As such, imported sugarcane ethanol meets the advanced biofuel lifecycle thresholds and no adjustment to the threshold is necessary. At this time we also assume that sugarcane ethanol produced in countries other than Brazil (e.g., U.S. or Caribbean) would also meet the threshold compliance value.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2137
Organization: Brazilian Sugarcane Industry Association (UNICA)
Comment:
The commenter (2137.1) states that EPA should adjust the advanced fuel lifecycle threshold to 40% in the final rule. While the commenter believes that there is abundant scientific evidence that sugarcane ethanol reduces GHG emissions compared to conventional gasoline by up to 90%, they concur that the threshold should be set at 40% at this time. Furthermore, if EPA does not update the lifecycle analysis in the Final Rule, sugarcane ethanol would not qualify as an advanced biofuel at the 50% GHG threshold. The commenter believes this result would be unreasonable given the uncertainty in EPA's lifecycle analysis and the clear Congressional intent to include sugarcane ethanol as an eligible advanced biofuel. [[Docket number 2137.1, p. 13]]

In addition, to further emphasize the need to properly characterize sugarcane as an advanced biofuel is EPA's own reasonable conclusion that any "advanced biofuel produced above and beyond what is required for the advanced biofuel requirements could reduce the amount of corn

ethanol needed to meet the total renewable fuel standard. The commenter fully supports this conclusion, which is supported by the record. [[Docket number 2137.1, p. 14]]

The commenter (2137.1) cautions EPA against only increasing the conventional biofuel mandate and presuming that all biofuels will be counted in the conventional pool. Congressional intent and President Obama clearly encourages the use of progressively cleaner, renewable fuels. The commenter believes that EPA has an abundance of information to make a determination that sugarcane ethanol meets the advanced biofuels lifecycle threshold and should implement the RFS2 without delay in 2010. [[Docket number 2137.1, p. 17]]

Our Response:

We have not adjusted the threshold to 40% for the final rule because based on comments from UNICA as well as others we were able to incorporate several updates to our lifecycle analyses for imported sugarcane ethanol. The final rule results indicate that imported sugarcane ethanol meets the 50% GHG threshold for advanced biofuel and as such, no adjustment to the advanced biofuel threshold is necessary.

Regarding the recommendation to implement the RFS2 biofuel standards for 2010, this is what EPA is doing.

7.8 Peer Review

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) does not support EPA's peer review process. EPA's process was closed to the public, and has the appearance of bias. Peer review guidance emphasizes public participation during the peer review process. (2329.1, p. 29) [[See Docket Number 2329.1, pp.29-30 for a more detailed discussion of the commenter's concerns with the peer review process]]

Our Response:

To ensure the Agency made its decisions for this final rule on the best science available, EPA conducted a formal, independent peer review of key components of the analysis. The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields. After identifying the most qualified individuals, the independent contractors screened candidates

for possible conflict of interest, bias due to strong editorial positions taken on issues related to this rulemaking, contractual relationships to EPA, and overall perception of independence from the Agency. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science. The full results of the peer review were added to the public docket during the comment period for this rulemaking. The comments provided by the expert reviewers were considered along with all of the public comments that EPA received.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1050
Organization: American Council for Ethanol (ACE)
Comment:
The commenter (2101.1) is pleased that EPA decided to initiate an independent peer review to help respond to stakeholder concerns and to ensure that the agency makes decisions with respect to RFS2 and particularly ILUC on the best available science. Unfortunately, the commenter is shocked and deeply concerned that Timothy Searchinger, the attorney who has created extraordinary controversy with his unrelenting attacks launched against ethanol and American agriculture, was named to the peer review panel. While some of the individuals EPA relied upon to conduct the peer review of the lifecycle greenhouse gas assumptions have impeccable credentials, because Searchinger is so divisive, his service on the peer review perhaps unnecessarily tarnishes the efforts of the other esteemed individuals named to the panel to undertake this critically important work. (2101.1, p.14)

The commenter noted that by insisting in the RFS2 proposed rule on arbitrarily ascribing GHG emissions to biofuels that cannot be shown empirically and which depend upon tortured use of computer models lacking the confidence of so many scientists, EPA has already exposed itself to a barrage of criticism. But to make matters worse, the naming of Timothy Searchinger to the peer review panel simply invites cynicism about the motives of EPA about the basic veracity of the lifecycle GHG analysis, and about the potential use of the lifecycle analysis tool as a political weapon against other energy sources in future GHG reduction programs. (2101.1, p.14)

Our Response:

The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields.

EPA wanted to avoid the appearance of selecting or denying candidates based on previously stated positions. That is why the Agency followed federal guidelines and used third-party contractors to independently select the reviewers. The independent contractors selected

reviewers based on their expertise in the relevant subject matter areas. It is not surprising that many of the most highly qualified individuals have done previous research or made public statements about biofuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2390
Organization: Governors' Biofuels Coalition
Comment:
The commenter (2390.1) recommends and supports the use of a peer review approach to guide IILUC theory. However, some of the reviewers selected by EPA lack scientific training and are primarily anti-biofuel advocates. This casts doubt on a process that included many qualified expert reviewers who provided valuable input in a good faith effort to reach a reasonable consensus on this issue. (2390.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2189
Organization: Technical Consultant for Enzyme Development Corporation and Genencor International
Comment:
The commenter (2189) noted that the proposal is based assumptions and analyses that aren't the product of good science. The reviewers in the peer review process were not competent to assess the assumptions and science involved in EPA's proposed rules. They were too far removed from agricultural business and technology. (2189, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that nearly all the peer reviewers were biased toward greenhouse gas reduction. In fact, potential peer-reviewers were screened subjectively. This subjective screening created biases to the pool of peer reviewers. This limits the objectivity of the results. (2112.1, p.7) (See Docket Number 2112.1, pp.6-7 or more discussion on the peer review process)

Our Response:

To ensure the Agency made its decisions for this final rule on the best science available, EPA conducted a formal, independent peer review of key components of the analysis. The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields. After identifying the most qualified individuals, the independent contractors screened candidates for possible conflict of interest, bias due to strong editorial positions taken on issues related to this rulemaking, contractual relationships to EPA, and overall perception of independence from

the Agency. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2528
Organization: U.S. Congress, House of Representatives
Comment:
Upon seeing the peer review analysis and the designated peer reviewers, the commenter (2528) is disappointed by the absence of objectivity and a lack of unbiased opinions in the process. The commenter is dismayed by EPA's disregard for an approach that is fair and balanced. The commenter is also frustrated that the United States Department of Agriculture, which has extensive knowledge related to this issue, was in no way included in the peer review process. Instead, individuals with long-standing agendas contrary to the goals of the RFS2 were given prominent placement on the review panel. (2528, p.2) (See Docket Number 2528, pp.2-3 for more discussion on this issue)

Our Response:

The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields.

EPA wanted to avoid the appearance of selecting or denying candidates based on previously stated positions. That is why the Agency followed federal guidelines and used third-party contractors to independently select the reviewers. The independent contractors selected reviewers based on their expertise in the relevant subject matter areas. It is not surprising that many of the most highly qualified individuals have done previous research or made public statements about biofuels.

Beginning early in this rulemaking process and continuing throughout the development of this final rule, EPA held hundreds of meetings with stakeholders, including government, academia, industry, and non-profit organizations, to gather expert technical input. Our work was also informed heavily by consultation with other federal agencies. For example, we have relied on the expert advice of USDA and DOE, as well as incorporating the most recent inputs and models provided by these Agencies. Dialogue with the State of California and the European Union on their parallel, on-going efforts in GHG lifecycle analysis also helped inform EPA's methodology. A key result of our outreach effort has been awareness of new studies and data that have been incorporated into our final rule analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2245
Organization: Illinois Corn Growers Association, et. al.
Contributors to this comment letter include: Iowa Corn Growers Association, Iowa Soybean Association, Illinois Soybean Association, Illinois Renewable Fuels Association, Kentucky Soybean Association, Minnesota Soybean Growers Association, Missouri Corn Growers Association, Missouri Soybean Association, Monsanto, the National Corn to Ethanol Research Center, Nebraska Corn Board, Nebraska Soybean Association, Novozymes, Ohio Soybean Association, South Dakota Soybean Association, University of Illinois Chicago, Energy Resources Center, University of Illinois Champaign-Urbana plant breeding, animal nutrition and agronomy, DuPont, Ethanol Technologies, John Deere, and the U.S. Grains Council
Comment:
The commenters (2245.1) believe that EPA did not follow appropriate procedures or guidelines in conducting a peer review and needs to repeat the process once the rule and docket are complete. The commenters were disappointed in the lack of a transparent process for the identification of the capabilities required for peer reviewers or of a transparent selection process. The reviewers involved clearly lacked the appropriate breadth and depth of expertise to adequately review and comment on the extensive technical elements of the proposal and a number of the reviewers lacked impartiality. The commenters would like a subsequent peer review be commissioned once the docket is complete. The request for candidates, selection criteria and selection process must then be conducted in an open and transparent manner with a focus on the capabilities and independence of the reviewers. (2245.1, pp.27-28)

Document No.: EPA-HQ-OAR-2005-0161-1989
Organization: Iowa Farm Bureau Federation (IFBF)
Comment:
The recent EPA peer review panel also reaffirmed many of the concerns the IFBF has about the EPA's proposed rule and rulemaking process. The panel expressed concern about using these incomplete and unreliable models to measure ILU changes and indicated that they didn't have enough time to review this convoluted and complicated proposal. We are also concerned that there is no evidence that the U.S. Department of Agriculture or any other federal agencies with expertise on these issues were included in the peer review process. This is exactly why the House of Representatives voted in the climate change bill to limit EPA's ability to implement international ILU provisions in the RFS-2.

We respectively disagree with the EPA assessment "...that there were no direct and substantial [conflict of interest] or appearance of impartiality issues that would have prevented a peer reviewer's comments from being considered by EPA." Dr. Timothy Searchinger, for instance, has been an outspoken critic of biofuels and is clearly not impartial. His inclusion on the peer review panel casts serious doubt on the sincerity of EPA in wanting an unbiased, critical review of the issues associated with life-cycle analysis and the use of models to assess causality.

Our Response:

EPA's peer review process was fully transparent. All of the peer review documents, including explanations from the independent contractors about how reviewers were selected, were made publicly available on EPA's website and in the public docket for this rulemaking.

The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields. After identifying the most qualified individuals, the independent contractors screened candidates for possible conflict of interest, bias due to strong editorial positions taken on issues related to this rulemaking, contractual relationships to EPA, and overall perception of independence from the Agency. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways are likely to be updated. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent lifecycle GHG assessments on this subject. As specified by EISA, if EPA revises the analytical methodology for determining lifecycle greenhouse gas emissions, any such revision will apply to renewable fuel from new facilities that commence construction after the effective date of the revision.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2079
Organization: AE Biofuels, Inc.
Comment:
With regards to the peer review process, the commenter (2079.1) encourages EPA to include experts from the biodiesel industry in the peer review process. Throughout the peer review process, the commenter encourages EPA to provide reviewers with additional independent studies and analyses that will help place the EPA lifecycle analysis in context and provide a holistic view of the debate over indirect effects. (2079.1, p.9)

Our Response:

The reviews were conducted following the Office of Management and Budget's peer review guidance that ensures consistent, independent government-wide implementation of peer review, and according to EPA's longstanding and rigorous peer review policies. In accordance with these guidelines, EPA used independent, third-party contractors to select highly qualified peer reviewers. The independent contractors autonomously selected reviewers who are widely published in peer reviewed journals and recognized as leading experts in their respective fields. After identifying the most qualified individuals, the independent contractors screened candidates for possible conflict of interest, bias due to strong editorial positions taken on issues related to this rulemaking, contractual relationships to EPA, and overall perception of independence from the Agency. The reviewers selected are leading experts in their respective fields, including lifecycle assessment, economic modeling, remote sensing imagery, biofuel technologies, soil science, agricultural economics, and climate science.

EPA provided the expert reviewers with all of the relevant materials needed to conduct a thorough and detailed review of EPA's analysis. The expert reviewers, as well as the public commenters, referenced a wide range of additional studies and sources of data to inform there responses. One of the most important outcomes of the peer review and EPA's efforts to maximize stakeholder feedback was the consideration of new studies and data sources in our lifecycle analysis for the final rule.

[i] Amaral W. A. N., J.P. Marinho, R. Tarasantchi, A. Beber, and E. Giuliani. 2008, Environmental sustainability of sugarcane ethanol in Brazil. In: Zuurbier P.; van de Vooren J. (eds) Sugarcane ethanol: Contribution to climate change mitigation and the environment. Wageningen Academic, Wageningen, pp 121-124.

[ii] Smith, D.M., N.G. Inman-Bamber and P.J. Thorburn. 2005. Growth and function of the sugarcane root system. Field Crops Research 92: 169-183.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 8
Impacts on Criteria (NAAQS) and Toxic Pollutants

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

8 IMPACTS ON CRITERIA (NAAQS) AND TOXIC POLLUTANTS

8 IMPACTS ON CRITERIA (NAAQS) AND TOXIC POLLUTANTS

What We Proposed:

The comments in this section correspond to Section VII of the preamble to the proposed rule and address impacts of the program on non-GHG emissions. A summary of the comments received and our response to those comments are located below (and in Section VI of the preamble to the final rule).

8.1 Fuel Production and Distribution Impacts of the Proposed Program

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) is concerned about the assessment of non-GHG emissions reported in the DRIA. The commenter lists specific concerns and refers EPA to a report that provides an in-depth discussion of the issues. [[Docket number 2393.1, p. 72]] [[See docket number 2393.1, pp. 71-73 and docket number 2393.7, Attachment 6 for further discussion of this issue.]]

Our Response:

EPA's responses are made directly to the specific comments outlined in the supporting report authored by Sierra Research, summarized below. Many of these comments pertain to vehicle and equipment emission impacts, but are included in this section to keep responses to the Sierra report contiguous.

What Commenter Said:

Sierra Research expressed concern (pp. 12-13, 16-17) about the analysis using multiple sources of fuel consumption, VMT and fuel economy – namely AEO2007, AEO2008 and MOVES. In particular, Sierra pointed to discrepancies in fuel economy, vehicle class mix and VMT projections between AEO and MOVES as a "fundamental flaw".

Our Response:

The primary reason MOVES and AEO fuel economies differ is because AEO reports a "CAFE-space" value, while MOVES deals directly in on-road fuel economy; EPA estimates on-road fuel economy to be about 20 percent lower than CAFÉ values. Additional differences are tied to different levels of fuel economy standards. While Sierra is correct that previous releases of MOVES have not accounted for the 2006 rules mandating increase in truck CAFÉ standards, these were accounted for in the RFS2 analysis. The primary difference between AEO2007 and AEO2008 is the inclusion of the EISA fuel economy mandates, which is why AEO2008 was

used for the overall gasoline volume estimates in the rule. These as of yet have not been accounted for in MOVES because the EISA requirements are being implemented through light-duty greenhouse gas standards which have not yet been finalized.

In general, AEO was used for the projections of energy demand in the rule. MOVES was employed where supplemental information, not available in AEO, was needed—mainly non-GHG emission estimates, and the breakdown of car and truck sales. For non-GHG estimates, the fuel economy issues raised by Sierra aren't relevant, but Sierra's comment regarding inconsistent VMT is. MOVES was updated with AEO2009 VMT for the air quality and final rule analysis, so it does reflect the lower VMT growth contained in the AEO updates. With respect to car/truck sales breakdown, this analysis was updated to reflect the car/truck split used in the light duty greenhouse gas proposal, which is consistent with AEO2009.

What Commenter Said:

Sierra Research raised the concern (pp. 32-33) that using the pre-aggregation function in MOVES (temporally and geographically) would affect the accuracy of the modeled impacts, and suggested a sensitivity analysis to assess this. Sierra also expressed concern with the fuel "binning" approach in MOVES, stating it would be critical to perform a reanalysis when MOVES was updated with the Complex and Predictive models.

Our Response:

We acknowledge that using a limited number of months affects modeled impacts; we found that with MOVES this impact is similar in magnitude to that quoted by Sierra from the RFS1 analysis, and does not play an important role in the general magnitude and direction of the estimated impacts. For the air quality modeling work, the model was run over all 12 months. With respect to geographic pre-aggregation, the model develops a fuel supply which retains the market share of fuels at the county level rather than combining fuel properties into an average fuel. On the last point regarding fuel "binning", in accordance with Sierra's comment the analysis for the final rule was redone primarily to allow the updates based on Complex and Predictive model to be incorporated.

What Commenter Said:

Sierra Research states on page 34 that biodiesel impacts would likely increase if the new MOVES estimates were used, as the baseline emissions are expected to increase significantly between MOVES and MOBILE. On page 36 Sierra pointed out that not clear how biodiesel was apportioned between the onroad and offroad fleet.

Our Response:

Biodiesel was apportioned entirely to the onroad fleet, and Sierra's comment regarding the magnitude of increase using MOVES is true, although we did not reflect this in the final rule

as the MOVES heavy-duty numbers were not final at the time of the analysis. We estimate that the NOx increase due to the use of biodiesel would be closer to 4,000 tons nationwide, vs. 1,300 tons used in the final rule analysis (the NPRM used an estimate of around 400 tons, but this was corrected in the final rule as it did not account for the dilution of biodiesel into B20 and lower blends). We project that this increase is still very small relative to the national NOx inventory (less than 0.05 percent).

What Commenter Said:

Sierra Research commented on page 35 that EPA apparently estimated naphthalene for E85 vehicles incorrectly by combining naphthalene emissions data from one test program and PM from another to develop toxic to PM ratios which were then applied to PM emissions.

Our Response:

This is not what EPA did. EPA scaled the naphthalene to PM ratio from E0 vehicles by 0.15, assuming naphthalene would decrease by the volume of ethanol in the fuel, which is not expected to produce any naphthalene emissions.

What Commenter Said:

On page 35, Sierra Research said that their analysis of the datasets we used to develop butadiene to VOC ratios for E85 did not show a statistically significant difference between vehicles running on E0 versus E85.

Our Response:

Our analysis of E85 data showed the butadiene to VOC ratio is roughly 5 times lower, which is roughly what one would expect from dilution with ethanol.

What Commenter Said:

On page 35, Sierra Research stated that their analysis showed a roughly 6000% increase in acetaldehyde emission rates for vehicles running on E85 versus E0. On page 36, they showed inventory results in tons per summer day that indicated a roughly 10-fold higher increase in acetaldehyde than EPA estimated for the draft RIA's "more sensitive" control case. They explain this, stating, "For acetaldehyde, vastly different assumptions regarding acetaldehyde emissions from FFVs operating on E85 result in the DRIA more-sensitive values being about an order of magnitude lower."

Our Response:

As detailed in Section 3.1.1.2.2 of the RIA, EPA's analysis of acetaldehyde emissions from E85 were based on data from the same two studies Sierra Research relied on, plus additional data from EPA's Office of Research and Development which was consistent with the other two studies. Thus, it is difficult for us to understand how Sierra Research found an inventory impact an order of magnitude higher, as there is no documentation of how they derived this estimate. As noted in our response to API's comment regarding acetaldehyde emissions below, we developed the acetaldehyde emissions based on ratios to VOC rather than direct application of this percent increase to an E0 emissions baseline, and perhaps a difference in how the increase was applied explains the large difference Sierra reports.

What Commenter Said:

On page 43 Sierra mentioned inconsistency in ag equipment emissions between FASOM ag fuel use and NONROAD model.

Our Response:

There is no way they would be consistent. They're totally different models.

What Commenter Said:

On page 44, Sierra commented on the lack of accounting for locations where marginal production of fertilizer and pesticides is going to occur.

Our Response:

We acknowledge that using a uniform distribution is a simplification; developing an analysis of localized impacts was beyond the scope possible for the rule.

What Commenter Said:

Sierra Research stated on page 46, "the total VOC emissions increase presented (32,278 tons per day) [by EPA] is smaller than the sum of the increases of ethanol, benzene, acetaldehyde, formaldehyde, and acrolein (43,754 tons per day). Given that these five species fall within the EPA definition for VOC, it is not possible that the method used to estimate the VOC impacts is consistent with the method used to produce the estimates for the specific compounds. Similarly, on page 46, Sierra Research notes a potential inconsistency in impacts of renewable fuel transport, with an increase in ethanol emissions much larger than the increase in total VOC.

Our Response:

These apparent discrepancies are, in fact, possible because some sources have increases in total VOC and others have decreases, and these sources have varying levels of ethanol and air

toxics. For instance, while there is an overall increase in total VOC, there are also VOC reductions from displaced gasoline production and distribution (see impacts spreadsheet, Results Diff tab), and there are, of course, no ethanol emissions associated with gasoline production and distribution.

What Commenter Said:

Sierra mentioned on page 47 that the assumption that electricity can be generated from biomass without resulting in non-GHG emissions is unlikely.

Our Response:

We don't say that there aren't emissions. The emissions are included in the overall biofuel plant emissions in the cases where the electricity is not purchased.

What Commenter Said:

On page 48, Sierra Research noted a discrepancy in VOC emission factors for storage and distribution emissions on Table 3.1-21 and those in the impacts spreadsheet provided in the docket for the rule. (The emission factors in the impacts spreadsheet were larger.)

Our Response:

This was in fact an error discovered after publication of the draft RIA, and was corrected for the final rule.

What Commenter Said:

On page 49, Sierra Research noted that the draft RIA stated toxic emission factors for ethanol production facilities came from wet mill plants whereas most plants in the future will be dry mill plants, with much different emission rates.

Our Response:

This was actually a typographical error in the RIA. Over 90% of the available emissions data used to develop emission factors were from dry mill plants.

What Commenters Said:

Sierra Research stated on page 49:

“EPA fails to point out that there may be biases introduced in its air toxic emission factor development when the 2005 NEI reporting is used. There were limited state data submitted for

calendar year 2005 because EPA de-emphasized state submittals for that year due to budgetary issues. Therefore, the state sample may be biased according to the states that elected to submit their data. This is an additional level of uncertainty that is introduced into the emission rates that were derived in this way."

Our Response:

This is a good point and we have added text addressing this to the RIA.

What Commenter Said:

Sierra pointed out on page 47 and 49 the need to consider effects of emission trading programs.

Our Response:

It is not certain that the emission reductions projected in refineries would meet the criteria that would allow them to be traded upon under NSR provisions.

What Commenter Said:

Sierra points out on page 49 that U.S. refineries might increase exports as domestic demand shrinks.

Our Response:

We do not have any basis for the potential impact on exports, making this issue difficult to assess. However, increased exports are less likely for gasoline, since we project most of the reductions will be from imported gasoline, and demand for exported gasoline is low. Increased exports may be more of a possibility for diesel, but again, it is more likely that the impact will mainly be reduced imports.

What Commenter Said:

On page 50, Sierra points out that benzene emissions from pesticide application is 26% of VOC, which seems high.

Our response:

This estimate is used in EPA's National Emissions Inventory. However, benzene is no longer used in pesticide products, and is no longer permitted as of 2004 (Federal Register, April 4, 2002, 67(65): 16027-16030). Thus, the inventory is inaccurate. However, due to time constraints, this error could not be corrected for the final rule.

8.2 Vehicle and Equipment Emission Impacts of Fuel Program

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) recommends that EPA review CRC E-65-3. CRC, Fuel Permeation from Automotive Systems: E0, E6, E10, E20, and E85, Final Report, CRC Project No. E-65-3 (Dec. 2006), available at http://www.crcao.com/reports /recentstudies2006/E-65-3/CRC%20E-65-3%20Final%20Report.pdf. The commenter does not think permeation emission rates should be increased at all between E6 and E10. (2329.1, p. 109)

Our Response:

For the final rule, EPA has updated permeation effects based on the most recent available data, as detailed in the technical memo from David Hawkins to the docket entitled "Analysis of Ethanol Evaporative Permeation Effects Update". This analysis included data from the E-65-3 program, and reflects the conclusion that a statistically significant difference in permeation effect between E5.7 and E10 was not found.

What Commenter Said:

The commenter noted that in Table 3.1-8 of the DRIA (at 447), EPA did not evaluate any change in PM emissions for nonroad SI engines. The commenter recommends that the Air Improvement Resource, Inc testing programs be included with other testing programs EPA will assemble for the final rule. (2329.1, pp. 110-111)

Our Response:

As EPA is in the midst of gathering data on ethanol effects on nonroad SI engines, we did not change our assumptions for these effects for the final rule. However, we did add language in the Regulatory Impact Analysis stating that the nonroad SI impacts presented in the rule do not account for a new requirement that many engines be certified on E10 beginning in 2011, meaning that by 2022 a significant share of engines in the fleet will effectively show no emission effect from E10, significantly reducing the nonroad SI impacts presented in this rule.

What Commenter Said:

The commenter (2329.1) provided comments on table 3.1-6 of the DRIA (at 446). One number that stood out in the table was the 3739.8% increase in acetaldehyde. This percentage is high not because acetaldehyde emissions are very high from these vehicles, rather the percent is so high because acetaldehyde emissions from E0 are very close to zero. . In situations like these, where

the increase in emissions is extremely sensitive to the denominator, it is far preferable to model this pollutant with an offset in mg/mi, rather than a multiplicative percentage. The concern is that as the non-methane organic gas (NMOG) emissions of the FFV increase with age, or with lower temperature, or some combination of the two, the acetaldehyde emissions still are assumed to increase by 3739.8%. It is likely that they increase as the vehicle ages or at low temperatures, but it is highly unlikely that they increase at the same percent that they do under relatively low mileage and 75F testing temperature. Thus, it is far preferable to develop an emission offset for acetaldehyde, and apply this under all conditions. (2329.1, pp. 109-110)

Our Response:

While the test results reported this percent increase, for the inventory calculation acetaldehyde impacts were not calculated by applying a percent increase to E0 emissions, but instead were estimated based on ratios to VOC. This is detailed in Section 3.1.1.2.2 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter states that EPA has used a piecemeal application of both the current models (NMIM/MOBILE6) and now-obsolete versions of MOVES emission inventory models; as a result, the subsequent reanalysis proposed by EPA using updated information may yield substantially different results.

Our Response:

The use of draft components of MOVES was made only where there was enough confidence that the updated information, while still draft, would better represent the emission impacts of the rule. Specifically, it was important in this analysis to update the MOBILE6 E10 impacts to the Predictive Model E10 impacts developed in the RFS1 rule; MOBILE6 was also incapable of breaking out evaporative permeation emissions, which are very sensitive to E10. The final rule analysis does update the version of MOVES used for the inventories, and is a closer reflection of the final model. Because the RFS2 final rule E10 impacts were in large part carried through to the final version of MOVES2010 , we would not expect substantially different impacts between the final rule analysis and MOVES2010.

What Commenter Said:

API expressed concern that the MOVES model did not employ restrictions on emissions below 30 ppm sulfur, and recommended that ARB's Predictive Model be used to updated the MOVES approach

Our Response:

The sulfur assumptions in MOVES did not have bearing in the emission inventory analysis for RFS2. However, this comment was taken into consideration and addressed for the final version of MOVES2010.

Note: API comments on vehicle and equipment emission impacts contained in the Sierra Research report are addressed in the previous section.

8.3 Air Quality Impacts

8.3.1 Air Quality Modeling Methodology

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2310
Organization: Low Carbon Synthetic Fuels Association (LCSFA)
Comment:
The commenter (2310) expresses concern that EPA's air quality impacts analysis could be misinterpreted by policy officials and others who might wrongly conclude that all renewable fuels negatively impact air quality. This is not the case for biomass-to-liquids (BTL) fuels, which are far cleaner than both other renewable fuels (like ethanol) and the petroleum fuels they would displace. As a result, use of BTL fuels would improve air quality nationwide, and, in particular, in non-attainment areas. The commenter requests that EPA conduct an alternate analysis of the nationwide and local air quality impacts (or improvements) that would result from the use of BTL fuels to meet the 16 billion gallon cellulosic biofuel standard (which would require roughly 9.4 gallons of BTL at a 1.7 equivalence value). Indeed, EISA Section 209 requires that EPA consider in its study of air quality impacts 'different blend levels, types of renewable fuels, and available vehicle technologies.' The commenter believes that EPA should develop accurate and objective evaluations of the air quality impacts of various renewable fuels that could be used to meet EISA mandates. Such an analysis should make clear to policy officials that improved air quality and increased use of certain clean renewable fuels are not mutually exclusive goals. [[Docket number 2310.1, p. 3]

Document No.: EPA-HQ-OAR-2005-0161-2497
Organization: Wisconsin Department of Natural Resources
Comment:
The commenter (2497.1) noted that the Midwest currently is and will likely continue to be a significant production center and user of renewable biofuels. The commenter believes that the modeling should acknowledge this by focusing sufficient resources to conduct the needed modeling in this region. The commenter requests that the needed modeling and information gathering be completed within two years of the rule becoming final (i.e., November 2011). If EPA does not have the resources to complete the required modeling in a timely manner, assistance from other credible entities, such as LADCO, should be utilized. (2497.1, p.2)

The commenter also requests that the modeling take into consideration the ongoing, regular reviews of existing criteria pollutant and toxics rules.

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) included additional comments from the State of New Jersey in addition to their own comments. The State of New Jersey supports EPA's proposal to use a national-scale air quality modeling analysis to assess the impacts of the RFS2 program on future ambient concentrations of PM2.5, ozone and air toxics. The State of New Jersey supports the CMAQ modeling platform and provides suggestions regarding the modeling plan. A) 2007 meteorology is preferred over 2005 meteorology for PM2.5 and ozone modeling B) WRF use is currently more prevalent than MM5 for meteorology modeling as suggested by EPA. (2466.1.pdf, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter lists specific concerns about air quality modeling and refers EPA to a report that provides an in-depth discussion of the issues. [[Docket number 2393.1, p. 72]] [[See docket number 2393.1, pp. 71-73 and docket number 2393.7, Attachment 6 for further discussion of this issue.]].

First, the commenter encourages EPA to perform air quality modeling of ozone, PM and hazardous air pollutants (HAPs) at one time, using CMAQ in the "one atmosphere" methodology. This method assures the atmospheric chemistry and physics represent the production of ozone, PM and HAPs simultaneously—not independently.

Second, the commenter recommends that EPA model with 4 km nesting as well as 36km and 12km in order to avoid dilution of urban point or mobile source emissions which – if it occurred – would lead to a possible understatement predicted concentrations. The commenter also recommends that EPA develop the urban emissions inventory at a minimum grid resolution of 4km, such that dilution is not achieved through methods similar to CAMx's flexi-nesting.

Third, the commenter is concerned with EPA's proposal to use the three-dimensional global atmospheric chemistry model, GEOS-CHEM, as an input to CMAQ or CAMx. The commenter believes that the application of CMAQ or CAMx mixes stratospheric ozone down to the surface and affects high altitude areas, inadvertently misleading decision-makers.

Finally, the commenter is concerned that the chemical mechanism for modeling SOA in CMAQ is relatively new and the degree to which it has been validated other than by "internal EPA evaluation" is unclear. The commenter suggests that the DRIA provides no indication as to how EPA will adjust either emissions of total aromatics or of specific aromatic compounds such as toluene in performing CMAQ modeling given that benzene is the only aromatic compound for which it has even attempted to quantify the emissions impact of the RFS. The commenter believes it is unclear why the issue of aromatic impacts on SOA formation is included in the DRIA.

Our Response:

We believe that it is important to include biofuels other than ethanol in our analysis of air quality impacts. Time requirements for the air quality modeling necessitated starting the air quality modeling prior to finalizing the emissions inventories for the final rule. Time constraints also precluded us from analyzing multiple strategies for meeting the EISA renewable fuels mandate. Thus, we used interim inventories that reflected the use of ethanol in about 34 of the mandated 36 billion gallons of renewable fuel. The remaining gallons of renewable fuel were comprised of biodiesel and renewable diesel. The subsequent final inventories, not done in time for air quality modeling, reflect the use of other types of cellulosic biofuels in place of ethanol.

We will incorporate the improvements made to this rule's final inventories into our inventories for the "anti-backsliding" analysis required by Clean Air Act section 211(v). Further, some commenters suggested EPA should separately evaluate air quality impacts of various renewable fuels, and EPA should convey the message that increased use of certain renewable fuels may improve air quality. We will keep these suggestions in mind as we conduct our anti-backsliding analysis.

The Wisconsin Department of Natural Resources suggested that EPA modeling efforts should focus on the Midwest region. We modeled the entire country, including the Midwest, and the modeling grid size provides sufficient resolution to characterize impacts in the Midwest. In addition, we note that the meteorological model used in our air quality modeling accounts for Midwest weather patterns. The Wisconsin Department of Natural Resources also commented that EPA's modeling should take into account ongoing, regular reviews of existing rules. We regularly update our baseline/reference case to reflect all currently promulgated air quality regulations.

In response to the State of New Jersey's specific suggestions on EPA's modeling plan, first, as noted in EPA modeling guidance, the choice of a model base year involves numerous considerations. The ultimate goal is to successfully model a variety of meteorological conditions conducive to a range of air pollution levels while using the best available model input data. Clearly, there are differences between the national simulations being done for the RFS2 analysis and the regional analyses being done by the State of New Jersey (and others) for upcoming attainment demonstrations of ozone and PM2.5. Based on an EPA analysis of the climatology of 2005 and 2007, we concluded that the former year was more appropriate for this particular national analysis given the extreme drought conditions in the southeastern U.S. and extreme wet conditions in the central U.S. during 2007. The ability to use unadjusted 2005 National Emission Inventory (NEI) data as emissions inputs was another factor in favor of 2005.

Second, while EPA is using the MM5 meteorological model for this rulemaking analysis, we are actively conducting MM5 and WRF comparisons for later base years. It is possible that we may be switching to WRF in subsequent analyses. However, as indicated in EPA modeling guidance, the most important consideration with respect to meteorological inputs is not which model is used, but instead how well the chosen model replicates the observed meteorology over the period in question. As is documented in the air quality modeling technical support document (AQ TSD) for the RFS2 final rulemaking (EPA-454/R-10-001 found in the docket for this rule), EPA is satisfied that the MM5 model performance is appropriate for use in this analysis with relatively low bias and error values for key meteorological parameters.

In regards to comments from API listing specific concerns about modeling methodology, first, EPA understands the importance of considering atmospheric chemistry interactions holistically. Accordingly, the CMAQ modeling was performed in "one-atmosphere" mode.

Second, while the emissions inventories can be available at a 4-km resolution (via spatial surrogate techniques), EPA has concluded that 12-km resolution is the most appropriate choice for the model horizontal grids for simulating the national impacts of the RFS2 program on air quality. The 12-km grid resolution employed in this analysis is consistent with EPA guidance for attainment demonstration modeling of ozone and PM2.5. Several studies have shown that model performance does not necessarily improve with finer grid resolution, nor does the model response differ appreciably in models that used both 12- and 4-km grids (Arunachalam, 2006; Cohan, 2006; Gego, 2005) when considering air quality at the regional- or city-scale. Even at 12-km resolution the RFS2 CMAQ modeling captures the NOx inhibition ozone effects resulting from new point sources associated with the production of renewable fuels. Even with short-cuts like "flexi-nesting" of non-emissions fields, conducting finer resolution modeling over some/all urban areas would involve a large increase in computational resources with no guarantee of improved, or even differing outcomes, from a national perspective. Based on all of the above factors, EPA is comfortable with the conclusion that the RFS2 air quality modeling approach is sufficient for estimating the national impacts of the program on air quality and human health.

Third, like the commenter, EPA was also concerned about the potential for stratospheric ozone from the global model (GEOS-Chem) boundary conditions inappropriately affecting surface air quality over high-altitude and other locations. Initial sensitivity tests performed as part of the EPA model evaluation process indicated that this could be problematic in certain parts of the year. To remedy this problem, EPA capped the ozone levels within the upper levels of the GEOS-Chem boundary conditions to 70 ppb, in effect removing the potential for stratospheric ozone to impact the surface layer. Additionally, our testing showed that most episodes of stratospheric (or upper tropospheric) intrusions into the surface boundary layer occur outside the period between May and September. We are only using the 153 days between May 1st and September 30th to estimate the ozone impacts of the RFS2 program. More details on the aforementioned sensitivity tests and the ozone modeling period will be contained in the air quality modeling Technical Support Document (AQ TSD) that accompanies the final rulemaking.

Finally, the issue of aromatic impacts on SOA formation is included in our air quality discussion because aromatic emissions can change with increased renewable fuel use and can therefore impact ambient SOA concentrations. As discussed in Section 3.4.1.2.2 of the RIA, toluene is an important contributor to anthropogenic SOA. Other aromatic compounds contribute as well, but the extent of their contribution has not yet been quantified. Mobile sources are the most significant contributor to ambient toluene concentrations as shown by analyses done for the 2002 National Air Toxics Assessment (NATA) (U.S. EPA, 2009) and the Mobile Source Air Toxics (MSAT) Rule (U.S. EPA, 2007). Levels of toluene and other aromatics in gasoline are potentially influenced by the amount of ethanol blended into the fuel. The high octane quality of ethanol greatly reduces the need for and levels of other high-octane components such as toluene (which is the major aromatic compound in gasoline). Since

toluene contributes to SOA and the toluene level of gasoline is decreasing, it is important to assess the effect of these reductions on ambient PM.

Therefore, EPA did estimate emissions of aromatics for our emissions and air quality modeling of the impacts of RFS2 fuel volumes, as discussed in Sections 3.1 and 3.3 of the RIA. In addition to developing emission inventories for explicit model species in CMAQ, we also developed inventories for a large number of precursor compounds, including aromatics, through application of speciation profiles in SMOKE (see also Section 3.4.1.2 of the RIA). We collected and analyzed new data on impacts of increased ethanol (E10 and E85) on aromatics and other compounds for Tier 2 vehicles, and developed new profiles for this rule (EPA 2009a). We used separate profiles for older vehicles that also account for ethanol impacts (Environ 2008), and accounted for the mix of Tier 1 and Tier 2 vehicles. Thus, the statement that we only accounted for impacts on benzene is incorrect.

As discussed in Section 3.4.1.2.2 of the RIA, researchers recently developed a new aromatic SOA chemical mechanism that takes into account both the impact of NOx on SOA formation and the contribution of benzene to SOA formation (Henze et al., 2007). EPA has updated the SOA chemical mechanism in CMAQ v4.7 by using this new mechanism, along with (1) laboratory-determined thermodynamic enthalpies of vaporization and SOA to SOC (secondary organic carbon) ratios, (2) SOA contributions from sesquiterpenes, isoprene, and benzene and (3) an elementary treatment of acid catalyzed isoprene (Bhave et al., 2009). The impact of the new SOA mechanism has been fully evaluated using tracer-based SOA data as well as the more directly measured ambient OC concentrations. (Foley et al., 2009; Bhave 2009).

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8.3.2 Impacts of Proposed Standards on Future Air Quality and Mitigation of Negative Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2089

Organization: National Association of Clean Air Agencies (NACAA)
Comment:
The commenter (2089.1) is concerned that commitments to increase the use of renewable fuels for the purposes of energy security and GHG emissions reductions have been made without sufficient study of the potential adverse air quality and human health impacts. The commenter points out that EPA's estimates of increases in upstream and downstream emissions of NOx, HC, PM, and acetaldehyde are not small and the renewable fuel standards program could substantially increase air pollution and imperil public health.

The commenter (2089.1) believes that as increased volumes of renewable fuels displace gasoline, emissions will increase significantly unless appropriately rigorous controls are put in place now. Therefore, they urge strongly that before EPA takes final action on this rule, the agency ensure that the full range of air quality impacts of the RFS - upstream and downstream- is comprehensively quantified, that appropriate mitigation measures are identified and that provisions for timely implementation of these mitigation measures are included in the final rule (e.g., BACT review for all pollutants). (2089.1, Page 3)

Document No.: EPA-HQ-OAR-2005-0161-2354
Organization: Massachusetts Department of Environmental Protection
Comment:
The commenter (2354) is concerned that without appropriate complementary strategies the proposed program could result in adverse effects on criteria pollutants and air toxics.

The commenter (2354) is concerned about the projected increases in VOC and NOx emissions because of possibility of non-attainment for the 2008 ozone standard. Also, the projected increase in SO2 emissions represents a setback to multiple air quality issues such as PM levels, regional haze, and acid rain.

The commenter (2354) is very concerned about impacts on air toxics (acrolein) resulting from implementation of RFS2. The potential of increases in the evaporative emissions of air toxics from motor vehicles represents a significant public health threat. The commenter (2354) urges EPA to mitigate these impacts by strengthening existing regulatory strategies that address these negative air impacts. The commenter (2354) suggests that one option would be to ensure that federally mandated reductions from other transportation sources occur, such as more stringent tailpipe standards. Another is to tighten permitting requirements (e.g., BACT reviews) for biofuel production facilities.

Document No.: EPA-HQ-OAR-2005-0161-1032
Organization: Texas Commission on Environmental Quality
Comment:
The commenter (1032.1) noted that EPA commented that the proposed expanded RFS Program will "result in significant increases in ethanol and acetaldehyde emissions-increasing the total U.S. inventories of these pollutants by up to 30-40 percent in 2022 relative to the RFS1 mandate case," and with "more modest but still significant increases" in oxides of nitrogen (NOx), formaldehyde, and particulate emissions. These EPA comments indicate that increased use of renewable fuels under an expanded RFS program would result in a potential negative impact on

criteria pollutant emissions that are of critical importance for compliance with the National Ambient Air Quality Standards (NAAQS) for ground level ozone, primarily volatile organic compounds (VOC) and NOx emissions. Ground level ozone is created by a photochemical reaction of VOC and NOx emissions in the presence of sunlight. Additionally, acetaldehyde and formaldehyde are of concern from an air toxics perspective. (1032.1, p.1)

The commenter has implemented a number of regulatory air quality control strategies in its State Implementation Plan (SIP) revisions to reduce VOC and NOx emissions in the areas of Texas that have been designated by the EPA as nonattainment for ground level ozone. The commenter is concerned that the adoption of the proposed rules to expand the RFS program may have a negative impact on the efforts of the State of Texas to meet its SIP goals. (1032.1, p.1)

The commenter (1032.1) recommends that the EPA reevaluate the appropriateness of requiring the increased use of renewable fuels in areas of the nation that are designated by the EPA as nonattainment areas under the NAAQS for ground level ozone or in areas that are considered to be near-nonattainment areas. (1032.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) argues that the discussion of environmental impact is inadequate and deprives public in submitting meaningful comments. (2143.2,p.9)

The commenter (2143) urges the need to discuss and mitigate the increase in criteria and toxic air pollutant emissions and the impact on NAAQS as result of this rule.(2143.2,p.9).

The commenter (2143) suggests that the issue of increase in toxic emissions must be addressed. (2143.2, p.10) Specifically, the commenter suggests that the EPA “take regulatory steps to ensure that the gasoline benzene reduction potential of renewable fuel blending is achieved in practice” and promulgate tailpipe standards for appropriate specific toxics.

Document No.: EPA-HQ-OAR-2005-0161-2375
Organization: Metropolitan Washington Air Quality Committee
Comment:
The commenter (2375.1) is concerned about the potential impact of the proposed rule on regional ground level ozone and particulate matter levels. The commenter believes that if the rule is implemented as proposed, EPA should mitigate the potential impacts and adopt appropriate, timely, and cost-effective controls that can be implemented on a national and regional scale. (2375.1, p.1)

The commenter noted that EPA did not provide any results from air quality monitoring studies in the analysis that would enable a region to better understand the likely air quality impacts as a region develop plans to meet the new standard. The commenter believes that a comprehensive federal analysis of anticipated air quality impacts is essential before finalizing the proposal. EPA should initiate strong proactive steps to mitigate the anticipated increase in emissions through other regulatory initiatives. (2375.1, p.1)

Document No.: EPA-HQ-OAR-2005-0161-2241
Organization: Alliance for a Safe Alternative Fuels Environment (ALLSAFE) and the Outdoor Power Equipment Institute (OPEI)
Comment:
The commenter (2241) noted that EISA created a new CAA Section 211(v), which requires that EPA conduct a study of the potential air quality impacts of fuels and prevent air quality deterioration by promulgating regulations "that mitigate, to the greatest extent achievable, any adverse impacts on air quality" caused by the RFS2 mandates. EPA indicated in the RFS2 preamble that it will have local air quality modeling completed for the final rule. As this modeling should constitute the EISA required study, EPA must mitigate air quality impacts in the final rule by ensuring that fuels and fuel additives do not negatively impact air quality.

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) urges EPA to pursue a vigorous assessment of these effects and establish rigorous anti-backsliding provisions for air and water quality to ensure that increased production of renewable fuels does not increase air and water pollution. Alternatively, the commenter encourages EPA to waive the RFS2 volume requirements if appropriate, until such time as the potentially adverse environmental impacts are mitigated.

The commenter (2466) points out that EPA states in the preamble to the proposed rule that the increased use of renewable fuels would also impact criteria pollutant emissions and there is a potential for increased emissions of acetaldehyde, acrolein, and other air toxics if the RFS volume requirements are implemented. (2466.1.pdf, p6,7)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) lists specific concerns about air quality modeling and refers EPA to a report that provides an in-depth discussion of the issues. [[Docket number 2393.1, p. 72]] [[See docket number 2393.1, pp. 71-73 and docket number 2393.7, Attachment 6 for further discussion of this issue.]]. In the report, the commenter is concerned that EPA had not yet performed the modeling required to assess the impacts of the RFS2 on ambient air quality and argues that this renders the DRIA incomplete and makes it impossible to provide informed comments.

The commenter argues that EISA requires EPA to study air quality impacts and make a determination whether or not increased renewable fuels will adversely impact air quality as a result of changes in vehicle and engine emissions of air pollutants, and it would be beneficial if EPA publishes guidance on measuring "anti-backsliding" that will allow for a timely response.

Document No.: EPA-HQ-OAR-2005-0161-0983
Organization: Holliday Environmental Services, Inc.
Comment:
The commenter (0983) argues that ethanol causes more pollution than gasoline when burned.

The commenter states, "Using ethanol actually creates more smog than using regular gasoline, and the EPA's own attorneys had to admit that fact in front of the justices presiding over the Third Circuit Court of Appeals in 1995 (API v. EPA). First, the primary job of the Environmental Protection Agency is to protect our environment. Raising the pollution does not adhere to the principle, 'Do no harm.' Ethanol does harm. Increasing the percentage of ethanol increases the harm."

Document No.: EPA-HQ-OAR-2005-0161-2421
Organization: Manufacturers of Emission Controls Association (MECA)
Comment:
The commenter (2421) believes that in coordination with EPA final action on this proposed renewable fuel regulation, the agency should quickly propose and put in place appropriate measures that would mitigate any air quality impacts associated with the final renewable fuels standard. (2421.1, p.5)

Our Response

The final rule presents the results of our modeling to determine the incremental air quality impacts of the renewable fuel standards, as compared to two reference cases: a 2022 baseline projection based on the RFS1-mandated volume of 7.1 billion gallons of renewable fuels, and a 2022 baseline projection based on the AEO 2007 volume of 13.6 gallons of renewable fuels. While the process of modeling air quality impacts began in the earlier stages of this rulemaking, due to the considerable length of time required to conduct this modeling, EPA did not complete it in time to publish it in the NRPM.

Like the commenters, EPA is concerned about the potential for negative air quality impacts of the renewable fuel standards finalized in this rule. The results of the air quality modeling conducted for this rule are presented in Section VI.D of the preamble and Section 3.4 of the RIA. In addition to air quality modeling, EPA reviewed the literature on evaluation of renewable fuel impacts using air quality monitoring data (Section 3.4 of the RIA).

The air quality modeling conducted for this rule does not constitute the "anti-backsliding" study required by Clean Air Act section 211(v). That study, and any regulatory measures to mitigate air quality impacts considering the results of that study, are separate from this rulemaking action. The anti-backsliding study is required to include consideration of "different blend levels, types of renewable fuels, and available vehicle technologies." In addition, the anti-backsliding exercise will be able to include inventory improvements, including additional emissions test data, that we could not include in this rulemaking analysis due to time constraints. While some commenters argued that the RFS2 requirements should be waived until mitigation measures are in place, EISA includes deadlines for EPA action in issuing the RFS2 regulations, the 211(v) anti-backsliding study, and any regulations designed to mitigate the adverse impacts identified in the 211(v) study. These deadlines clearly demonstrate that Congress did not intend that the RFS2 regulations be delayed pending completion of either the study or issuance of mitigation measures. As to the suggestion that EPA waive the RFS2 volume mandates until such time as adverse environmental impacts are mitigated, EPA notes that its general waiver authority requires a determination that implementation of the standards would severely harm the

economy or environment of a State, a region or the United States, or that there is inadequate domestic supply to fulfill the mandates. EPA's analyses to date do not indicate that the criteria for issuing a waiver are present at this time. However, EPA may exercise this general waiver authority at any time on its own motion or in response to a petition. We also note that EISA does not provide EPA with authority to exempt ozone nonattainment areas from the RFS2 standards and the statute clearly envisioned that to the extent that adverse impacts occurred, they would be mitigated by additional regulations.

EPA appreciates the commenters' specific suggestions on measures for mitigation of negative air quality impacts. EPA will consider these suggestions in the context of rulemaking under CAA section 211(v). One of the commenters suggested that EPA should publish guidance on measuring anti-backsliding that will allow for a "timely response"; because EPA is conducting the anti-backsliding study, this is not necessary. The draft anti-backsliding study will be released for comment, as required by CAA section 211(q).

8.4 Health and Environmental Effects of Criteria and Air Toxic Pollutants

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0984
Organization: Citizen
Comment:
The commenter (0984) noted that there has been virtually no toxicology research conducted to date that directly compares biodiesel and diesel in the same well conceived experiment specifically designed to evaluate a number of relevant health-effect endpoints in a biological system. The toxicology research community has been engaged in research related to diesel and other mobile source air pollutants for several decades. As a result of these investigations, petroleum diesel exhaust today is recognized to induce tissue-specific and systemic inflammation, aggravated allergic disease, and cardiopulmonary injury. Biodiesel is a mono-alkyl ester derived from either edible or non-edible plant oils and can be used unblended or blended with traditional petroleum diesel in an unmodified diesel engine. The chemistry of biodiesel is different than that of petroleum diesel and therefore the combustion processes and emissions profiles are disparate. It is plausible that different types of feedstocks used in biodiesel production and the requisite fuel additives may produce or contribute to combustion products that exceed current emissions regulations in some locations and could adversely affect human health. (0984, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2010; EPA-HQ-OAR-2005-0161-2011; EPA-HQ-OAR-2005-0161-2013; EPA-HQ-OAR-2005-0161-2123
Organizations: SoyMor Biodiesel, LLC; Western Dubuque Biodiesel, LLC; Central Iowa Energy, LLC; Renewable Energy Group®
Comment:
The commenters (2010, 2011, 2013, 2023) state that initial studies have shown a dramatic reduction in particulate matter for biodiesel emissions when compared to regular diesel. And, specific additional studies are being completed such as one published this year, "Release of the

Pro-Inflammatory Markers by BEAS-2B Cells Following In Vitro Exposure to Biodiesel Extracts," Swanson et. al. This study demonstrated that the organic extracts of biodiesel can increase the amount of healthy cells which can counteract the damaged cells resulting from petro diesel emissions. While more studies need to be completed; the commenter believes it's apparent and should not be overlooked that biodiesel may actually increase positive health related effects and should be accounted for with an economic and health social cost in an LCA. [[Docket number 2010.1, p. 12]]

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that all their employees know that if we had a choice of sucking fumes from diesel truck using petroleum-based fuel or fumes from a French fry vat, we're going with the fries. The commenter adds that biodiesel is better than 100% petroleum diesel - another reason to get on with using biodiesel and stop delaying the RFS2 program. [[Docket number 2510.1, p. 6]]

Our Response:

EPA's assessment of the emission impacts resulting from the use of biodiesel is contained in the appendix to the RIA. These emission impacts were reflected in the emission inventory and air quality assessments also contained in the RIA (though the air quality analysis used draft estimates of the emission impacts of biodiesel). The use of biodiesel fuel seems to produce less PM, VOC, and CO emission than petroleum diesel, and slightly more NOx. The difference in composition, and resultant health impacts, of the PM may be different from that from conventional diesel. Under the fuel registration regulations at 40 CFR 79, the National Biodiesel Board conducted health-effects testing on biodiesel in the late 1990's and EPA had that information reviewed by a contractor. While regulatory responsibility for health effects testing resides with manufacturers under Clean Air Act section 211(b), EPA's Office of Research and Development is conducting some research in this area. It has *in vitro* and installation studies underway, development of test strategies for animal inhalation studies, and studies of formation of reaction products from biodiesel exhaust.

Commenters 2010, 2022, 2013 and 2023 noted that biodiesel may improve health and that these improvements should be included in an economic benefits analysis. As stated above, the estimated emission impacts of biodiesel were reflected in our air quality modeling, which was then used in our assessment of the monetized health impacts of the increased use of renewable fuels needed to meet the RFS2 standards. The impacts of biodiesel are reflected along with those for the other renewable fuels. In addition, the emission impacts were treated the same as those from other fuels (i.e., the PM emissions from biodiesel were treated the same as PM from other sources).

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 9
Costs

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

9 COSTS

9 COSTS

What We Proposed:

The comments in this section correspond to Section VIII of the preamble to the proposed rule and address impacts of the program on costs of the program. A summary of the comments received and our response to those comments are located below (and in Section VII of the preamble to the final rule).

9.1 Renewable Fuel Production Costs

What Commenters Said:

Document No.: Varied
Organization: Renewable Energy Group, SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC, et al.
Comment:
Referring to cost impacts of renewable fuel and glycerin as a co-product, the commenter (1015) notes that given the rapid growth of national biodiesel production, this non petroleum based co-product has lead to significant ongoing research at USDA-ARS and several top agricultural universities. This research has stimulated new applications for both crude and refined glycerin in several industries domestically and overseas. The commenter adds that the market average price for crude 80% basis glycerin is $0.1175, as reported by the Jacobsen Fats & Oils Bulletin between 1/ 2008 to 7/ 2009. The highest price was reported last year of $0.30/lbs. Glycerin will continue to be a valuable co-product for vegetable and fats based biodiesel. [[Docket number 2123.1, pp. 4-5]]

The commenter concludes that the final rule implemented by EPA will dramatically impact the biodiesel industry. Manufacturing facilities are running much below capacity or are shut down. Credit markets continue to be tight until lenders see signs of confidence from agencies like EPA. The commenter is seeing signs that the petroleum industry is delaying biodiesel purchases until rules are in place, in turn, making working capital difficult to obtain. [[Docket number 2123.1, p. 16]]

Document No.: EPA-HQ-OAR-2005-0161-2510
Organization: Iowa Renewable Energy, LLC
Comment:
The commenter (2510) states that as research continues, new uses for glycerin are coming to the table everyday, again reducing some of the need for foreign oil and its derivatives. [[Docket number 2510.1, p. 3]]

Our Response:

We have adjusted glycerin co-product price to $0.15/lb (2007$) to better reflect new uses. Though prices may go higher, to be conservative we chose this value as a sort of baseline, equivalent to glycerin's heating value based on our control case refinery modeling work.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2021
Organization: Fulcrum Energy
Comment:
The commenter (2021.1) noted that EPA requested comments on the costs of sorting urban waste and the costs avoided by diverting cellulosic materials from landfills. The commenter has done extensive analysis regarding the processing of urban waste into a feedstock suitable for conversion technologies. The commenter concluded that the processing costs are generally less than $10 per ton (far lower than expected tipping fees for waste), which demonstrates that urban waste is in fact a zero or negative cost feedstock. The commenter noted that the processing costs for a waste-to-fuels feedstock preparation facility require much less commodity-driven separation, less labor and benefit from the ability to shred and reduce the incoming waste to a more manageable size that enables the facility to meet its sole objective: remove the inorganics from the waste stream. The remaining material organic and reduced in size makes excellent feedstock for a gasifier, which is capable of handling a heterogeneous stream of waste for conversion to synthesis gas. (2021.1, p.42-44)

Our Response:

We have added text to Section 4.1.1.2.1 discussing the research by Fulcrum, as well as other companies intending to use MSW as a feedstock for the production of biofuels, that indicates MSW may be available as a zero or even negative cost material. While this may be the case for the scenarios Fulcrum has investigated, we believe there are several factors that will cause the average price of MSW for use as a biofuel feedstock to be higher. First, in order for MSW to be eligible as a feedstock, a certain level of separation of recyclable materials must first occur, including separation of not only inorganic material (glass and metals), but also inorganic materials such as paper and plastics. Furthermore, some biofuel processes, especially biochemical processes, may be more sensitive to contaminated materials and therefore require an even more thorough and costly separation of waste materials. Additionally, we believe that while initial sources of MSW may indeed be zero cost feedstocks, the average cost of MSW will increase as additional quantities of MSW are used for biofuel production and more expensive sources are utilized. Competition for MSW from other biofuel producers as well as waste to energy companies may further increase the cost of MSW. For our final rule we have adjusted the cost of MSW downward, assuming that it is available at a cost of $15 per ton if sourced from within the same count as the biofuel production facility. If the MSW is being brought in from neighboring counties and additional transportation cost is added.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) supports the implementation of the RFS2 regardless of consumer cost. However, the commenter believes the oil companies will try to fight the rule adoption in other states, nationally or internationally by pointing out the impact it could have on fuel cost. (2048.1, p.7)

Our Response:

After proposing the RFS2 program, EPA gathered all comments advocating both for and against the proposed program or aspects of the proposed program. We considered all these comments and reassessed the program partially on these comments. We then issued the final rulemaking.

The cost impacts are one of the many impacts of the program that we assess and consider. Since we proposed the RFS2 program, the Department of Energy has reevaluated its crude oil prices and now believes that crude oil prices will be much higher in the future. If crude oil prices will be as high as projected, our analysis shows that the RFS2 program will cause a cost savings in the future, not a cost increase.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2311
Organization: Wyoming Refining Company
Comment:
The commenter (2311.1) believes that that the financial burden of compliance with the proposed rules will be so great as to seriously threaten the continued business existence of one or more Small Business Refiners in Petroleum Administration for Defense District (PADD) IV. (2311.1, p.2) [[See Docket Number 2311.1 pp.2-5 for detailed discussion of this issue.]]

Our Response:

While the RFS2 standards as written by Congress will have impacts on all refiners, we don't believe that the RFS2 renewable fuels requirement will cause a large impact on PADD IV refiners as expected by the commenter. As discussed in Section 7 of the RIA, we estimate that the costs to small refiners will in all cases be less than 1 percent including PADD IV refiners. In addition, as crude oil prices rise and renewable fuels prices fall, these costs will be further minimized.

Since the program is a nationwide average program with credits (RINs) being traded nationwide to demonstrate compliance, the economic impacts in PADD IV should be similar to the impacts nationwide. Furthermore, since the obligation is a function of gasoline and diesel fuel production, the economic impacts on an annual average basis for small refiners are reduced in proportion to their production volume.

9.2 Distribution Costs

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter questions the accuracy of EPA's cost estimates for installing E85 refueling equipment, adding that EPA's rationalization of the costs of the E85 upgrade fails to account for the upfront affordability of this upgrade.

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter stated that the cost of installing one underground storage tank, related piping dispensers would range from $200 to $600 thousand. The commenter stated this would be extremely burdensome for independent retailers and that the time needed to complete such installations would contribute to an extended delay before renewable fuels can be safely and legally stored and dispensed at retail facilities.

Our Response:

While the RFS2 standards could be met using a range of different renewable fuels, for our analysis of the impacts of the standards, we have assumed a large portion would be met with ethanol, some of which is in the form of E85. To cost this out, we project the need for a significant number of new E85 retail dispensers and storage tanks at existing fuel retail facilities. Our cost estimates are based on input from fuel retailers familiar with installation of E85 facilities. We project that depending on the number of dispensers at a facility, the cost per facility would range from $130 to $175 thousand dollars (see Section 4.2 of the Regulatory Impact Analysis). We believe that given the projected crude oil costs in the future, the cost of ethanol may compare favorably to gasoline (see the response to the comment from the Engine Manufacturers Association [2147] in Section 6.4 of this document. Therefore, the demand for E85 may be sufficient for retailers to justify the installation of E85 dispensing/storage equipment. There are also government assistance programs in place that will help retailers recoup a significant fraction of the cost of installing E85 refueling equipment.

We acknowledge that the timeline for the addition of new E85 facilities is aggressive. Nevertheless, we believe the addition of these numbers of new E85 facilities may be possible for the industries that manufacture and install E85 retail equipment.

We believe that no changes to retail infrastructure will be needed to handle biodiesel blends up to 5% and blends of cellulosic distillate/renewable diesel fuel.

9.3 Total Estimated Cost Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company
Comment:
Overly aggressive biofuel mandates are expensive because (1) both corn-based and cellulosic ethanol are costly to produce relative to conventional fuels, (2) a gallon of ethanol has only two-thirds the energy content of a gallon of gasoline, and (3) corn-based ethanol production uses a significant amount of energy obtained from fossil fuels. MathPro estimates that replacing a barrel of crude oil with an energy-equivalent volume of ethanol would cost between $260 and $310 per barrel of crude displaced, depending upon the full cost of ethanol production. The MathPro cost estimates relied upon recent U.S. government estimates of the full costs of cellulosic ethanol: $3.50 to $4.00 per gallon – roughly twice the current cost of corn ethanol production.

Our Response:

Whether renewable fuels increases or decreases fuel costs is partially driven by the production cost of renewable biofuels. Since corn-based ethanol is largely phased in by the time the RFS2 program takes effect, the RFS2 program will mostly require expanded use of cellulosic ethanol and cellulosic diesel fuel. Therefore the costs of the program are dependent to a great extent on what happens with the cellulosic biofuel production costs over years that the program phases in. In the RIA we provide our projections for the production costs of cellulosic biofuels. Crude oil prices are another factor and they are expected to increase over the period that the RFS2 program is phasing-in.

In our analysis, we estimate that the RFS2 program will be a zero cost program when crude oil is priced at $88 per barrel. At EIA's projected crude oil price of $116 per barrel in 2022, the RFS2 program is expected to incur a significant cost savings.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 10
Economic Impacts and Benefits of the Rule

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

10 ECONOMIC IMPACTS AND BENEFITS OF THE RULE

10 ECONOMIC IMPACTS AND BENEFITS OF THE RULE

The comments in this section correspond to Section IX of the preamble to the proposed rule and address economic impacts and benefits of the program. A summary of the comments received and our response to those comments are located below (please also see Section VIII of the preamble to the final rule for a further discussion of these issues).

10.1 Economic Impact Analysis

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) agrees that the RFS is not likely to impact food prices, and incorporates by reference its comments on the Texas waiver request. The commenter noted that EPA's analysis on food prices, while correct, is additional evidence that the RFS will have little, if any, impact on land use changes. (2329.1, p. 112-113) [[See Docket Number 2329.1, pp.112-113 for a detailed discussion of the Economic Analysis]]

Our Response:

EPA's analysis of the RFS2 rule estimates that there will be a modest impact on both U.S. food prices and land use as a result of the rule. For instance, the FASOM model estimates that requiring the Control Case renewable fuel volumes results in an increase in U.S. corn price of roughly $0.27 per bushel (8.2 percent) above the AEO 2007 Reference Case price in 2022. By 2022, FASOM projects that U.S. soybean prices increase by $1.02 per bushel (10.3 percent) above the AEO 2007 Reference Case soybean price. Higher corn and soybean prices also result in higher meat prices. In 2022, it is estimated that the average price for all meat production in the FASOM model increases by 0.1 percent. Due to higher agricultural commodity prices, FASOM estimates that U.S. food costs increase by roughly $10 per person per year by 2022, relative to the AEO 2007 Reference Case. Total effective farm gate food costs increase by $3.6 billion (0.2 percent) in 2022. To put these changes in perspective, average U.S. per capita food expenditures in 2007 were $3,778 or approximately 10 percent of personal disposable income.

The RFS2 rule is also anticipated to have modest impacts on land use patterns in the U.S. In 2022, FASOM projects that total cropland increases by 3.1 million acres (1.0 percent) relative to the Reference Case. The increase in cropland is derived primarily from a combination of decreased idle cropland acres, a decrease in idled cropland pasture acres, and a decrease in forest acres.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2107

Organization: Goldsboro Milling Company
Comment:
The commenter (2107.1) noted that economists have shown that EPA models of the RFS2 severely underestimate its effects on consumer food prices. The commenter requests that in EPA's final analysis, they work to include a more comprehensive study on commodities, which have a direct impact on food prices. (2107.1, p.2)

Our Response:

EPA's analysis of the RFS2 rule estimates that there will be a modest impact on U.S. food prices as a result of the rule. See previous response to EPA-HQ-OAR-2005-0161-0952 (Renewable Fuels Association).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2317
Organization: National Corn Growers Association (NCGA)
Comment:
The commenter (2317) agrees with EPA that the RFS program has not had any meaningful effect on food prices. EPA should confirm this conclusion in the final rule. [[Docket number 2317.1, pp. 43-44]]

Our Response:

EPA's analysis of the RFS2 rule estimates that there will be a modest impact on U.S. food prices as a result of the rule. See previous response to EPA-HQ-OAR-2005-0161-0952 (Renewable Fuels Association).

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2047
Organization: Terrabon
Comment:
Commenter [[2071]] states the rule's exclusive focus on crop-based feedstocks undermines the sustainability of the biofuel industry as a whole. The Texas biofuel industry is illustrative. With the record costs of corn, fanners supplanted soybeans with corn, which led to a significant lack of feedstock supply for biofuel producers in Texas. As a result of the limited feedstock supply, at least two Texas biodiesel plants were forced to cease operations. [[#2071.1 p.5]]

Our Response:

A variety of different renewable fuels are capable of qualifying for use under the RFS2 rule. The RFS2 rule allows for renewable fuel to be produced from a variety of feedstocks. These feedstocks can be crop-based, crop residues, waste-based, or dedicated energy crops. Most of the

expanded RFS2 volume requirements must come from cellulosic feedstock sources. While there are specific definitional requirements for each feedstock, the Act allows the market to determine which feedstock will be used to satisfy the EISA volume requirements, assuming that feedstock meets the applicable greenhouse gas reduction threshold and renewable biomass definition requirements.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2074
Organization: GreenShift Corporation
Comment:
EPA estimated in its impact assessment that corn oil extraction after fermentation will be incorporated in about 20 percent of ethanol plant production by the year 2022. The commenter (2074) believes this number is much too low. Today's penetration of corn oil extraction technology is about 12 percent, representing only systems with the initial efficiency of extracting 30 percent of the available oil. In the next 10 to 15 years, the commenter suggests the majority of the industry will add corn oil extraction, including new extraction technology, as a means to add revenue, reduce costs and decrease GHG emissions, all at the same time. [[Docket number 2074, p. 4]]

Our Response:

For the final rulemaking, EPA's agricultural models have been updated with revised estimates for fractionation and extraction use in the future. Based on engineering cost analysis, it is expected that by 2022, 70% of dry mill corn ethanol plants will adopt extraction technology, 20% will adopt fractionation technology, and 10% will not adopt either technology. Corn oil that is withdrawn from the extraction process is not food-grade, and is considered only suitable as a biodiesel feedstock. By 2022, it is estimated that corn oil from extraction is a significant contributor to the biodiesel volume required by the RFS2 rule. Corn oil that is withdrawn via the fractionation process is considered food-grade, and is assumed to only enter those markets due to favorable economics there.

Additional information regarding the assumptions behind corn oil extraction can be found in chapters 1, 2, and 5 of the RIA, as well as in the technical reports on the FASOM and FAPRI models for the final rulemaking analysis.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) noted that the economy wide impact analysis was not completed when the rule was written. Without that analysis, EPA anticipated the need for taxes to increase to pay for this rule. The benefits from the rule should be sufficient to pay for the implementation of the

RFS. EPA does not understand that building a biofuel infrastructure will also enhance the environment. Although EPA's entire analytical effort is biased against biofuel adoption, it doesn't change the fact that increasing energy independence and economic growth (the supply, demand, and technical efficiency of biofuel production) will reduce ancient carbon emissions and promote sequestration. However, the opposite is not true. Reducing carbon emissions will not promote energy independence and economic growth. (2112.1, p.3)

The commenter noted that EPA chose to remove military effects from their work on the basis that it is too difficult, but constructed a global indirect land use model with limited data. The commenter noted that it is not clear why one analysis was deemed unworkable, while the other apparently unworkable analysis was deemed ok. (2112.1, p.12)

Our Response:

As the commenter notes, for the RFS2 proposal an economy-wide analysis was not undertaken. However, for the final RFS2 rule, EPA did conduct an economy-wide analysis. As described in the January 11, 2010 Memorandum to Docket Re: Economy-Wide Impacts of the Renewable Fuels Standard, our analysis shows that the combined impact of higher agricultural commodity prices and higher transportation fuel prices decrease U.S. GDP in the early years of the program. However, the costs of renewable fuels are projected to decrease over time, while the cost of petroleum products is projected to increase significantly over time. By 2016, renewable fuels are projected to be cheaper than the gasoline and diesel that they replace. By 2030, the impacts of lower transportation fuel costs and lower world oil prices outweigh the impacts of higher agricultural commodities, resulting in an increase in U.S. GDP with the RFS2 rule.

EPA believes that all of the impacts of the RFS2 rule—including international impacts—should be estimated when assessing the impacts of the rule. In the case of EPA's analysis of the RFS2 rule's impacts on agricultural commodities, it is well understood that domestic and international markets are linked by changes in the price of agricultural commodities and net exports of agricultural commodities. Thus, increasing use of renewable fuels in the U.S. will have market impacts that transmit to agricultural production patterns outside the U.S. and result in international land use change. Agricultural sector modeling tools have been used for decades to analyze the impacts of different policies on the price and production of different commodities worldwide. Therefore, we were able to use the well-established, peer-reviewed FAPRI/CARD model to estimate the amount of additional crop acres that would be brought into production as a result of the renewable fuel standard volumes. .

In contrast, the link between energy security benefits and military expenditures to secure a steady flow of petroleum is less well understood and established. See related responses to comments by Renewable Energy Group (EPA-HQ-OAR-2005-0161-1015), SoyMor Biodiesel, LLC (EPA-HQ-OAR-2005-0161-2010), and Western Dubuque Biodiesel LLC (EPA-HQ-OAR-2005-0161-2011) in Section 10.3 on Energy Security.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2502
Organization: Verenium Corporation
Comment:
The commenter (2502.1) believes that in its final cost-benefit analysis, EPA should provide full and fair consideration, e.g., through probabilistic analysis, of the economic and consumer benefits that can be expected over time from the addition of volumes to the total U.S. fuel supply called for by the RFS2 program. (2502.1, p.11) (See Docket Number 2502.1, pp.10-11 for a detailed discussion of this issue)

Our Response:

For the final rulemaking, EPA has conducted a thorough cost-benefit analysis of the required renewable fuel volumes. Please refer to Section VIII of the preamble and Chapter 5 of the RIA for more detail about, and the results of, the economic impact analysis. While not all of the analyses lend themselves to thorough probabilistic analysis, we have conducted a probabilistic analysis of the quantified and monetized health impacts associated with the required renewable fuel volumes. We also present certain economic impact results in terms of ranges to reflect uncertainty when appropriate.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) noted that under Executive Order 12866, EPA is required to analyze the economic impacts of the proposed regulation, and if significant, to obtain review by the Office of Management and Budget. EPA's analysis is incomplete because it is missing an assessment of the costs to automakers, the public and others due to misfueling. The commenter also believes that EPA must conduct and publish this analysis for comment before finalizing the rule. (2132.1, p.7) [[See Docket Number 2132.1, pp.27-28 for detailed discussion on this issue]]

Our Response:

This issue is not unique to this rulemaking. E85 is already a fuel in the marketplace being supported by the Alliance and its members and already raises concerns of misfueling conventional vehicles on E85. It is for this very reason that the FTC is considering E85 pump label requirements, and why we proposed similar pump label requirements in the NPRM. Furthermore, while we have modeled its use, E85 is not required to be used by this program. It is up to the industry and marketplace to determine which renewable fuels are produced and how they are used in order to meet the RFS2 standards. E85 is one of several options currently being considered by industry. If E85 continues to be pursued and its use continues to grow, then the potential for such misfueling concerns may also grow, and as a result efforts to mitigate and alleviate potential in-use concerns should then be considered and investigated. Given the uncertainty in the future use of E85, the uncertainty in projecting misfueling rates in a future

marketplace that looks very different from today's E85 market, and the uncertainty of potential misfueling mitigation measures, it is not possible at the present time to quantify costs associated with this potential misfueling, and we have no basis to believe that they would be large enough to have a significant impact on the overall economic impacts of the program. Finally, the standards we are setting were specified in EISA by Congress and are not being set on the basis of the economic impacts. Thus, there is no compelling need to assess these costs prior to finalizing the rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2305
Organization: The Soap and Detergent Association
Comment:
The commenter [[2305]] stated that federal biofuel policies have persistently threatened its continued viability as a domestic industry. If animal fats are lost as a raw material to the oleochemical industry, the logical replacement for tallow is palm oil. However, a shift to palm oil will set the stage for the U.S. oleochemical industry to be lost to offshore producers.

The commenter states that at present animal fats are competitively priced in comparison to palm oil. This is in turn allows U.S. domestic producers to compete effectively with palm oil-based competitors. However, if animal fats either become unavailable for oleochemical production because of government policies directing them to biodiesel production, or, they lose their price advantage for the same reason, the U.S. industry will be forced offshore to be near palm oil sources. It is critically important to understand that current policies threaten both availability and price. [[#2305.1 p.2]]

Our Response:

The RFS2 rule allows for renewable fuel to be produced from a variety of feedstocks. These feedstocks can be crop-based, crop residues, waste-based, or dedicated energy crops. The analysis presented in Chapter 1 of the RIA indicates that biodiesel could be produced from a number of sources, including soybean oil, yellow grease, fractionated corn oil, and animal fats. The volumes presented in Chapter 1 represent only one possible pathway for meeting the RFS2 volume requirements. We expect that biodiesel will be produced from feedstocks on a least-cost basis.

However, we are sensitive to the concerns raised by commenters that increases in renewable fuels will affect industries beyond the transportation and fuels industries. While we have attempted to model the economy-wide impacts of the RFS2 rule, as described in the January 11, 2010 Memorandum to Docket Re: Economy-Wide Impacts of the Renewable Fuels Standard, our current modeling framework does not have sufficient detail to determine the impact on the oleochemical industry. In addition, the commenter has not provided EPA will any specific data or information that can be used to estimate the impacts of the RFS2 on the oleochemical industry.

It should be noted that Darling International, a large rendering company and marketer of rendered fats and recycled greases, submitted comments and analysis suggesting there would be adequate supply of this material for significantly increased use in renewable fuel production (see Docket item OAR-2005-0161-2151.2). They point out that only about 20 percent of rendered materials are currently used by the oleochemical industry, and suggest exports (totaling some 3 billion lbs/yr, or about 30 percent of current supply) as a potential source of additional domestic feedstock. Another mitigating factor is increased contribution of non-food grade corn oil from dry mill ethanol production. We project this will bring as much as 5 billion lbs/yr of additional inedible and relatively low-cost feedstock to the market, helping to balance supply issues.

Document No.: EPA-HQ-OAR-2005-0161-2112
Organization: Biomass Rules, LLC
Comment:
The commenter (2112.1) believes that the weak summary of the agricultural, forestry, MSW (none), and energy security costs and benefits are disappointing. Much of the text in the RFS2 preamble on benefits is dedicated to explaining why these economic and energy security issues could not adequately be developed with EPA's allotted time frame. (2112.1, p.3)

Our Response:

As detailed in the RIA, we have projected a wide range of costs and benefits associated with the increased use of renewable fuels needed to achieve the RFS2 standards. Most of these analyses have been updated considerably from the work done for the NPRM and have taken into account information provided to us during the public comment period. More work can always be done, but we balance our analyses to provide a perspective which is both sufficient and valuable on what the environmental and economic impacts are of increased renewable fuel use.

10.2 Agricultural Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2305
Organization: The Soap and Detergent Association
Comment:
Commenter [[2305]] states total fat and greases production has been flat over the last three years at circa 10 billion lbs according to the National Renderers Association (NRA). This includes everything from inedible tallow, hog grease, yellow grease, lard, edible tallow and poultry fat. Last year, 863 million lbs, or over 8% of the 10 billion lbs, went to biodiesel according to an NRA report. This was more than a 200% increase over the previous year. Over the last three years, fat prices have jumped from the mid teens (historical range) to as much as $0.50/lb. The U.S. oleochemical industry has historically used around 2 billion lbs of fats and greases as raw material for a viable and important contributor to the U.S. economy. If soya is excluded from qualification under the RFS2, then essentially 100 percent of United States fats and greases are likely to be consumed in meeting the biodiesel mandates. There would be nothing that the oleochemical industry could do to stop it. Unfortunately, even if soya is qualified under the

RFS2, fat prices will likely rise to soya price which is almost equally catastrophic for oleochemical producers as described above. [[#2305.1 p.3-4]]

Our Response:

Based on the lifecycle analysis conducted for this final RFS2 rule, soybean-based biodiesel will qualify as a biomass-based diesel renewable fuel. Therefore, the commenters concern that 100 percent of the U.S. fats and greases will be needed to meet the biofuel mandates is not applicable. The RFS2 allows for renewable fuel to be produced from a variety of feedstocks. These feedstocks can be crop-based, crop residues and waste-based or dedicated energy crops. The analysis presented in Chapter 1 of the RIA indicates that biodiesel could be produced from a number of sources, including soybean oil, yellow grease, fractionated corn oil, and animal fats. In addition, EPA estimates that a significant contribution of non-food grade corn oil from dry mill ethanol production will be produced to meet the EISA biodiesel requirement. We project this will bring as much as 5 billion lbs/yr of additional inedible and relatively low-cost feedstock to the market, helping to balance supply issues. The volumes presented in Chapter 1 represent only one possible pathway for meeting the RFS2 volume requirements. In reality, we expect that biodiesel will be produced from feedstocks on a least cost basis.

As renewable fuel volumes increase to meet the RFS2 volumes, the prices of all biodiesel feedstocks are generally expected to increase, not just the price of rendered fats. As described in Chapter 5 of the RIA, our analysis shows that soybean oil prices will also increase as a result of the RFS2 volume requirements. Therefore, it is unlikely that the biodiesel mandate will result in fat prices that rise to the same level as soybean oil prices. Since soybean oil has several higher value uses (e.g., as a food source) than rendered fats and oils, we expect that soybean oil prices will continue to remain higher than rendered fats and oil prices even with the higher biodiesel volumes required by the RFS2 rule.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2138
Organization: American Meat Institute, National Chicken Council, National Turkey Federation, Farm Econ LLC
Comment:
Commenter [[2138]] states that contrary to the EPA analysis in the NPRM, the RFS and other policies are likely the major cause of the increase in corn prices since 2005. The U.S. is the only country with a biofuel policy that subsidizes and encourages a grain-based ethanol industry. U.S. tax credits and the RFS have offered financial support and a guaranteed market for the use of corn to produce ethanol. Since the advent of the RFS the only major increase in GLOBAL grain demand has come from the U.S. ethanol sector. For that reason, we believe that in the absence of the RFS and direct subsidies the U.S. ethanol sector would be much smaller, and agricultural price much lower, than is the case today. We also believe that future increases in the RFS will exacerbate the current effects of the RFS. [[2138 p.12]]

Our Response:

We disagree with the commenter that the U.S. increase in renewable fuels is the only cause for the increase in agricultural commodities since 2005. A number of factors have contributed to the recent increase in corn prices, such as higher foreign demand for coarse grains, sustained drought in major international crop producing regions, and historically high energy prices. Furthermore, increasing world demand for vegetable oils can also contribute to higher overall agricultural commodity prices, including grains, since increased production of oil crops may crowd out production of alternate crops. Since the majority of additional renewable fuel required by the RFS2 must be cellulosic or advanced renewable fuels, our analysis shows that there will be only a modest increase in crop prices as a result of the RFS2 requirements. For instance, the FASOM model estimates that between the AEO2007 Reference Case and the Control Case renewable fuel volumes will result in an increase in the U.S. corn price of $0.27 per bushel (8.2 percent) above the Reference Case price in 2022. By 2022, FASOM projects that U.S. soybean prices increase by $1.02 per bushel (10.3 percent) above the Reference Case price. Higher corn and soybean prices also result in higher meat prices. In 2022, it is estimated that the average price for all meat production in the FASOM model increases by 0.1 percent.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2013
Organization: SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Central Iowa Energy, LLC
Comment:
The commenter (2010) states that FASOM assumes the increased cost/person for food due to higher usage of soy biodiesel in 2022 without considering the policy impacts of banning trans fat by policy makers. Data from the U.S. census bureau shows a 56% drop in soy oil used for baking and frying since 2002. The commenter adds that even as soy oil used for baking and frying has dropped dramatically, soy oil used to produce biodiesel in the U.S. has declined 35% from July 2007 to May 2008. [[Docket number 2010.1, pp. 13-14]], [[Docket number 2011.1, pp. 13-14]]

Our Response:

EPA's analysis using the FASOM and FAPRI models are only analyzing the impact of increased demand for renewable fuels. Certain assumptions, such as population growth, developed land use, as well as laws, regulations, and policies (e.g., conservation reserve program) are held ceteris paribus between model scenarios. Thus, since EPA analyzes the difference between modeling scenarios, we are only observing the effect of change in demand for renewable fuel. Additional information on how the FASOM and FAPRI models were used to estimate the impact of increased demand for renewable fuel can be found in the RIA and in their respective technical reports in the docket.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) mentions that it is not clear where the depicted feedstock inventory for cellulosic biofuel production in 2022 comes from, given that no cellulosic biofuel is being produced in the reference case and suggests that EPA should discuss, by State, the sources of expected cellulosic biofuel feedstocks. [[See Docket Number 2143.2, p.8]]

Our Response:

For the proposal and the final rulemaking, EPA provides regional crop production at the state level in each scenario analyzed in the docket as part of the FASOM modeling results. Specifically, in regard to cellulosic renewable fuel, the two primary feedstocks projected for cellulosic renewable fuel production are switchgrass and corn residue. The RIA for the final rulemaking includes the top ten producing states for each of these feedstocks in Chapter 5. More information on these feedstocks, and other cellulosic feedstocks by region can be found in the docket.

10.3 Energy Security Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1015, EPA-HQ-OAR-2005-0161-2010, EPA-HQ-OAR-2005-0161-2011, EPA-HQ-OAR-2005-0161-2510
Organization: Renewable Energy Group, SoyMor Biodiesel, LLC, Western Dubuque Biodiesel LLC, Iowa Renewable Energy, LLC
Comment:
The commenter (1015) states that policy makers, administration officials, and agency personnel have told the American public that energy security is a top priority and necessitates complex public policy and enormous public expenditure to achieve. The cost of the protection of the imported crude oil supply has been studied and analyzed. One report by the International Center for Technology Assessment concluded that the cost of protection could be as high as $0.30/gal just for gasoline. It is disingenuous for EPA to acknowledge the costs, but conclude that it's not worth the time and effort to add this component to the full life cycle analysis of petroleum fuel because of a lack of LCA availability. The commenter suggests commissioning a model to address the carbon cost of petroleum. The Department of Defense estimates show the cost to protect Persian Gulf oil interests at $50B/yr. The commenter questions EPA's conclusion that the carbon cost of this mission is not noteworthy. [[Docket number 2123.1, p. 13]]

The commenter (2510) states that as long as we are importing foreign oil, there will be a military presence required to prevent disruptions in the supply and distribution chain. These costs are not included in the government models but are real costs that make biofuels more attractive. The commenter finds it interesting the EPA doesn't think it is important to figure the costs because it

is too difficult; however, if the government can't do it, how does EPA expect a small business to do it effectively? [[Docket number 2510.1, p. 6]]

Our Response:

For the RFS2 rule, U.S. military costs associated with energy security, and resulting greenhouse gas emissions from military activities, are excluded because their attribution to particular missions or activities is not well understood or established. Most U.S. military forces serve a broad range of security and foreign policy objectives. Attempts to attribute some share of U.S. military costs or greenhouse gas emission to changes in U.S. oil imports are further challenged by the need to estimate how those costs and greenhouse gas emissions might vary with incremental variations in U.S. oil consumption and imports as a result of the RFS2 rule. In the RFS1 rulemaking, a peer review was undertaken of the methodology that is the basis for U.S.'s energy security analysis. Most of the peer reviewers were in agreement that U.S. military costs should not be quantified in EPA's energy security analysis. While studies that were submitted to the Agency did attempt to quantify the military costs associated with maintaining a stable flow of petroleum to the U.S., even the studies' authors concede that the estimates developed should not be used for policy analysis's purposes, but rather for illustrative and discussion purposes only.

The reason the system boundaries used for threshold assessment in the proposed rule did not include indirect emissions from petroleum production was to be consistent with the goals and scope of the analysis as defined by the Energy Independence and Security Act (EISA).

The text of EISA specifies that the lifecycle threshold analysis for the different renewable fuel categories be compared to baseline lifecycle greenhouse gas emissions. EISA defines baseline lifecycle GHG emissions as:

> The term 'baseline lifecycle greenhouse gas emissions' means the average lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, for gasoline or diesel (whichever is being replaced by the renewable fuel) sold or distributed as transportation fuel in 2005.

Therefore, the petroleum production component of the system boundaries is specifically mandated by EISA to be based on the 2005 average for crude oil used to make gasoline or diesel sold or distributed as transportation fuel, and not the marginal crude oil that will be displaced by renewable fuel.

However, for this final rule, we did analyze the potential indirect impacts of petroleum use. Discussion of our analysis can be found in Section V.B.3 of the preamble and Chapter 2.7 of the RIA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2138

Organization: American Meat Institute, National Chicken Council, National Turkey Federation, Farm Econ LLC
Comment:
Commenter [[2138]] states the table [[on p.4]] shows that as we moved into 2007 there was a marked increase in the relationship between energy prices, as represented by gasoline, and corn prices. As ethanol production and energy prices increased in 2008 the correlation increased to 0.89. The increased correlation coincides with the rapid expansion in ethanol production that we believe was largely a result of the RFS and a guarantee of a market. As the RFS expands from the current 10.5 billion gallons to 36 billion in 2022 the fuel and agricultural price linkage will be strengthened. This is important and highly relevant information to EPA analysis. It also casts serious doubts on the results obtained from the FAPRI, FASOM and other models used to assess the impact of RFS2. These models used in EPA analysis contain substantial historical data prior to 2007. In that data there is essentially no correlation between energy sector prices and agricultural prices. Recent developments represent a fundamental structural change. In particular, predicted impacts of energy markets and price changes on agricultural sector prices and production will be substantially underestimated by models that do not include such a relationship. [[2138 p.4]]

Our Response:

As the commenter notes, the market price of oil-based and renewable fuels are increasingly linked since the fuels in their end-use form tend to be relatively close substitutes for each other. In the analysis of the RFS2 rule, EPA has focused on the production costs of renewable fuels in comparison to oil prices. We believe that the models that we are using—FAPRI , FASOM and engineering processing models—are accurately assessing the costs of producing renewable fuels, which we are using to assess the impacts of the RFS2 program.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes that the energy security impacts of increased ethanol mandates are marginal and costly. [[Docket number 2233.2, p. 65]] [[See docket number 2233.2, pp. 65-66 for additional discussion of this issue.]]

Our Response:

Energy security is generally agreed to be the U.S.'s ability to obtain and maintain a steady and affordable flow of energy for its use. By requiring the wider use of renewable fuels, the RFS2 rule promotes diversification of transportation fuels in the U.S. and helps to improve the U.S.’s energy security. The wider use of renewable fuels has two effects. First, by reducing U.S. oil imports and consumption, the RFS2 rule lowers the world oil price, which decreases the costs of purchasing imported crude oil/refined products (the so called “monopsony/import cost” effect). In addition, the wider use of renewable fuels lowers the potential macroeconomic

disruption impacts to the U.S. economy of potential future oil supply disruptions. In addition, the Agency conducted an extensive cost analysis for the RFS2 rule and determined that cost-effective renewable fuel technologies will be developed and deployed, and that the resulting cost of the renewable fuels will be competitive with petroleum products. Thus, the Agency does not believe that the energy security benefits impacts of increased use of renewable fuels are costly or marginal.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) believes that the energy security impacts of increased ethanol mandates are marginal. The commenter further states that the biofuel mandates impact energy security only at the margin as a gallon of ethanol has only two-thirds the energy content of a gallon of gasoline and corn-based ethanol production uses a significant amount of energy obtained from fossil fuels. In fact, higher corn-based ethanol production could actually increase natural gas imports. Additionally, biofuel mandates are expensive because both corn-based and cellulosic ethanol are costly to produce relative to conventional fuels, and the energy content of ethanol is only two-thirds that of a gallon of gasoline.[[Docket number 2393.1, pp. 70-71]]

Our Response:

Energy security is generally agreed to be the U.S.'s ability to obtain and maintain a steady and affordable flow of energy for its use. For every gallon of ethanol produced, roughly two-thirds of a gallon of imported gasoline or equivalent crude oil product is likely to be displaced (since imported gasoline/crude oil is likely to be the "marginal" supply of petroleum products to the U.S.) Furthermore, imported gasoline/crude oil is likely to come from portions of the world where oil supply is unstable. As a result, decreased use of this petroleum imports increases the energy security of the U.S. The Agency conducted an extensive cost analysis for the RFS2 rule and determined that cost-effective renewable fuel technologies will be developed and deployed, and that the resulting cost of the renewable fuels will be competitive with petroleum products.

10.4 Benefits of Reducing GHG Emissions

What We Proposed:

Document No.: EPA-HQ-OAR-2005-0161-2114
Organization: Pew Center on Global Climate Change
Comment:
The commenter (2114) suggests that given that future economic growth and interest rates are uncertain, and could even be negative in the worst case, using the minimum recommended rate is justified on both ethical and analytical grounds.

The commenter is concerned that in more recent social carbon cost estimate by an Interagency Working group, a high discount rate (3-5%) was used. The justification for such a high discount rate is faulty, therefore, and should be abandoned on the grounds of analytical inaccuracy and incompatibility with the ethical standards embodied in current OMB and EPA guidance. (2114.1.pdf, p1)

The commenter (2114) mentioned that it is critically important that the EPA analyze discount rate uncertainty as planned and that it employs the resulting SCC estimate in developing the final standard. (2114.1.pdf, p2)

The commenter (2114) comments that many expected and potential impacts are omitted from the SCC calculation, including nonmarket impacts and potential abrupt, catastrophic, or irreversible outcomes. The commenter comments that by this omission, the benefits of avoiding these impacts is effectively set to zero- the only value known to be incorrect. The commenter suggests that until EPA is better able to quantify omitted impacts directly, analysts should compensate by an alternative method. One option is to solicit expert opinions on the value of omitted impacts. Another option is to add a risk premium. ((2114.1.pdf, p.3)

The commenter (2114) comments on the unjustified optimism of IAM results and suggests that since current IAMs do not capture the impacts of changing extremes, it is folly to accept their estimates of net positive benefits, especially in climate-sensitive sectors like agriculture and forestry. (2114.1.pdf, p.3)

Our Response:

As mentioned in the response to Commenter [[2117]] the Interagency Workgroup is actively working on the development of new SCC values. The workgroup is aware of the critical role played by discount rates in the ultimate ranges of SCC values. Under certain discounting schemes, such as the Ramsey equation, the growth rate is highly correlated to the choice of discount rate. Other discounting schemes allow for uncertainty in the discount rate over time. All comments on discounting, both on how the rate is determined and uncertainty over the rate, are being considered by the Interagency Workgroup for the development of new SCC values.

Omitted impacts are an important issue when examining the benefits of emissions reductions. To some extent, many of these impacts are captured in the three integrated assessment models used for the interim values, including non-market impacts and some catastrophic impacts. However, the models are imperfect and EPA therefore feels it is important to discuss qualitatively the nature and extent of these omitted impacts, indicating the likely direction of the bias, in order to better inform policy makers. In the case of the RFS2, however, the standards have been prescribed by Congress, so the exclusion of these benefits does not impact the setting of the standard. Commenter's suggestions on how to address these issues in future standard settings are appreciated and will be considered.

As the commenter rightly points out, the impacts in the integrated assessment models are based primarily on changes in average temperatures. Impacts are also likely to occur because of increasing variance in weather extremes (increased droughts, floods, severe weather events).

These impacts are also not currently well captured by IA models and EPA has sought to address this issue in a similar fashion to other omitted impacts.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2117
Organization: NYU School of Law
Comment:
Commenter [[2117]] states that according to best practices, and as required by EPA's internal guidelines and Executive Order 12,866, 39 EPA must analyze the potential costs and benefits of its proposed regulation, and must quantify those impacts to the extent possible. To estimate the projected benefits of reducing GHG emissions, EPA must calculate the reductions achieved by switching to renewable fuels, multiplied by the monetary measure of incremental damage resulting from each additional ton of GHG emissions, often called the social cost of carbon (SCC).

Commenter [[2117]] states that EPA does employ a range of SCC estimates in both its proposed rule on the Renewable Fuel Standard program and in its draft regulatory impact analysis. IPI largely supports EPA's approach to the use of SCC estimates. However, as EPA readily admits, its SCC figures are preliminary and uncertain. More recently, a collection of federal agencies has been working on a more refined methodology to calculate the SCC. In a separate rulemaking released this month, EPA used these newer Interagency figures to calculate the benefits of reducing GHG emissions from motor vehicles. These comments do not promote the use of any specific range of SCC figures over another. Instead, these comments seek to remind EPA of certain methodological considerations that must be taken into account no matter what SCC range is selected. [[2117.1 p.7]]

Commenter offers extensive further commentary on pages 7-12.

Our Response:

EPA thanks the commenter [[2117]] for the extensive methodological input. The commenter raised several key issues. The first of these is the treatment of omitted impacts and ancillary benefits. The commenter notes the importance of an in-depth discussion, rather than simply a listing of omitted impacts. Additionally, the commenter notes that to the extent possible, ancillary impacts should be separately identified and calculated. The RFS2 standards we are setting were specified in EISA by Congress and are not being set on the basis of the economic impacts, including the value of the SCC. However, the commenter's suggestions will be taken into account in the development of new SCC values.

The commenter additionally noted the importance of accounting for catastrophic and irreversible events and suggested several alternate methodologies for doing so. Again, this work continues to be ongoing and all comments will be considered in the derivation of new SCC values.

In a discussion about the omitted benefits to the domestic SCC values, the commenter notes that there are specific omitted benefits that should be taken into account, above and beyond those listed by EPA. Work continues to better estimate and understand all impacts, both those that occur domestically as well as globally.

The commenter discusses discounting choices and notes that EPA and OMB guidance both place ranges of discount rates for long-term, intergenerational issues between 0% and 3%. Commenter suggests that updated SCC values should reflect this guidance. These comments will be taken into account by the Interagency Workgroup as new values are developed.

Finally, the commenter notes that the presentation of the results is critically important, noting both that it is mathematically incorrect to take the arithmetic mean of the discount rates (as opposed to the discount factors) and that presentation of only means obscures the distribution and uncertainty around the SCC estimates. EPA agrees with both these points and will strive to address these issues within the context of the Interagency Workgroup process to develop a new set of SCC estimates.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1987
Organization: Cornell University
Comment:
Commenter [[1987]] states it is difficult to overstate the role played by the social discount rate in cost benefit analyses of public projects. And it is even more difficult to do so when the project under consideration extends into the distant future, as is the case when dealing with climate change consequences of GHG emissions. A case in point is the recent controversy surrounding the Stern Review (Stern, 2007), which revolves around the parameters of the SDR (Dasgupta 2007, Nordhaus 2007, Weitzman 2007). The SDR is often represented in the form $r = \rho + g*\eta$, where ρ is the pure (utility) discount rate, η is the elasticity of marginal utility of consumption and g is the growth rate of per capita consumption. This expression separates between the two main motives of discounting, namely impatience (ρ) and economic growth (g). While discounting for impatience (or pure time discounting) is reasonable for private investments, it is harder to justify in public investments. [[1987.1 p.6-9]]

Our Response:

EPA agrees that SCC estimates are highly sensitive to selection of the discount rate. EPA will strive to address this issue through the Interagency Workgroup's ongoing development of new SCC numbers.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2326
Organization: N/A

Comment:
The commenter's (2326) remarks are directed primarily to the new interagency social cost of carbon (SCC) estimates that have appeared in a recent DOE rulemaking. The commenter focuses on methodological issues that the interagency process might consider. It is important to note that in the RFS2 proposed rule, the estimates are not used for setting the standard, which has already been legislatively prescribed. That stands in stark contrast to other rules considering SCC estimates, such as recent DOE rules for beverage machines and appliances and DOT CAFE standards, where the chosen SCC estimates can influence the standard. For this reason (standard setting), the commenter believes it will be important for the Administration to settle on a few specific estimates that can be applied across rules that have incremental effects on global emissions (i.e., non-climate policies). Clearly, that is what the Interagency process that has developed new tentative estimates is attempting to do, and they should be commended for it. [[Docket number 2326.1, p. 1]]

The commenter provided the following specific comments about SCC, as it was presented in the DOE final beverage machines rule, Energy Conservation Program: Energy Conservation Standards for Refrigerated Bottled or Canned Beverage Vending Machines; Final Rule, *Federal Register*, Vol. 74, No. 167, August 31, 2009, pp. 44914-44968, http://www1.eere.energy.gov/buildings/appliance_standards/commercial/beverage_machines.html.

Our Response:

EPA thanks the commenter [[2326]] for the various comments regarding the presentation of interim SCC estimates in the DOE final beverage machines rule, Energy Conservation Program: Energy Conservation Standards for Refrigerated Bottled or Canned Beverage Vending Machines; Final Rule, (74 FR 44914; August 31, 2009). EPA has since then presented a similar discussion about the derivation and use of the Interagency Workgroup's interim SCC estimates in the Proposed Rulemaking to Establish Light-Duty Vehicle GHG Emission Standards (74 FR 49454, September 28, 2009).

The commenter noted that socioeconomic uncertainty cannot be resolved and has implications for future emissions, climate change, and adaptive capacity. The Interagency Workgroup plans to examine the implications of various socioeconomic scenarios on the SCC.

The commenter discussed the filtering exercise conducted as part of the interim SCC derivation, and noted that little has changed in SCC modeling since 2001. The Interagency Workgroup decided to limit the sample size as a trade-off for SCC estimates from the most recent versions of the three models. Although the sample size is smaller, the estimates are presumed to be superior to estimates from earlier versions of the models. The distribution of the SCC is planned to be explored in the next phase of SCC development within the workgroup.

The commenter discussed statements made in the Vending Machine rule regarding the possibility of future consideration of SCC estimates based off of business-as-usual projections. We agree that this type of departure is not warranted.

The commenter stated that the estimates resulting from the filtering and averaging approach do not fully capture SCC uncertainty and climate change risk. EPA, as a part of the Interagency Workgroup, has begun a process that will better, and more systematically, characterize the uncertainty surrounding estimates of the SCC.

The commenter stated that estimates based on different discount rates cannot be averaged. As described in the referenced text, both 3 percent and 5 percent are reasonable estimates of the discount rate under specific economic assumptions. EPA agrees and will strive to address this issue through the Interagency Workgroup's ongoing development of new SCC estimates. In addition, EPA has judged other rates to be reasonable (e.g. 2 percent) for prior analysis (such as the NPRM for this rule). The current work to better characterize the uncertainty surrounding SCC estimates will also explore different approaches to uncertainty in the discount rate.

The commenter recommended that EPA reconsider providing an odd number of SCC estimates. EPA continues to examine the appropriateness of these five values and expects to release new ranges in the coming months. EPA agrees with the commenter on the importance of developing SCC estimates based on methodological soundness and places high emphasis on this issue.

The commenter asked why the Hope (2006) estimates were labeled as 5 percent. One common equation used to calculate the discount rate is the Ramsey equation: $r = \rho + g*\eta$, where ρ is the pure rate of time preference, g is the growth rate, and η is the elasticity of the marginal utility of consumption. The pure rate of time preference cited in the Hope (2006) article is 3 percent per year. While the actual discount rate varies over time, it is relatively common to refer to the discount rate as the pure rate of time preference plus 2 percent, where the 2 percent is roughly the growth rate times the elasticity of the marginal utility of consumption. A more accurate categorization would be "approximately 5 percent" or "a pure rate of time preference of 3 percent." On-going efforts to develop a range of SCC estimates will address this issue directly.

The commenter requested more information to understand the application of Newell and Pizer discounting. The undiscounted stream of benefits was not available for each of the studies included in this analysis. The way that the Newell and Pizer (2003) findings were adapted for the interim values was to apply the adjustment factors implied by either their preferred random walk model or mean-reverting model. According to the random walk model, SCC estimates based on a 3 percent or 5 percent discount rate are adjusted by 70.733 percent and 89.8 percent, respectively. The mean-reverting model implies adjustments of 10.733 percent and 16.8 percent for estimates based on a 3 percent or 5 percent discount rate.

Note Newell and Pizer based adjustment factors were not applied to estimates from Guo et al. (2006) that use a different approach to account for discount rate uncertainty.

The commenter also stated that Newell and Pizer discounting will be inconsistent with various alternative futures. On-going work within the Interagency Workgroup is exploring the implications of uncertainty over socio-economic futures.

The commenter presented various observations about efficiency and ethical judgments underlying discount rates, intergenerational implications, interpretation of a risk premium, and dynamic discount rates. The Interagency Workgroup is considering all comments when developing new ranges of discount rates to use for updated SCC values.

The commenter noted difficulty in discussing domestic SCC estimates without more guidance about how the agencies would use such estimates. EPA will take this comment into consideration if and when it explores domestic estimates in the development of updated SCC values.

The commenter requested information about base years and Newell and Pizer discounting. Please see table below.

Model	**Study**	Base year (Best available info)	Year Dollars (Best available info)
FUND	Anthoff et al. 2009	2000	2000
FUND	Link and Tol 2004	1995	1995
FUND	Guo et al. 2006	1995	1995
PAGE	Wahba & Hope 2006	2000	2000
PAGE	Hope 2006	2000	2000
DICE	Nordhaus 2008	2005	2005

Additionally, the commenter requested a complete list of references. The references are as follows:

Anthoff, D., C. Hepburn, and R. Tol. 2009. Equity weighting and the marginal damage costs of climate change. Ecological Economics 68: 836:849.

Guo, J., C.J. Hepburn, R. Tol, and D. Antoff. 2006. Discounting and the social cost of carbon: a closer look at uncertainty. Environmental Science and Policy 9: 205-216.

Hope, Chris. 2008. Optimal carbon emissions and the social cost of carbon over time under uncertainty. The Integrated Assessment Journal 8(1): 107-122.

Hope, Chris. 2006. The Marginal Impact of CO2 from PAGE2002: An Integrated Assessment Model Incorporating the IPCC's Five Reasons for Concern. The Integrated Assessment Journal 6(1): 19-56.

Link, P.M., and R. Tol. 2004. Possible Economic Impacts of a Shutdown of the Thermohaline Circulation: an Application of FUND. Portuguese Economic Journal 3: 99-114.

Newell, R., and W. Pizer. 2003. Discounting the Distant Future: How Much Do Uncertain Rates Increase Valuations? Journal of Environmental Economics and Management 46: 52-71.

Nordhaus, William. 2008. A Question of Balance: Weighing the Options on Global Warming Policies. New Haven, CT: Yale University Press.

Tol, R. 2008. The Social Cost of Carbon: Trends, Outliers and Catastrophes. Economics: The Open-Access, Open-Assessment E-Journal 2(25): 1-24.

Wahba, Mohammed, and Chris Hope. 2006. The Marginal Impact of Carbon Emissions Under Two Scenarios of Future Emissions. Energy Policy 34: 3305-3316.

The commenter also identified an incorrect reference—EPA notes that Nordhaus (2007) does not exist.

10.5 Economy-Wide Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2093
Organization: Targeted Growth, Inc.
Comment:
Commenter [[2093]] states that as a company that is pursuing a business strategy focused on new energy crops, we have spent considerable time understanding how the proposed rules will treat new energy crops and are extremely concerned that the rules as written will negatively impact our ability to continue developing next generation biofuel crops. The RFS2 as currently written will have a chilling effect on the development of new energy feedstocks, impeding investment and innovation. [[see docket #2093, p.2]]

Our Response:

A variety of different renewable fuels are capable of qualifying for use under the RFS2 rule. These feedstocks can be crop-based, crop residues and waste-based or dedicated energy crops. While there are specific definitional requirements for feedstocks, the Act is feedstock-neutral and allows the market to determine which feedstock will be used to satisfy the EISA requirements. EISA set volume requirements that encourage significantly higher volumes of advance renewable fuels from cellulosic feedstock sources that can include energy crops. Thus, we do not believe that EISA will have a "chilling effect" on new energy feedstocks, or act as an impediment to investment and innovation in the development of energy feedstocks.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2309
Organization: Grocery Manufacturers Association, National Council of Chain Restaurants, and Snack Food Association
Comment:
Commenter [[2309]] states that the RFS would pose severe economic and environmental harm by significantly increasing the cost of food and feed, potentially damaging more than 400 millions of engines and injuring their operators, contributing to poor air and water quality in many communities, and by driving millions of people around globe into poverty. [[#2309.1.p.1]]

Our Response:

The commenter [2309] raises a number of issues associated with the RFS2 rule. The first issue the commenter raises is about the impacts of the RFS2 on the cost of agricultural commodities. Our analysis shows that the increase in renewable fuel volumes required by the RFS2 rule will raise food prices modestly, as described in more detail in our response in Section 10.2 to SoyMor Biodiesel, LLC (EPA-HQ-OAR-2005-0161-2010), Western Dubuque Biodiesel LLC, (EPA-HQ-OAR-2005-0161-2011), and Central Iowa Energy, LLC (EPA-HQ-OAR-2005-0161-2013).

The second concern that the commenter raises is about the potential of the RFS2 rule to adversely impact vehicles and their operators. With regard to fuel utilization and motor vehicles, all fuels and fuel additives are required to be registered with the Agency and ultimately approved for use prior to being put into the commercial fuel market. Therefore, the use of these fuels should not pose a risk to the equipment and operators if used in appropriate applications. The RFS2 program defines which fuels and fuel additives are renewable with respect to the program itself, however it does not approve fuels or fuel additives for use. That is done through other Clean Air Act authorities and regulations where applicable.

The third concern the commenter raises is about the air and water quality impacts of the RFS2 rule. The Agency conducted a detailed air quality analysis of the RFS2 rule. In that analysis, we found that there are both air quality benefits (e.g., reductions in benzene and carbon monoxide) and disbenefits (e.g., ozone) associated with the wider use of renewable fuels. These impacts will vary based the type of fuel utilized and the geographic location of its use. See Chapter Three of the RIA for more information on the air quality impacts of the RFS2 rule. EPA agrees that water quantity is an important consideration in the development of renewable fuels, especially in some local or regional areas with limited water supplies. See Chapter Six of the Regulatory Impact Analysis for more information on the water quality and quantity impacts of the RFS2 rule. EPA will further evaluate water quantity and quantity impacts in the report to Congress required under Section 204 of EISA due December 2010. The last issue that the commenter raises is the issue of the impact of the RFS2 rule on global poverty. Estimating the effects of the RFS2 rule on global poverty is beyond the scope of this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2396
Organization: CVR Energy
Comment:
The commenter (2396.1) is concerned the mandate for yet-to-be developed and/or adequately tested transportation fuels will have an adverse economic impact not only on the general petroleum refining industry, and the SBR in particular, but also on our nation's entire transportation system. (2396.1, p.2)

Our Response:

In the Energy Independence and Security Act (EISA), Congress expanded upon the renewable fuels mandate of RFS1 to further reduce our reliance on imported petroleum. Although renewable fuel use has increased beyond that required in RFS1 (most likely due to higher average crude oil prices), the RFS2 program is expected to further expand the use (or ensure the expansion) of renewable fuels.

The principal renewable fuels expected to be used are ethanol, biodiesel and renewable and cellulosic diesel fuel. Although the commenter questions whether these renewable fuels have been adequately tested, ethanol has been tested extensively in motor vehicles and has been adapted into the gasoline pool for many years. While the volume of biodiesel blended into diesel fuel is small, there has been extensive vehicle and fuel testing of biodiesel fuel. Renewable and cellulosic diesel fuel are the newest of the principal renewable fuels which we expect to be used, however, they are also the most like petroleum-based diesel fuel so their blending with petroleum-based diesel fuel should be straightforward. The petroleum industry has demonstrated that it is up to the challenge of adapting to and using these new fuels. However, if a particular refiner does not wish to attempt to use a particular renewable fuel, or any renewable fuel, it has the option to allow other refiners to blend its required share of renewable fuels into the gasoline and diesel fuel pool, and purchase the RINs generated by those refiners.

There are many impacts of this program. For example, cellulosic biofuels will require the development of a whole new infrastructure for the planting and harvesting of cellulosic feedstocks, as well as the construction of biofuel plants that will convert the cellulosic feedstocks into viable biofuels. Then the cellulosic biofuels will have to be transported from the plants that produce them to the terminal where they will usually be blended into the gasoline and diesel fuel pools, requiring new fuel distribution hardware. In some cases, the retail sector may need to modify its fuel dispensing hardware to enable selling the new renewable fuels. All these steps will require extensive capital investments and incur other costs associated with these various steps. The RIA contains our assessment of these many impacts and their related costs. Despite these new capital costs and other costs, because the price of crude oil is expected to increase significantly, the net impact of the RFS2 program is expected to be a cost savings to consumers. Even if the price of crude oil does not increase to the point as projected by DOE and the RFS2 program increases costs, the RFS2 program will reduce our dependence on foreign oil which was a primary reason why Congress included the RFS2 provisions in EISA.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2508
Organization: Environmental Working Group (EWG)
Comment:
The commenter (2508) recommends that EPA cast a sufficiently broad net in its criteria for determining harm to the economy or the environment. The Administrator should look at the following economic factors: impact on commodity/feed prices; consequent impact on food prices; impact on exports of agricultural commodities and global food supply. The Administrator should also look at the following environmental factors: impact on soil quality;

impact on water quantity and quality; impact on aquatic and terrestrial fish and wildlife habitat and biodiversity. (2508, p.4)

Our Response:

We have carried out an extensive set of analyses to quantify the impacts of the increased renewable fuel volumes projected to be used to comply with the RFS2 standards, including many of the economic and environmental impacts highlighted by the commenter. Specifically, the Agency has conducted an economy-wide analysis to determine the impact of this rule on the U.S. economy and has examined subsectors of the economy, including the agricultural sector, to determine the impacts on commodity/feed prices and the resulting impact on food prices and annual costs to American families. For additional details, see the January 11, 2010 Memorandum to Docket Re: Economy-Wide Impacts of the Renewable Fuels Standard. Further, the Agency examined air and water quality impacts, quantifying impacts to the extent possible with the models and tools available to the Agency. Where it was not possible to quantify impacts, the Agency qualitatively described those impacts and invites the public to provide tools and methods to quantify those impacts that could only be qualitatively described. These analyses are described in detail in the Regulatory Impact Analysis for the final rule. Additional analyses will continue to be carried out by the Agency over time in response to section 204 of EISA entitled "Environmental and Resource Conservation Impacts," and section 209 of EISA entitled "Anti-backsliding."

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 11
Impacts on Water

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

11 IMPACTS ON WATER

11 IMPACTS ON WATER

What We Proposed:

The comments in this section correspond to Section X of the preamble to the proposed rule and address impacts on water. A summary of the comments received and our response to those comments are located below (as well as Section IX of the preamble to the final rule).

11.1 Ecological Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0982
Organization: Holliday Environmental Services, Inc.
Comment:
The commenter noted that water is as precious as fuel and if we run out, water will be more precious. The country cannot afford more ethanol! (0986.1, p.1)

Our Response:

EPA agrees that water quantity is an important consideration in the development of biofuels, especially in some local or regional areas with limited water supplies. EPA will further evaluate water quantity impacts in the report to Congress required under Section 204 of EISA due December 2010.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2466
Organization: Northeast States for Coordinated Air Use Management (NESCAUM)
Comment:
The commenter (2466) urges EPA to pursue vigorous assessment on impact on water quality as a result of increase in corn production for ethanol. The commenter points out that the agency states in its Regulatory Impact Analysis that it anticipates that increased corn production for ethanol will increase the occurrence of nitrate, nitrite, and atrazine in sources of drinking water. It may exacerbate existing serious water quality problems in the Gulf of Mexico and may potentially cause adverse human health effects due to increase in pesticides usage. (2466.1.pdf, p7)

Our Response:

For this rulemaking, EPA quantitatively and qualitatively analyzed certain water quality impacts of the increase in corn production for ethanol. The quantitative analysis of the Upper Mississippi River Basin estimated that this rulemaking will lead to an increase in nitrogen loads to the Mississippi River from the Upper Mississippi River Basin by 1.2% in 2022 compared to

the AEO 2007 ethanol volumes. Phosphorus loading is estimated to increase 0.7%. In addition, Section 204 of EISA requires EPA, in consultation with USDA and DOE, to produce a report to Congress every three years on the impacts to date and likely future impacts of the RFS on : (1) environmental issues (air quality, effects on hypoxia, pesticides, sediment, nutrient and pathogen levels in waters, acreage and function of waters, and soil environmental quality); (2) resource conservation issues (soil conservation, water availability, and ecosystem health and biodiversity including impacts on forests, grasslands and wetlands), and (3) the growth and use of cultivated invasive or noxious plants and their impacts on the environment and agriculture. The first report is due December 2010.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2363
Organization: Ag Processing Inc.
Comment:
The commenter (2363) urges EPA to refigure the water quality impacts resulting from greater erosion and water quality reduction when crop residues are removed. [[Docket number 2363.1, p. 7]] [[See docket number 2363.1, pp. 4-5 for further discussion of this issue.]]

Our Response:

The preamble (Section IX) and RIA (Section 6) includes a qualitative discussion of the value of crop residues for both soil and water quality and the potential negative environmental impacts when residues are removed. We were unable to conduct a quantitative analysis at this time. However, as stated in the RIA, different conservation systems and conservation practice standards will need to be developed and adopted for cellulosic feedstocks, such as corn stover, switchgrass, and trees for biofuels production. USDA will need to continue to adjust current standards and develop additional standards, where needed, to permit cellulosic feedstocks to be produced and utilized in a sustainable manner.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2111
Organization: Arcadia Biosciences, Inc.
Comment:
Commenter [[2011]] states that the impact of future biofuel production on water quality can be most cost effectively addressed with the development and employment of Nitrogen Use Efficiency (NUE) technology. Increased corn demand as a result of biofuels incentives and policies could potentially harm water quality, depending on other factors that impact production and yields. Widespread deployment of NUE would decrease demand and use of nitrogen fertilizer and logically decrease nitrogen use for corn production and improve water quality. [[See #2011.1 p.2]] In addition the commenter states that drought-tolerant technology will improve farming efficiencies and reduce the demand for water

Our Response:

EPA analysis shows that the increase in corn demand as a result of this rulemaking will increase nitrogen loadings to water with current agricultural genotypes. A variety of conservation practices are needed to minimize nitrogen runoff and leaching from corn fields. EPA will have an opportunity to consider improvements in crop performance in its periodic reports under EISA 204 on the environmental impacts of the RFS

What Commenters Said:

Document No: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment: *EPA should take a lifecycle view of water impacts*
EPA appropriately recognizes the non-agricultural sources of water quality and quantity impacts from ethanol production. In completing its Regulatory Impact Analysis, EPA should however consider the water impacts of the fossil fuels these biofuels are displacing, as well as consider a more complete landscape of water management practices in the ethanol industry.

The biofuels industry is also making great strides in reducing its water needs. As EPA points out, new corn ethanol plants use about half as much water than older designs thanks to increased recycling and process heat management. Cellulosic ethanol furthermore is expected to have water requirements that are substantially less than corn ethanol on a "lifecycle" basis (including water needed for feedstock and fuel production). A recent study by Argonne National Lab found that switchgrass-based cellulosic ethanol could have water use requirements in line with, or even lower, than all major sources of gasoline in the U.S. Coskata is furthermore specifically designing its process for minimum water utilization through innovative process heat integration and advanced recycling, and expects to have one of the lowest water requirements in the emerging advanced biofuel industry. Finally, crop genetics companies are developing advanced varieties of corn and biomass crops, such as drought tolerant corn and energy crops that don't require irrigation, which will further lessen the water impacts of the industry.

Our Response:

EPA did not conduct a lifecycle analysis of the water quality and quantity impacts of this rulemaking, nor was it required under EISA. However, Section 204 of EISA requires EPA, in consultation with USDA and DOE, to produce a report to Congress every three years on the impacts to date and likely future impacts of the RFS including: environmental issues (air quality, effects on hypoxia, pesticides, sediment, nutrient and pathogen levels in waters, acreage and function of waters, and soil quality; resource conservation issues (soil conservation, water availability, and ecosystem health and biodiversity), and the growth and use of cultivated invasive or noxious plants and their impacts on the environment and agriculture. The first report is due December 2010. EPA will consider this comment in the context of that undertaking.

11.2 Additional Water Issues

11.2.1 Ethanol Production

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2526
Organization: Coskata
Comment:
The commenter (2526) believes that EPA should take a more complete view of water impacts and not seek to regulate corn fertilizer use by regulating biofuel manufacturers. [[Docket number 2526.1, p. 2]] [[See docket number 2526.1, pp. 11-12 for further discussion of this issue.]]

Our Response:

EPA agrees with the concerns expressed by the commenter and is not regulating fertilizer use on corn production through this rulemaking. EPA and USDA are working together to help agricultural producers implement practices to minimize water pollution from corn production.

11.2.2 Ethanol Leaks and Spills

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter suggests a full exam of the water and air pollution risks associated with spills and releases from using existing fuel dispensing facility infrastructure [[Docket number 2384.1, p.1 10]]

Our Response:

More detail on ethanol biodegradation and a summary of laboratory and field studies of ethanol spills will be forthcoming in the EPAct 2005 Report to Congress on Fuel Additive Replacements for MTBE in 2010. In addition, EPA is undertaking analyses designed to assess the potential impacts of ethanol blends on tank infrastructure and leak detection systems and determine the resulting water quality impacts.

11.3 Water Quantity

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2249
Organization: National Biodiesel Board (NBB)
Comment:

The commenter (2249.2) believes that EPA need not, and should not, address Section 211(c) in the context of this rulemaking. EPA's authority under Section 211(c) is not intended to address any potential impact that might arise as a result of the RFS program, but is limited. 42 U.S.C. 75458. The commenter notes that EPA does not have the authority to regulate agricultural practices, and believes that attempts to regulate agricultural practices by imposing additional requirement on the feedstock that can be used by renewable fuel producers is beyond the authority provided in Section 211(c). [[Docket number 2249.2, pp. 109-110]]

Nonetheless, the commenter notes that soybean farming and biodiesel production provide water quality benefits. For example, soybean is often used as part of a crop rotation program, which promotes sustainability, including reducing impacts of agricultural production on water. Soybeans require an insignificant amount of fertilizer, pesticide, and irrigation inputs, and therefore represent significantly less potential water quality and quantity impacts. In addition, biodiesel production also involves little water per gallon. [[Docket number 2249.2, p. 110]]

Our Response:

The final rule does not include any controls related to agricultural practices under authority of CAA Section 211(c). EPA and USDA are working together to help agricultural producers implement practices to minimize water pollution from corn production. EPA understands that soybeans use fewer inputs than corn. However soybeans also have less residue than corn which can result in greater sediment losses from fields as a result.

11.4 Request for Comment on Options for Reducing Water Quality Impacts

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that this is not the appropriate forum for EPA to seek comment on regulation of renewable fuel to address water quality. EPA's authority under Section 211(c) is limited and is intended to addresses the fuel itself or emissions, not any potential impact that might arise as a result of the RFS program. In particular, EPA does not have the authority to regulate agricultural practices, and there is no indication Congress intended EPA to regulate agricultural practices by imposing additional requirement on the feedstock that can be used by renewable fuel producers through Section 211(c). The commenter believes that this is a blatant example of EPA seeking to overstep its authority to regulate the agricultural industry. (2329.1, p. 111)

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute

Comment:
The commenters (2129.1) believe that EPA should exercise its authority under Section 211(c) to protect against water pollution that threatens public health or welfare. The commenters do not see a rationale for singling out corn ethanol however, but support applying such authority to all biofuels produced under the RFS2. EPA could use this authority in combination with restrictions on the volume of environmentally damaging biofuels that are produced under the RFS2, pursuant to either its waiver authority under Section 211(o) of the Clean Air Act or its control or prohibit authority under Section 211(c) of the CAA. (2129.1, p.13)

The commenters support EPA's suggestion to impose restrictions on farming practices used in the production of biofuels that cause, or contribute to water pollution (including any degradation in the quality of groundwater) that may reasonably be anticipated to endanger the public health or welfare. The commenters suggest that EPA impose eligibility requirements on feedstock production for fuel that ensure the following conditions are met:
-No current violations of the Clean Water Act or Swampbuster have been identified on the land;
-The land used to grow crops is not eroding in excess of tolerable levels—soil is eroding faster than new soil is naturally produced; and
-A soil and water conservation plan is in place and being implemented for the land, or alternatively, a certain score could be required on the USDA's Soil and Water Evaluation tool or EPA could adapt this tool for this specific purpose. (2129.1, pp.13-14)

Document No.: EPA-HQ-OAR-2005-0161-2374
Organization: Amyris Biotechnologies, Inc. (Amyris)
Comment:
Regarding EPA's request for comment on how and if to include water issues related to biofuels production, the commenter (2374) supports clear definitions of sustainability that allow companies to verifiably produce better biofuels. If in completing its Regulatory Impact Analysis, EPA should consider the water impacts of biofuels, the commenter believes that biofuel water use should be weighed against the water use in fossil fuel just as EPA is doing for GHG emissions. The mandate to use biofuels should always be measured against the petroleum alternative being displaced. [[Docket number 2374.1, p. 3]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) states that the potential water quality impacts of biofuels are important and EPA should look at them carefully. EPA will likely need the results of the study required by section 204 of EISA before it can make a finding that a fuel, or its emission product, "causes or contributes" to air pollution or water pollution that may reasonably be anticipated to endanger the public health or welfare. The commenter recommends that EPA OAR consult with the Office of Water, Office of Underground Storage Tanks, and Office of Research and Development, as they prepare the section 204 report. The commenter also recommends that EPA review the recommendations made by the Agency's MTBE Blue Ribbon Panel 1999 recommendations included conducting a full, multi-media assessment of effects on air, soil, and water of any major new additive to gasoline prior to its introduction. [[Docket number 2393.1, p.

66]] [[See docket number 2393.1, pp 65-69 and docket number 2393.6, Attachment 5 for a detailed discussion of water quality assessment.]]

Document No.: EPA-HQ-OAR-2005-0161-2497
Organization: Wisconsin Department of Natural Resources
Comment:
The commenter (2497.1) believes that impacts to water quality and quantity from expanded biofuel production need to be carefully considered. Putting additional land into crop production increases the risks of surface water and groundwater contamination from agricultural chemicals and additional aquifer depletion. The commenter believes that the future diversification of biofuel stocks, such as cellulosic-based ethanol production, can not only minimize impacts to land and water, but can create enhanced environmental benefits from agriculture and forestry practices. The commenter recommends that EPA financially support research to minimize groundwater and surface water impacts from increased biofuel production. Specifically, the research should be focused in the Midwest region. (2497.1, p.2)

Our Response:

The final rule does not include any controls related to agricultural practices under authority of CAA Section 211(c). However, EPA may consider using this authority in the future. EPA and USDA are working together to help agricultural producers implement practices to protect water quality through voluntary conservation programs.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2111
Organization: Arcadia Biosciences, Inc.
Comment:
Commenter [[2011]] states that imposing additional feedstock certification that requires manufacturers to certify that they used specific cultivation practices for corn would be expensive and impractical. Tracking the practices under which a feedstock was grown and maintaining that throughout the supply chain would require a costly revamping of the grain delivery process. Certification requirements would increase production costs and be a disincentive to sustainable biofuel production.

Our Response:

The final rule does not include the type of certification procedures the commenter finds objectionable.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 12
Administrative Requirements and Legal Authority

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

12. ADMINISTRATIVE REQUIREMENTS AND LEGAL AUTHORITY

12. ADMINISTRATIVE REQUIREMENTS AND LEGAL AUTHORITY

What We Proposed:

The comments in this section correspond to Section XII of the preamble to the proposed rule and address compliance burden and program impacts. A summary of the comments received and our responses to those comments are located below (and in Section XI of the preamble to the final rule).

12.1 Paperwork Reduction Act/Information Collection Requests (ICR)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1.
Comment:
The commenter (2157) is concerned with additional registration, certification, and reporting requirements that EPA is proposing. The commenter finds these are impractical, burdensome and unnecessary. Generally the current RFS RIN program has been working, and EPA should not add undue burdens that may be cost prohibitive and, in fact, may result in having the opposite of the intended effect. Specifically, EPA should presume the existing agricultural lands are met, and not require certification and, at most, should utilize an approach similar to the baseline production approach identified in the Proposed Rule (taking into account increased yields). Additionally, price information, on-site engineering reviews, and production outlook reports are unnecessary and burdensome, may require release of confidential business information, and should not be required. (2157 p. iv-v and 21-23).

Our Response:

Please see Chapter 4 of this Summary and Analysis of Comments document for responses related to compliance burdens. We note that a final Supporting Statement with detailed cost estimates has been prepared for the final rule and has been submitted to the Office of Management and Budget (OMB) for approval under EPA ICR Number 2333.02. A copy of the Supporting Statement has been placed in the docket for the final rule. The Supporting Statement contains detailed estimates of the costs associated with recordkeeping and reporting by party and by recordkeeping and reporting activity. Interested parties are urged to review the Supporting Statement.

12.2 Regulatory Flexibility Act/SBREFA

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2118
Organization: CountryMark Cooperative, LLP
Comment:
The commenter (2118.1) believes that EPA has the legal authority to adopt the recommendations of the SBREFA panel conceding the impact of RFS2 proposed regulation on SBRs. RFS2 will have a substantial financial impact and create operating problems for SBRs. The SBREFA process was properly conducted and resulted in the determination that SBRs would be impacted by the proposed regulations and EPA should grant appropriate relief to SBRs as a result of the recommendations of the SBREFA panel. (2118.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2135
Organization: Ad Hoc Coalition of Small Business Refiners (SBR)
Comment:
Under Section 604 of SBREFA, EPA is required to perform a thorough analysis of the implications of the RFS2 proposal on small entities and potential alternatives to minimize significant economic impacts on such entities. The commenter (2135) notes that to date, EPA has not offered factual, policy, and legal reasons necessary to satisfy the SBREFA mandates. [[Docket number 2135.1, p. 15]]

The commenter states that EPA's disregard of flexibility considerations cannot be sustained under SBREFA. In view of the conclusory nature of EPA's legal reasoning described above, the commenter submits that EPA's regulatory flexibility analysis, as well as the proposals and non-proposals it purports to support, cannot pass muster under Section 604 of SBREFA. Moreover, because EPA has valid legal authority to permit the Panel recommendations, EPA's conclusion to the contrary is a clear error in judgment, not in accordance with law, and therefore, arbitrary and capricious. [[Docket number 2135.1, pp. 19-20]]

The commenter further states that EPA's bases for disregarding the relief being sought by the SBR Coalition is inimical to the safeguards that the RFA and SBREFA were set in place to address and, therefore, are not in the public interest. In this regard, it should be noted that Section 611(a)(4)(2) requires that a Court remand a rule to the agency for non-compliance with SBREFA unless the Court determines that the enforcement of the rule is in the public interest. As set forth above, unless EPA satisfies its obligations to conduct a meaningful evaluation of the impact on small businesses and considers reasonable alternatives, then the outcome of the rulemaking is clearly at odds with the public interest. Indeed, the "harm" that EPA hypothesizes relative to the commenter's proposals is precisely the type of relief that the RFA and SBREFA were enacted to provide. EPA must demonstrate a greater showing of harm to the public interest in order to disregard the proposals of the SBR Coalition. [[Docket number 2135.1, p. 20]]

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:

The commenter (2105.1) noted that small entity fuel refiners have expressed concern over the general impracticability of the rapid implementation schedule of the RFS2 program. Many commercially unavailable and untested fuels are required to be blended into petroleum fuel stocks in the near future, and small refiners are concerned that they will be disadvantaged in the marketplace by the uncertainty caused by this situation. (2015.1, p.2)

Our Response:

As discussed in detail Section III.E of the preamble to the final rule and Chapter 7 of the Final RIA, Congress spoke directly to the relief that EPA may provide for small refineries, including those small refineries operated by small refiners, and limited that relief to a blanket exemption through December 31, 2010, with additional extensions if the criteria specified by Congress are met. EPA believes that an additional or different extension, relying on a more general provision in section 211(o)(3) would be inconsistent with Congressional intent. Further, we do not believe that the statute allows us the discretion to give relief to small refiners only—as this would result in a subset of small refineries (those that also qualify as small refiners) receiving relief that is greater than the relief already given to all small refineries under EISA. The criterion specified by the statute for providing a further compliance extension to small refineries is a demonstration of "disproportionate economic hardship." The statute provides that such hardship can be identified through the DOE study, or in individual petitions submitted to the Agency. However, the DOE study has concluded that no disproportionate economic hardship exists, at least under current conditions and for the foreseeable future under RFS2. Therefore, absent further information that may be provided through the petition process, there does not currently appear to be a basis under the statute for granting further compliance extensions to small refineries. If DOE revises its study[1] and comes to a different conclusion, EPA can revisit exemption extension at that time in accordance with section 211(o)(9)(A)(ii).

We note that we are finalizing a petition process for small refiners, based upon disproportionate economic hardship, which is similar to the provision for case-by-case extensions for small refineries. We believe that these avenues of relief can and should be fully explored by small refiners who are covered by the small refinery provision, as well as those not covered by the small refinery provision. In evaluating applications for this hardship provision EPA will take into consideration information gathered from annual reports and RIN system progress updates, as recommended by the SBAR Panel, as well as information provided by the petitioner and through consultation with DOE.

In response to the comment stating that the rapid RFS2 implementation schedule will harm small refiners, EPA notes that small entities qualifying as small refiners and small refineries are temporarily exempt from renewable fuel standard obligations through 2010. Therefore they will have most of this calendar year to prepare for compliance. Furthermore, a compliance demonstration for 2011 will not be required until February of 2012, providing

[1] In Senate Report 111-45, the Senate Appropriations Committee "directed [DOE] to reopen and reassess the Small Refineries Exemption Study by June 30, 2010," noting a number of factors that the Committee intended that DOE consider in the revised study. The Final Conference Report 111-278 to the Energy & Water Development Appropriations Act (H.R. 3183), referenced the language in the Senate Report, noting that the conferees "support the study requested by the Senate on RFS and expect the Department to undertake the requested economic review."

additional flexibility and lead time for compliance. Finally, compliance does not require actual blending of renewable fuel, but can be achieved merely through the purchase of RINs. Therefore, EPA does not foresee that small refineries or small refiners will have difficulty complying with their obligations under RFS2 as a result of the RFS2 implementation schedule.

12.3 Other Executive Orders

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) supports voluntary consensus standards. EPA should follow the guidance from OMB, let the marketplace work, and not step in to regulate when there is a voluntary standard. (2124.1, p.22)

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter (2105.1) noted that small refiners are concerned that RFS2 mandates, under the auspices of the EISA, could, in fact, threaten regional energy security and independence within the U.S. Many small refiners serve isolated regions of the U.S. without many substitute fuel suppliers, or serve as primary suppliers to military bases or installations. If the requirements of the RFS2 program interfere with the ability of these refiners to meet the demands of their isolated and unique customers, it could have the unintended consequence of disrupting U.S. energy markets rather than making them more independent and secure. The commenter believes that EPA should consider the energy independence and security impact of this rule on geographically isolated regions of the country and military bases and installations, and find flexibility options to alleviate these potential problems before they happen. (2105.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter (2105.1) noted that there are issues with the availability of "exotic" renewable fuels, those made using methods that are not yet commercially viable. This additional GHG reduction requirement adds significant cost and uncertainty to a rule that is already costly and filled with uncertainty for small entities. (2105.1, p.6)

The commenter noted that given that the production, price, and availability of RINs are very uncertain, further narrowing the types of renewable fuels acceptable for compliance will further decrease the availability of RINs. RFS2 was designed with a focus on the importance of energy independence and security rather than greenhouse gas emissions reductions. Areas within the United States that currently grow soybeans and produce soybean-based diesel will be drastically affected by the elimination of this fuel from certification for blending. The commenter believes that EPA should consider waivers to assist these regions in compliance. (2105.1, p.6)

The commenter also believes that the approval and selection of renewable fuel technologies will create limitations on innovation. These limitations would put restraints on potentially beneficial and cost-effective improvements. (2105.1, p.6)

Our Response:

We appreciate the commenters' remarks and concerns regarding the various executive orders including the National Technology Transfer and Advancement Act (voluntary consensus standards) and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).

We note that we are incorporating by reference the most recent version of the voluntary consensus standard ASTM D-6751-08, which the RFS1 rule already contains at 40 CFR Part 80 Subpart K, and are adding several more voluntary consensus standards (ASTM D-1250-08, "Standard Guide for Use of the Petroleum Measurement Tables"; ASTM D-4442, "Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials"; ASTM D-4444, "Standard Test Method for Laboratory Standardization and Calibration of Hand-Held Moisture Meters"; ASTM D-6866-08 "Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis"; ASTM E-711, "Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter"; and ASTM E-870, "Standard Test Methods for Analysis of Wood Fuels".) Information about these standards may be obtained through the ASTM website (www.astm.org) or by contacting ASTM at (610) 832-9585.

While the RFS2 standards as written by Congress will have impacts on all refiners, we do not believe that the RFS2 renewable fuels requirement will cause a large impact on small refiners as expected by the commenter. As discussed in Section 7 of the RIA, we estimate that the costs to small refiners will in all cases be less than 1 percent. In addition, as crude oil prices rise and renewable fuels prices fall, these costs will be further minimized.

Since the program is a nationwide average program with credits (RINs) being traded nationwide to demonstrate compliance, the economic impacts to small refiners should be similar to the impacts nationwide. Furthermore, since the obligation is a function of gasoline and diesel fuel production, the economic impacts on an annual average basis for small refiners are reduced in proportion to their production volume. Finally, EPA does not believe that compliance by small refiners providing fuel to military bases or other small markets will be more onerous than compliance for other small entities or refiners at large. Compliance can be achieved through the purchase of RINs on the marketplace, and there is no need to alter fuel production or delivery practices.

Additionally, the final rule makes a distinction between fuel produced from current crops and technology and that produced from emerging alternative feedstocks and technologies. EPA has provided a petition process whereby biofuel producers can request EPA to evaluate specific technologies or operating processes that distinguish their biofuel production LCA GHG impacts

from those already considered by EPA. These new technologies or operating processes can then receive an alternative GHG threshold assessment, if appropriate.

One commenter expressed a concern about the qualification of soy-based biodiesel under EISA, and the impact that constraints on that product would have on RIN availability and price. EPA's proposed lifecycle analysis of soy-based biodiesel suggested that it would not meet the required 50% reduction in GHG emissions as compared to baseline fuel for qualification as biomass-based diesel. However, EPA's revised lifecycle assessment for the final rule indicates that it does qualify, so EPA believes that this change has addressed the commenter's concerns.

Renewable Fuel Standard Program (RFS2) Summary and Analysis of Comments

Chapter 13
Other

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

United States
Environmental Protection
Agency

EPA-420-R-10-003
February 2010

13 OTHER

13 OTHER

What We Proposed:

The comments in this section do not necessarily correspond to specific section of the preamble to the proposed rule, but rather are comments that span various areas and issues. A summary of the comments received and our responses to those comments are located below.

13.1 Public Participation Process (Public Hearing and Comment Process)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA has not provided sufficient opportunity to comment as required by the Clean Air Act. Significant portions of EPA's lifecycle analysis that was included in the Proposed Rule lack sufficient transparency required for scientific analysis and public review and comment. The commenter believes that prior to finalizing its lifecycle analysis, EPA must give the public an opportunity to review and comment on revisions, including the numerous elements that EPA acknowledges were not completed prior to proposal, to the analysis. (2329.1, p.20).

The commenter also believes that while EPA has provided some information on its lifecycle analysis, the information regarding its analysis of land use changes is insufficient to make its analysis transparent and cannot be reproduced, undermining the public's ability to comment and placing into question the scientific validity of its analysis. (2329.1, p.22)

Document No.: EPA-HQ-OAR-2005-0161-2204
Organization: Sierra Research, Inc.
Comment:
Commenters [[2204]] review has been limited due to the failure of U.S. EPA fully to document and explain in the DRIA its direct lifecycle emissions analysis (LCA) for Brazilian sugarcane ethanol. Based on my experience related to regulatory development while employed by the California Air Resources Board, it is not acceptable to attempt to finalize a regulation without providing an opportunity for public review of and comment on a reasonably complete set of data and assumptions used in preparing an emissions analysis. [[2204 p.2-3]]

Document No.: EPA-HQ-OAR-2005-0161-2339
Organization: Illinois Com Growers Association
Comment:
Commenter [[2339]] states that EPA repeatedly states that it will develop additional data and convene peer review work groups after the close of the public comment period to address holes in its analysis. But this does not solve the problem that the proposal that has been presented to

the public is not documented by good science in the EPA record. Moreover, EPA's opaque post-comment period peer review process cannot retroactively cure the failure to disclose the scientific basis of the proposal to the public before finalizing the rule. This peer review should have taken place before this rule was proposed. EPA's Peer Review Handbook states as much. [[#2339 p.4]]

Document No.: EPA-HQ-OAR-2005-0161-2347
Organization: Illinois Farm Bureau
Comment:
Commenter [[2347]] states EPA's proposal is not transparent. The proposal does not allow the public to effectively comment on the rule. [[#2347.1 p.2]]

Document No.: EPA-HQ-OAR-2005-0161-2471
Organization: Sutherland Asbill & Brennan LLP
Comment:
The commenter (2471.1) believes that before finalizing the rule, EPA must hold public hearings on the entirety of the rule. The commenter noted that EPA did convene a broader hearing on the proposal in June; however, that hearing occurred only a few weeks after the Proposed Rule was published. Both EPA's and stakeholders' understanding of key issues since has evolved considerably, and will continue to do so as EPA considers public comments on the rulemaking. Transition issues and obstacles are likely to arise if the final rule is adopted without additional EPA-stakeholder interaction in the form of a second multi-topic hearing. The best way to effectuate the goals of EPAct and EISA is to implement an RFS2 program that has been thoroughly examined and crafted to address valid concerns, incorporate sensible flexibilities and correct inconsistencies or misperceptions before being finalized. (2471.1, p.3)

Our Response:

EPA held a public hearing on the proposed rule on June 9, 2009. At the hearing, any interested party was invited to provide public comment, and a great many did so. In addition, we initially provided a 60-day public comment period for interested parties unable to attend the hearing to submit written comments, and for those who attended the hearing to submit supplementary or revised comments. At the request of a number of individuals, we later extended the comment period an additional 60 days to provide the public and the regulated community additional time to review and provide comments on the proposed rulemaking. We received some comments after the close of the comment period, and to the extent possible, we have considered and responded to these late comments as well. Finally, it is important to note that EPA was directed by Congress to issue the final RFS2 rule by December 19, 2008. Although EPA missed this deadline due to the complexities inherent in the rulemaking and the time needed to evaluate the many comments received, EPA was mindful that it had an obligation to proceed expeditiously to issuing a final rule, and therefore had to weigh the benefits of further extensions of comment opportunities with the statutory imperative to issue a final rule as promptly after the statutory deadline as possible. In sum, EPA believes that the public was provided ample opportunity for public comment, especially in light of the tight deadlines imposed by the statute for issuing a final rule.

A significant development that occurred during the public comment period was the release of the report of the peer review that EPA sought with respect to its proposed lifecycle analyses. We promptly added the report to the public docket, and the extension of the comment period allowed the public the ability to consider the peer reviewers comments in evaluating EPA's proposal and preparing their own written comments on the rule.

With regard to holding an additional hearing, we do not agree with the commenter's assessment. The proposed rule was signed by the EPA Administrator on May 5, 2009 and the signature version was made available on EPA's website the same day. The hearing date of June 9, 2009 was chosen due to the time constraints for completing the final rule. We do understand the commenters' point that our understanding and our stakeholders' understanding of key issues evolve as we consider public comments on the rulemaking, and for this reason, but we note that commenters had ample opportunity after the public hearing to submit written comments, as discussed above.

13.2 Carbon Capture and Sequestration (CCS)

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA's assumptions regarding carbon sequestration are flawed. EPA should revise its 80-year assumption for the final rule. EPA should also be using the same average age for carbon sequestration and for developing the emission factors for forest conversion. (2329.1, p.60)

The commenter noted that ethanol facilities have taken great strides in addressing GHG emissions, including carbon capture and sequestration projects, which are not reflected in EPA's pathways. EPA should allow facilities to submit a facility specific analysis in order for the facility to take advantage of the measures they are taking to reduce their overall carbon footprint. (2329.1, p. 99)

Document No.: EPA-HQ-OAR-2005-0161-1033
Organization: Poet Ethanol Products
Comment:
The commenter (1033.1) submits to EPA for consideration the concept that by capturing and making carbon dioxide available for commercial use, that Renewable Fuel Producers are displacing carbon dioxide that has been sequestered in the earth and would otherwise remain there were it not for its market value. Whether under an offshoot of the Carbon Capture and Storage program or as simply as being evaluated as a separate fuel pathway, the commenter believes this production process should be separately considered for its contribution to lowering GHG emissions. (1033.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2097

Organization: North American Carbon Capture and Storage Association (NACCSA)
Comment:
The commenter (2097) addresses the need for clear and cohesive regulation. For example, the Proposed UIC Rules are focused on protecting underground sources of drinking water (USDW) and cannot address, for example, issues related to use of CCS to satisfy existing or future emissions reductions requirements under the SDWA rulemaking. While recognizing the resulting necessity of some ad hoc rulemaking in the CCS context, NACCSA encourages the Agency to work toward creation of a comprehensive framework for CCS, rather than a patchwork of context-specific CCS provisions. (2097.1.pdf, p3)

The commenter (2097) suggests avoiding potential conflicts with the UIC program. EPA's Proposed RFS Rules identify a number of program elements that will require treatment in order for fuel producers to utilize CCS as a means to reduce life-cycle GHG emissions from fuels, these are listed on page 3, page4 and page 5 of the document. (2097.1.pdf, p3-5)

The commenter (2097) suggests developing a comprehensive framework and avoiding a regulatory patchwork. For example, rather than develop rules specific to the use of CCS in reducing life-cycle GHG emissions for RFS purposes, EPA should work toward development of a comprehensive regulatory framework for all aspects of a CCS project. (2097.1.pdf, p 5)

The commenter (2097) would welcome the opportunity to work with EPA in crafting an appropriate framework for CCS. (2097.1.pdf, p 5)

Document No.: EPA-HQ-OAR-2005-0161-2146
Organization: DuPont Applied BioSciences
Comment:
The commenter (2146.1) recommends no provisions for generating RINs based on carbon capture be allowed until approaches / means of CO2 capture, transportation and storage have been fully tested and regulated by the EPA. (2146.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2335
Organization: Edison Electric Institute
Comment:
The commenter (2335.1) believes that CCS technologies are a critical element in the full portfolio of options needed to reduce GHG emissions and combat climate change, and that the promise of CCS is not limited to its use in connection with coal-fired electricity production. The commenter applauds EPA for its recognition that CCS can be a key element in reducing the life-cycle GHG emissions of renewable fuels. Not only does EPA's acknowledgement lay the groundwork for use of CCS in reducing carbon dioxide (CO2) emissions associated with renewable fuels, it also serves to support commercial development and deployment of CCS technologies more generally. The commenter supports the development of clear, flexible and appropriately tailored regulatory regimes that will facilitate development of and investment in CCS technology and projects. Of particular importance in this context is the need to avoid piecemeal regulation of CCS. In particular, the commenter urges EPA to ensure that any monitoring requirements that may be considered for purposes of the Proposed Rules are not duplicative of potential SDWA monitoring requirements and do not impose additional

unnecessary burdens on CCS projects. (2335.1, p.4 & p.6) (See Docket Number 2335.1, pp.4-9 for a more detailed discussion of these issues)

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that the development and deployment of carbon capture and storage technologies is an important means of reducing GHG emissions. The commenter recommends that EPA should provide a mechanism for GHG reductions due to CCS to be credited for a given fuel pathway. The commenter believes that EPA should deem compliance with the UIC permit issued for CCS as adequate assurance that the monitoring and recordkeeping necessary to ensure the carbon is captured. These programs are designed to ensure this is occurring. This rule should not try to reinvent the wheel for the existing programs under which CCS are implemented. (2360.1, p.5)

The commenter noted that EPA requested comment on efficacy of capturing CO2 from combustion of fossil fuels. The commenter believes that EPA correctly concluded that immediate source CO2 for capture is that from fermentation. There are numerous issues to be resolved before combustion emissions will be efficiently captured, but that should not stop EPA from proposing an ethanol with CCS pathway. Such a pathway, which could be used now for ethanol fermentation, would be available for future use from fossil fuel combustion. (2360.1, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) states that EPA's proposed regulations do not provide any "pathway" or mechanism for a renewable fuel producer that captures and stores CO2 to use associated GHG reductions in establishing that a fuel qualifies for generation of RINs as either "renewable fuel" or "advance biofuel." The commenter recommends that EPA establish a process to expedite assignment of new D codes based on case-by-case demonstrations of the lifecycle GHG emissions of a particular fuel. The commenter urges EPA to clarify in RFS2 that, for purposes of any "additionality" analyses under carbon legislation and programs, while CCS systems may be used to qualify a fuel for a specific D code classification of renewable fuel, to the extent such systems are not necessary for a fuel to achieve a particular D code, any carbon reductions from CCS systems should be fully creditable as "additional" reductions or offsets. [[Docket number 2383.1, p. 62]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2303) believes that companies should be encouraged to pursue a broad suite of solutions, including carbon capture and storage (CCS), to reduce GHG emissions. However, establishing monitoring requirements and performance standards for CO2 leakage from CCS implies EPA support for a specific pathway for renewable fuel producers to reduce the GHG emissions associated with renewable fuel production. Additionally including CCS regulations in the RFS2 regulations would create a patchwork of requirements for CCS. The commenter

supports establishment of CCS regulations separately from the RFS regulation. Separate regulations would facilitate commercial deployment of this important technology while avoiding duplicative rules. If EPA chooses to include CCS requirements in the RFS regulation, the commenter offers suggestions on capturing CO2 from the combustion of fossil fuels for process heat, monitoring to demonstrate long-term storage of CO2, and performance standard for CO2 leakage during transport, injection, and/or geologic storage. [[Docket number 2393.1, p. 61]] [[See docket number 2393.1, pp. 61-65 for a detailed discussion of this issue.]]

Our Response:

EPA recognizes the necessity of clear and cohesive regulation regarding carbon capture and sequestration (CCS). We acknowledge the difficulty that conflicting and/or patchwork CCS regulations would impose on this developing technology; however the establishment of comprehensive CCS regulations is beyond the scope of this rule.

EPA has not finalized a pathway allowing a biofuel producer to generate RINs using carbon capture and storage to reduce lifecycle green house gas emissions to meet the thresholds in this rule. The many uncertainties surrounding CCS regulations, as well as the wide range of green house gas emission reductions achievable depending on how CCS is utilized, are primary factors in this decision. Biofuel producers who desire to generate RINs using CCS as part of their fuel production process will be eligible to petition EPA. Biofuels producers using CCS as part of their fuel production process will be considered to have a significantly different pathway than those described in Table V.C-7. For a description of the petition process see Section V.C of the Preamble. These petitions will be evaluated on a case by case basis. Biofuel producers who capture CO_2 for commercial sale, displacing naturally sequestered CO_2 that would otherwise be collected and used in a variety of industries, and desire to generate RINs are also eligible to petition EPA. In addition to the information that must be submitted as part of the petition process described in Section V.C of the Preamble, these biofuel producers must also demonstrate that the sale of this CO_2 replaces naturally sequestered CO_2 in the market.

13.3 Biodiesel Temperature Standardization

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) notes that Section 80.1426(d)(10) provides formulas for the standardization of volume for ethanol and biodiesel. However, paragraph (iii) in this section allows the standardization of volume for other renewable fuels to be determined by an appropriate formula commonly accepted by the industry which may be reviewed by the EPA for appropriateness. The commenter recommends that EPA extend this courtesy to biodiesel. [[Docket number 2233.2, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2249

Organization: National Biodiesel Board (NBB)
Comment:
The commenter (2249) requests that EPA revise its renewable identification numbers (RIN) temperature correction factors for biodiesel. The commenter has collected significant industry data and polled the commercial marketplace and is providing the following recommendations to EPA for temperature compensating biodiesel RINs:
-Allow the use of the API tables for temperature compensating of biodiesel RINs, or;
-Allow the use of the current EPA equation for calculating RINs with adjusted values contained below; and
-Require, under either scenario, that the method of temperature compensation (API tables, updated EPA formula) be recorded and disclosed by the biodiesel company for purposes of RIN generation on each RIN transaction. [[Docket number 2249.2, pp. 44-45]]

The commenter stands willing to work with EPA to fine tune the record keeping associated with this option. The commenter believes that the option above represents a significant step forward in simplifying the generations of RINs and harmonizing the RIN and sales gallon accounting systems of both biodiesel and obligated parties. This simplification will reduce the overall cost of compliance and significantly reduce the possibility of invalid RINs and the costs and lost productivity in dealing with possible invalid RINs. [[Docket number 2249.2, p. 46]] [[See docket number 2249.2, pp. 44-48 for further explanation of the rational and basis for this recommendation.]]

Document No.: EPA-HQ-OAR-2005-0161-2360
Organization: Archer Daniels Midland Company (ADM)
Comment:
The commenter (2360.1) noted that in September 2008, EPA published an equation for biodiesel volume corrections to be used to calculate RINs as part of the Renewable Fuel Standard. This equation utilized a coefficient of expansion of 0.0008008 for all biodiesel regardless of feedstock or processing. Now EPA is proposing to change the coefficient of expansion significantly to 0.00045767. The commenter recommends that EPA use the API values (widely used by traditional fuel suppliers) rather than the value proposed in that it is confusing to use different values for calculating RINs volumes and sales volumes. It is imperative to have a single, uniform calculation to apply throughout the industry. (2360.1, p.7-8) [[See Docket Number 2360.1, pp.7-8 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2157
Organization: World Energy Alternatives, LLC.
Notes:
The same comment has been submitted and posted multiple times under the following docket numbers: 2157-2157.1, 2294-2294.1, 2295-2295.1, 2296-2296.1, 2297-2297.1, 2298-2298.1, 2340-2340.1, 2226-2226.1, 2227-2227.1, 2293-2293.1, 2170-2170.1, 2159-2159.1. 2157 contains all of the summary information.
Comment:
The commenter (2157) requests that EPA revise its renewable identification numbers and temperature correction factors for biodiesel. Additional detail given on (2157 p. 41-26).

Document No.: EPA-HQ-OAR-2005-0161-2172.1
Organization: Minnesota Soybean Processors.
Comment:
The commenter (2172) requests that EPA revise its renewable identification numbers (RIN) temperature correction factors for biodiesel to the 2008 Minnesota Hedman equation.

Our Response:

The volume of a batch of renewable fuel can change under extreme changes in temperature. The volume of a batch of renewable fuel can experience expansion as the temperature increases, or can experience contraction as temperature decreases. The Agency requires temperature standardization of renewable fuels at 60 ° Fahrenheit (°F) so renewable fuel volumes are accounted for on a uniform and consistent basis over the entire fuels industry. In the May 1, 2007 Renewable Fuels Standard (RFS) final rule the Agency required biodiesel temperature standardization to be completed as follows:

$V_{s,b} = V_{a,b} X(-0.0008008 X T + 1.0480)$

Where

$V_{s,b}$ = Standard Volume of biodiesel at 60 degrees F, in gallons;

$V_{a,b}$ = Actual volume of biodiesel, in gallons;

T = Actual temperature of batch, in degrees F.

This equation was based on data from a published research paper by *Tate et al.* [1] Members of the petroleum industry have indicated that the current biodiesel temperature standardization equation in the regulations provides different results than that commonly used by both the petroleum and biodiesel industry for commercial trading of biodiesel. These commercial values are either based on American Petroleum Institute (API) tables for petroleum products or on empirical values from industry measurements at common temperatures and pressures observed in bulk fuel facilities. The difference between RIN calculated volumes and commercial sales volumes has created confusion within the record keeping system of both the petroleum and biodiesel industry.

In the RFS2 proposed rule, the Agency proposed the temperature standardization of biodiesel remain unchanged from the RFS1 requirements.[2] The Agency received comments from Archer Daniels Midland Company (ADM), World Energy Alternatives, Marathon Petroleum Company (Marathon), Minnesota Soybean Processors (MSP), and the National Biodiesel Board (NBB) to revise the biodiesel temperature standardization equation.

Both ADM and NBB agreed on the necessity for biodiesel temperature standardization at 60 °F. ADM, MSP, and NBB commented on several empirical calculations which have been developed specific to biodiesel temperature standardization since the 2007 RFS1 final rule. These include a 2004 data set developed by the Minnesota Department of Commerce and the

[1] Equation was derived from R.E. Tate et al. "The Densities of Three Biodiesel Fuels at Temperatures up to 300°C.", Department of Biological Engineering, Dalhousie University, April 2005. "Fuel 85 (2006) 1004-1009, Table 1 for soy methyl ester."

[2] 74 FR 24943, May 26, 2009.

Renewable Energy Group and updated in 2008; information embedded in the European Biodiesel Specification EN 14214; and information from the Alberta Research Council. The table below provides values from NBB for 1000 gallons of biodiesel standardized to a temperature at 60 °F for these empirical calculations, along with the current EPA equation, and the American Petroleum Institute (API) Refined Products Table 6.

Table 1: NBB Comparison of Biodiesel Temperature Standardization Calculations to 60°F for 1000 gallons of Biodiesel at 90°F

2007 EPA Biodiesel Formula	975.28 gallons
2008 Minnesota (Hedman) data	986.270 gallons
API Refined Products Table 6 (biodiesel density @ 7.359)	986.625 gallons
Alberta Research Council	986.238 gallons
EN 14214 data	986.401 gallons
2004 Minnesota Renewable Energy Group data	986.830 gallons

As illustrated by the results from the above table, the values for the various biodiesel temperature standardization empirical calculations are within 1 gallon of agreement of each other for a 1000 gallon biodiesel batch, except for the current biodiesel temperature standardization equation in the regulations.

To ensure consistency in RIN generation, ADM commented EPA should adopt only one biodiesel temperature standardization calculation. ADM commented that all biodiesel temperature standardization calculations developed, including the API Refined Products Table 6, are in very close agreement with each other and the differences between them all are insignificant. They further commented the API Refined Products Table 6 has provided a uniform measurement of volume for years for the entire liquid fuels industry. Thus, ADM believes the API Refined Products Table 6 should be adopted for biodiesel to be consistent with the calculation of sales volumes. Finally ADM comments adoption of the API Refined Products Table 6 would allow for easier verification within the marketplace, eliminate the need for calculating one volume for sales and trades and another for RINs, and prevents the entire distribution network from facing the financial burden of reprogramming existing meters that already are based on the API Refined Products Table 6.

NBB commented that earlier surveys from its members indicate a fifty-fifty split between members using the API Refined Products Table 6 or some variation of the current EPA biodiesel formula for biodiesel temperature standardization. Some NBB members indicated that the API Refined Products Table 6 was more commonly used by the petroleum industry and embedded into the meters, pumps and accounting systems of the petroleum industry. Companies already using the API Refined Products Table 6 would have a reduction in required paperwork with RIN generation and tracking because already existing commercial documents could serve that purpose and they thus could eliminate or reduce their current dual tracking system. Other NBB members have already embedded the current EPA biodiesel equation within their accounting and sales systems and would like to continue using that type of biodiesel temperature standardization approach rather than the API Refined Products Table 6. The NBB and MSP recommended EPA revise its current equation in the regulations to the 2008 Hedman biodiesel temperature

standardization equation. Thus, NBB commented EPA should provide flexibility to their members by allowing the use of either the API Product Table 6 or the use of a biodiesel temperature standardization equation.

Marathon commented the regulations allow for the standardization of volume for other renewable fuels to be determined by an appropriate formula commonly accepted by the industry which may be reviewed by the EPA for appropriateness. They recommended that EPA extend this courtesy to biodiesel.

The Agency acknowledges that the current biodiesel temperature standardization equation is likely not correct for biodiesel temperature standardization at ambient temperatures observed in the fuel distribution system. Based on the comments received, the Agency is amending the regulations to allow for two ways for biodiesel temperature standardization: 1) the American Petroleum Institute Refined Products Table 6B, as referenced in ASTM D1250-08, entitled, "Standard Guide for Use of the Petroleum Measurement Tables", and 2) a biodiesel temperature standardization equation that utilizes the 2008 data generated by the Minnesota Department of Commerce and the Renewable Energy Group. These two methods for biodiesel temperature standardization are within one gallon of agreement of each other for a 1000 gallon biodiesel batch and thus in very close agreement. ADM, MSP and NBB acknowledged that the differences between these two methods are insignificant and the resulting corrected volumes from these two methods of calculation are within accuracy tolerances of any metered measurement. Thus, the Agency believes the allowance of both of these methods for biodiesel temperature standardization will increase flexibility while still providing for a consistent generation and accounting of biodiesel RINs over the entire fuel delivery system.

13.4 Comments Outside Scope of the Proposal

13.4.1 Fuel Quality

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2465
Organization: Ford Motor Company
Comment:
The commenter believes that vehicle compatibility, refueling infrastructure improvement and appropriate pricing are all important to achieving the RFS2 goals; however, there is a need for strict adherence to fuel quality needs as outlined by automakers. Automakers are best suited to define the requirements for their engines and vehicles. As such, fuel experts from the auto industry worldwide have created the WorldWide Fuel Charter (WFFC). The WFFC includes guidelines for all transportation fuels including biofuels and was created to assist countries with implementation of transportation fuels. The commenter believes that both the base fuel as well as the final blended biofuel needs to meet minimum automaker fuel specifications. (2465.1, p.13)

The commenter also believes that ethanol should become an accepted transportation fuel. However, in order for ethanol to gain acceptance in the marketplace, it is essential to avoid the

kind of consumer backlash that developed with early and flawed diesel applications in the U.S. car market. (2465.1, p.14) (See Docket Number 2465.1, p.14 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter recommends against EPA including E85 quality specifications to the RFS2 regulation because it will be unnecessary to do so. (Docket Number 2132.1, pp.18-19) [[See Docket Number 2132.1, pp.18-20 for a detailed discussion on the ATSM Fuel Quality Standard for E85)

To the extent the expansion of renewable fuels in the marketplace may cause an increase in emissions, the commenter (2132.1) that EPA recognizes such increases will need to be mitigated through fuel quality changes and not through regulations on other sources. (2132.1, p.8)

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter (2143) suggests that if E85 must be regulated if it is expected to be a significant motor fuel. (2143.2, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2127
Organization: Caterpillar Inc
Comment:
The commenter notes that significant uncertainty with today's bio-diesel fuels (FAME), and despite their availability, there is a lack of adequate clarity to their effects, shorter term and longer term. Engine manufacturers need predictability and consistency of fuel in order to design future engine technologies. Because of this, engine manufacturers need adequate lead-time to develop the requisite technologies that offer optimum performance, coupled with the most cost effective GHG reductions. [[Docket number 2127.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2141
Organization: American Trucking Association
Comment:
The commenter (2141.1) noted that the rule does not require that fuel used to satisfy the biomass-based diesel portion of the mandate comply with ASTM D975. This oversight must be remedied to avoid potential damage and operating challenges for the legacy fleet. The commenter noted that last year, ASTM-International approved a modification to the on-road diesel fuel standard (i.e., ASTM D975), which will facilitate the use of biodiesel in blends up to five percent (B5). Five percent of the diesel fuel consumed by the U.S. trucking industry is 1.95 billion gallons almost double the amount mandated by RFS2. The commenter believes that requiring compliance with ASTM D975 will not impede the ability to achieve the biomass-based diesel targets under RFS2. There is no reason that EPA should not require fuel sold in the U.S. to meet this universally accepted standard. (2141.1, p.2)

The commenter also noted that the rule may result in certain obligated parties distributing blends of biodiesel that exceed five percent. These higher biodiesel blends do not meet the ASTM D975 standard. While renewable diesel that meets the ASTM D975 standard is expected to perform comparably to today's ultra low sulfur diesel (ULSD) fuel, first generation biodiesel has been shown to present operational challenges for the trucking industry as the blend rate increases. (2141.1, p.2) [[See Docket Number 2141.1, pp.3-5 for a detailed discussion of the operational challenges.]]

Document No.: EPA-HQ-OAR-2005-0161-2127
Organization: Caterpillar Inc
Comment:
The commenter (2127) is concerned about two interrelated issues: certification fuel and certification testing. The commenter believes it is very premature to discuss any changes to the current diesel engine certification testing process or the current certification fuel used in that process. Renewable fuels currently available in the marketplace significantly vary in compositions and quality. Engine manufacturers should not be required to test or otherwise demonstrate compliance to a variety of possible renewable fuels or blends. That would be extremely cumbersome, cost prohibitive, and not practical. [[Docket number 2127.1, p. 4]]

The commenter adds that an engine manufacturer should not be liable, or implicitly accountable, for emissions when a fuel different than the certification fuel, is used. Emissions certification tests are based on using a well-defined certification fuel and need to continue in this course. [[Docket number 2127.1, p. 4]]

The commenter states that EPA needs to provide assurance and enforcement for the technical and quality specifications for both renewable fuels and the resulting finished fuel blends in the market. The commenter states that such enforcement of current renewable fuels and finished fuels to the latest industry specifications and standards by EPA will be critical to the success of this renewable fuels initiative. The commenter (2127) believes that transparency to the end user about the "finished" fuel being purchased will be another important element of assuring the market about the quality and consistency of the transportation fuel pool. [[Docket number 2127.1, p. 4]]

The commenter urges EPA to work with Agency counterparts in other major geographic areas with the goal of achieving this global harmonization of renewable fuel specifications and standards. [[Docket number 2127.1, p. 4]]

Document No.: EPA-HQ-OAR-2005-0161-2127
Organization: Caterpillar Inc
Comment:
The commenter (2127) is concerned that the proposal does not address the demand side of renewable fuels, nor the compatibility of the mandated renewable fuels with current and future engine technologies. The commenter and the engine industry have long stressed that engine technology and fuels need to be developed together, as a "system", in order to address the needs of customers and society. The commenter believes that promoting much greater use of renewable fuels (by and through this RFS2 NPRM) should only be done in parallel with a thorough

investigation of the implications and compatibility of the various renewable fuels/fuel blends with the engine technologies. [[Docket number 2127.1, pp. 3-4]]

Document No.: EPA-HQ-OAR-2005-0161-0984
Organization: Citizen
Comment:
The commenter noted that the fuel quality standards currently in development by standards organizations in the U.S., Europe and Brazil tend to be feedstock neutral, performance-based standards. Achieving fuel production quality standards is a worthy goal because longer term, standardization of biofuels will hopefully enable us to more clearly identify the public health benefits of biofuels from an air pollution stand point. (0984, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2127
Organization: Caterpillar Inc
Comment:
The commenter states that EPA needs to provide assurance and enforcement for the technical and quality specifications for both renewable fuels and the resulting finished fuel blends in the market. The commenter states that such enforcement of current renewable fuels and finished fuels to the latest industry specifications and standards by EPA will be critical to the success of this renewable fuels initiative. The commenter (2127) believes that transparency to the end user about the "finished" fuel being purchased will be another important element of assuring the market about the quality and consistency of the transportation fuel pool. [[Docket number 2127.1, p. 4]]

Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) recommends that EPA combine the RFS2s increased renewable fuel production requirements with the necessary finished fuel specification requirements in a single comprehensive rulemaking package providing both the timing and logistics required to coordinate the production and use of the renewable fuel requirements as specified by EISA. (Page 10)

Document No.: EPA-HQ-OAR-2005-0161-2125
Organization: Mercedes Benz
Comment:
The commenter (2125.1) noted that there are a number of forms of biomass-based diesel, such as renewable (non-ester) diesel, which represent excellent solutions for meeting the aggressive EISA volumetric mandate for biomass-based diesel. These non-ester renewable diesels, such as biomass-to-liquid fuels and hydrotreated vegetable oil, do not present the types of performance and reliability problems associated with traditional biodiesel. In contrast, in order to use traditional biodiesel to meet the EISA mandates, these performance and reliability problems must be addressed. (2125.1, p.2) [[See Docket Number 2125.1, pp.2-3 for a detailed discussion of this issue.]]

Our Response:

The RFS2 final rulemaking is implementing the new provisions of section 211(o) of the CAA. In so doing, it is establishing a program for the generation and use of renewable credits (RINs) for fuels that meet the requirements for a renewable fuel under section 211(o). Other sections of the CAA address standards for and approvals for the use of fuels and fuel additives. New specifications for fuels and fuel additives and new mechanisms to enforce those requirements are outside the scope of the RFS2 rule. The current EPA requirements which apply to finished motor fuels will continue to apply to finished motor fuels which contain biofuels. For example in the case of diesel fuel used for highway consumption, such fuel must meet a 15 ppm sulfur specification which EPA enforces throughout the fuel distribution system.

13.4.2 Low Carbon Fuel Standard & Cap and Trade

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-0952
Organization: Renewable Fuels Association
Comment:
The commenter (2329.1) believes that EPA should preempt state programs designed to address carbon content and lifecycle analysis of fuels. The commenter believes that EPA should use its authority to preempt state low carbon fuel standards. (2329.1, p. 107) [[See Docket Number 2329.1, pp.107-108 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) questions EPA's discretionary authority to control fuels for GHG impacts. The commenter states that Congress has sometimes chosen to establish fuel standards itself rather than looking to EPA to rely on authority delegated by §2118 of the Clean Air Act to set those standards and believes that this is exactly what Congress did when it enacted EISA. EPA action under §2118 to set additional fuel standards such as a low-carbon fuel standard (LCFS) is unneeded and duplicative. [[Docket number 2393.1, pp 76-77 and 2523.1, pp. 2-3]] [[See docket number 2393.1, pp 76-78 for details of this discussion.]]

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) questions EPA's discretionary authority to control fuels for GHG impacts. The commenter states that Congress has sometimes chosen to establish fuel standards itself rather than looking to EPA to rely on authority delegated by §2118 of the Clean Air Act to set those standards and believes that this is exactly what Congress did when it enacted EISA. EPA action under §2118 to set additional fuel standards such as a low-carbon fuel standard (LCFS) is unneeded and duplicative. [[Docket number 2233.2, p. 66]] [[See docket number 2233.2, pp. 66-68 for additional discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2337

Organization: California Air Resources Board
Comment:
The commenter (2337.1) would like to see future RFS proposals reflect the existing standards in place in California's LCFS (low carbon fuel standard) in a variety of ways: California's LCFS avoids volumetric requirements and instead promotes carbon intensity reductions from a broad mix of fuels without applying set limits to individual fuels. No fuel production is "grandfathered", rather the LCFS applies a carbon intensity performance standard. Fuel producers are allowed to pursue the cost-effective mix of fuels of their choosing so long as they meet the overall emissions reduction requirement. (Page 5)

Document No.: EPA-HQ-OAR-2005-0161-2127
Organization: Caterpillar Inc
Comment:
Regarding a fuel-based carbon pricing mechanism, the commenter points out that there are two basic approaches to a "fuel based carbon pricing mechanism" (FBCPM). Including all transportation fuels under a "cap & trade" system would be one approach. The other approach would be a "carbon tax" on transportation fuels. The commenter believes this price based approach, or a market based approach would be technology neutral and would be the most efficient approach; hence, the comment recommends a FBCPM.

However, the commenter also believes that a FBCPM and a RFS can be complimentary approaches to mitigating GHG emissions and improving energy efficiency; and thus, are not necessarily mutually exclusive. They could possibly be implemented in concert with one another. [[Docket number 2127.1, p. 8]]

Our Response:

EPA through the RFS2 final rule is implementing the Renewable Fuel Standards program as required by Congress through EISA. Issues associated with State LCFS programs, and potential future Federal fuel standards, are not germane to the final RFS program. However, where possible we have attempted to structure the RFS2 program so as to be compatible with existing State LCS programs, including coordination on lifecycle modeling.

13.4.3 E15 Waiver

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) is concerned about retail dispensing and consumer acceptance of E10+ fuels. The commenter notes that the equipment at retail sites has only been approved for use with up to 10% ethanol and there are regulatory issues, safety consideration, and concerns with dispensing equipment to resolve. [[Docket number 2233.2, pp. 17-18]]

Document No.: EPA-HQ-OAR-2005-0161-2303
Organization: American Bakers Association
Comment:
The commenter (2303.1) believes that EPA should not increase fuel blend levels until advanced biofuels are available and the ongoing science has been completed. EPA should also ensure that it has its Science Advisory Boards (SAB) ethanol blends compatibility study completed prior to altering existing ethanol blend levels is significant. The commenter urges EPA to oppose proposals that recommend increasing the amount of corn ethanol that can be blended into gasoline. EPA should take the appropriate steps to bring advanced biofuels into the marketplace. According to the Grocery Manufacturers Associations study, more than half of the U.S. corn crop will be diverted from food and feed to fuel if EPA permits the use of E15, leading to significant increases in food and feed prices and potentially, creating food security issues for the U.S. population in the future. (2303.1, pp.1-2)

Document No.: EPA-HQ-OAR-2005-0161-2504
Organization: American Frozen Food Institute
Comment:
Commenter [[2504]] states that EPA should not increase fuel blend levels until advanced biofuels are available and the ongoing scientific research has been completed. And that EPA should oppose proposals that recommend increasing the amount of corn ethanol that can be blended into gasoline. [[#2504.1 p. 2]]

Document No.: EPA-HQ-OAR-2005-0161-0933
Organization: Citizen
Comment:
The commenter (0933) reports excellent performance of his FFV fleet and chainsaws using ethanol blends. The commenter suggests that EPA move the allowable blends upward until UL finishes the certification for E85, investment in pumps follow, E85 vehicles are brought to market with new technologies to maximize ethanol efficiency, and the public embraces high ethanol blends. The commenter also sees no issues with a voluntary cap of E15. [[See Docket Number 0933, pp.1-2]]

Document No.: EPA-HQ-OAR-2005-0161-2329
Organization: Renewable Fuels Association
Comment:
The commenter noted that EPA dedicated several pages of the preamble to the so-called “blend wall” issue. The commenter noted that the “blend wall” is largely irrelevant to the RFS mandate requirements. The commenter believes that this discussion is best addressed in context of the petition for a waiver that is currently pending before EPA, rather than as part of the final rule. Ultimately, allowing mid-level blends will be an important part of meeting the RFS2 volume requirements under the EISA, and EPA should move expeditiously to approve the waiver request or otherwise allow increased use of ethanol in gasoline. The commenter incorporated by reference its comments on the E15 waiver request (Appendix O). [[See Docket Number 2329.1, p. 107]]

Document No.: EPA-HQ-OAR-2005-0161-0964

Organization: Citizen
Comment:
The commenter (0694) asks EPA to consider potential damage to engines and invalidation of engine warranties as the amount of ethanol allowed in gasoline mixes rises. (P. 1)

Document No.: EPA-HQ-OAR-2005-0161-1397
Organization: United Refining Company
Comment:
The commenter (1397) is concerned that blending beyond E10 and B5 is the liability issue. If ethanol blends and biodiesel blends are to be increased above 10% by volume and 5% respectively, the commenter would need a liability waiver to protect against engine damage claims which could result in ruinously large expenses for defending such claims and paying judgments. (1397, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2102
Organization: RENTECH, INC
Comment:
Given the limited benefit that midlevel ethanol would have in helping EPA to achieve EISA mandates, the commenter (2102.1) believes it would be shortsighted to risk damaging vehicles and equipment that were not designed to operate on more than 10 percent ethanol. We support a careful review of the E15 waiver, as negative consumer experiences with midlevel ethanol would create a stigma in the marketplace against all renewable fuels and undermine the ability of ultimately achieving EISA mandates. (2102.1, pp.5-6) (See Docket Number 2102.1, p.6 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2105
Organization: Small Business Administration, Office of Advocacy
Comment:
The commenter (2105.1) believes that EPA should not approve the E15 waiver until definitive research has been conducted showing the viability of E15 for safe and effective use. Small refiners are concerned that the blending requirements will force them to produce E15 as the only alternative for the volume of ethanol that they must use, and doing so will cause damage to gasoline powered engines that will result in legal liability for the fuel producers. Until engine and vehicle producers certify their vehicles as safe for E15 use, and E15 is found through extensive research not to be harmful for already produced engines, EPA should not approve any E15 waiver and should instead find alternative methods for mitigating the blend wall stalemate. (2105.1, p.7)

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) opposes the proposal to approve E15 as gasoline and urges EPA to reject Growth Energy's petition for the following reasons:
(1) the science on the impact of mid-level ethanol blends on consumer safety, engine performance, and potential environmental harm has not been completed and likely will not be completed for at least two years;

(2) the information submitted by Growth Energy in support of its petition is a woefully inadequate foundation upon which to base such an important change in the nation's supply of gasoline;
(3) the potential approval of Growth Energy's petition is not an effective short- or medium-term solution to avoiding the "blendwall" problem caused by the increasing conventional biofuels volumes mandated under the Energy Independence and Security Act of 2007 and thus EPA should not rush such an important decision until a scientifically-based rationale can be reached regarding consumer safety, engine reliability, and environmental concerns of mid-level ethanol blends use in all gasoline-powered motor vehicles and engines in use in the United States; and
(4) this seemingly modest petition will, if granted, have wide-ranging implications on other federal and state fuels programs and will require a series of complex and lengthy rulemakings to harmonize these programs with the introduction of mid-level ethanol blends. (2124.1, p. 37)

The commenter also opposes the grant of a "partial waiver" to permit the use of mid-level ethanol blends in some gasoline-powered engines for the following reasons:
(1) it would cause significant disruption in the nation's wholesale and retail gasoline distribution infrastructure, widespread consumer confusion and potential misfueling, and potential liability for engine and fuel manufacturers for any damage caused to gasoline-powered engines not compatible with mid-level ethanol blends; and
(2) EPA does not have the statutory authority under Section 211(f) of the Clean Air Act to grant a partial waiver. (2124.1, p.38)

[[See Docket Number 2124.2 for detailed comments on this issue]]

The commenter also believes that there are several mid-level ethanol blend infrastructure compatibility issues; including OSHA regulations, EPA UST regulations, UST leak detection equipment, Fire Codes, and Vapor Recovery. (2124.1, p.38) [[See Docket Number 2124.1, pp.38-40 for a detailed discussion of this issue]].

The commenter proposes that EPA provide for conventional gasoline the blending flexibility EPA provides for reformulated gasoline (RFG). The commenter noted that EPA regulations allow retailers to sell non-ethanol-blended RFG that has been combined with ethanol-blended RFG under certain conditions ("commingling"). Providing this flexibility for conventional gasoline would provide flexibility while retail stations transition to ethanol-blended gasoline in the summer and transition out of ethanol-blended gasoline when there may be an ethanol shortage in a given area. (2124.1, p.41) [[See Docket Number 2124.1, pp.41-42 for a detailed discussion of this issue]]

Document No.: EPA-HQ-OAR-2005-0161-2130
Organization: ExxonMobil Refining & Supply Company (ExxonMobil)
Comment:
The commenter (2130) urges EPA to require that new vehicles be certified on E10 as it is the prevailing fuel in the marketplace. Moreover, if EPA subsequently grants a substantially similar waiver for an E10+ blend, the new E10+ blending level should become the new certification fuel for new vehicle production and testing. [[Docket number 2130.1, p. 11]]

The commenter believes that a mid-level blend substantially similar waiver is needed to permit growth in the use of ethanol as the RFS2 mandates intend. However, long term durability testing of the legacy fleet must be completed so the potential impacts of a mid-level blend waiver decision can be adequately assessed. In addition, the adequacy of distribution and retail infrastructure to accommodate mid-level blends must be assessed as well and a path available to enable any upgrading that may be needed. [[Docket number 2130.1, pp. 14-15]]

The commenter does not support a "testing tolerance" approach to avoid the full testing and analysis requirements of a substantially similar waiver. [[Docket number 2130.1, p. 15]]

In addition, the commenter states that when EPA reaches a decision regarding the Growth Energy waiver petition or any subsequent petition that may result in approval of a mid-level blend for use, EPA must clarify the status of the 1 psi RVP waiver for 10% ethanol blending. [[Docket number 2130.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) noted that one of the issues highlighted in the RFS2 rulemaking preamble is the possibility that EPA might partially grant the E15 waiver request, thereby allowing mid-level ethanol blends to be used in some, but not all, vehicles. EPA has rightly recognized that such a step would require careful implementation strategies to prevent the misfueling of vehicles and products that cannot safely use E15. The commenter believes that EPA still needs more data to determine whether any vehicles may successfully use E15, including models meeting Tier 2 emission standards as suggested in the proposed rule. Since E15 has not yet been proved safe for any vehicles, discussing ways to implement a split market may be premature. (2132.1, p.2) [[See Docket Number 2132.1, pp.21-23 for a detailed discussion E15 & E85)

With regards to the partial waiver implementation, the commenter noted that EPA asked for comment on a variety of ways to identify the fleet that might be allowed to use a higher ethanol blend, such as a model year cut-off or a technology group, such as Tier 2. This discussion is premature because we don't know yet what the research will show. Assuming some class of vehicles is shown capable of using some blend above E10, for discussion purposes, the commenter believes that EPA will need to clearly define the class and explain how the owners will learn what fuel is appropriate for their vehicle. (2132.1, p.26) [[See Docket Number 2132.1, pp.26-27 for a detailed discussion on the partial waiver implementation]]

Document No.: EPA-HQ-OAR-2005-0161-2147
Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) asserts that blends greater than E10 are not compatible with the existing spark ignition (SSI) engine powered equipment fleet.

They specify that data generated through DOE contracts for testing SSI engines confirmed that significant increases in regulated emissions were identified when engines were aged using E15

fuel. The combination of EPA's own experience with ethanol blends increasing evaporative emissions and DOE's experience with ethanol blends increasing exhaust emissions provides clear and compelling evidence that blends greater than E10 are not compatible with the existing SSI engine powered equipment fleet. While it does not appear that EPA is proposing to breach the E10 blend wall within the RFS2 NPRM, the substantial preamble discussion concerning the relationship between the RFS2 mandated ethanol volume and the ability to adsorb that volume with E10 and E85 blends, results in the obvious conclusion that EPA intends to make a change to finished fuel specifications at some point in the near future. (Page 8)

Additionally, the commenter (2147.1) raises strong objections to the bifurcated fuel distribution system where traditional gasoline (E10 maximum) and E85 would remain in the market but an additional category (E15, E20, etc.) would be introduced for use in a sub-set of existing non-flex vehicles. The commenter notes this is not viable for a number of reasons including: (i) fuel infrastructure; (ii) customer acceptance; (iii) misfueling of engines/vehicles; (iv) unintentional misfueling of small portable containers; and (v) potential to consume the volume of ethanol required by the proposed rule. (Page 8)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) believes there are many challenges related to the E10 blendwall, fuel distribution and the FFV fleet. After 2013, the volumes of ethanol mandated by EISA will be in excess of the market's capability to absorb under current regulations. If gasoline demand falls (as it is currently doing), there will be even less gasoline volume to absorb ethanol, and the blendwall would come sooner. In addition, it is unrealistic to believe that 100% of the gasoline pool will have 10% ethanol blended into every gallon. If only 95 or 90% of the gasoline pool blends ethanol, the blendwall could occur in 2012 or 2011. Regarding the distribution issues, the commenter states that huge sums of money will need to be invested in new infrastructure before either of the two proposed solutions (E85 and mid-level blends) have an impact on the blendwall. In addition E85 has marketing problems and mid-level ethanol blends require years of research before they can be introduced into the current fleet without creating very large liability concerns. [[Docket number 2233.2, pp. 15-16]] [[See docket number 2233.2, pp. 15-20 for further discussion of these issues.]]

The commenter also notes significant consumer acceptance issues associated with E85 that will make it an unworkable solution to the E10 blendwall problem. [[Docket number 2233.2, pp. 18-19]]

The commenter also states that the measurement tolerance for ethanol value can not be used to allow biofuels blenders to deliberately blend above the legal limit. [[Docket number 2233.2, pp. 32-33]]

The commenter urges EPA to reject the current Growth Energy E15 waiver application because the technical justification is inadequate, adding that the waiver application no more supports a partial waiver than it does a full waiver. [[Docket number 2233.2, p. 33]] [[See docket number

2233.2, pp. 33-38 and pp. 71-73, Attachment A for an extensive discussion of the issues of concern associated with the E85 waiver.]]

The commenter believes that EPA should change future vehicle certification fuel to E10 and that FFVs should be certified on E85 and E10. [[Docket number 2233.2, pp. 63-64]]

Document No.: EPA-HQ-OAR-2005-0161-2241
Organization: Outdoor Power Equipment Institute (OPEI); Alliance for a Safe Alternative Fuels Environment (AllSAFE)
Comment:
The commenter (2241.1) noted that EPA must not only consider companion provisions in Section 211, but it must also consider all other CAA Title II programs and ensure that the RFS2 is not causing unintended consequences in each class of regulated on-road and nonroad mobile sources. In addition to considering whether emissions failures are occurring and whether emissions are increasing (and mitigating those increases), EPA must also ensure that RFS2 mandates will never unintentionally result in de facto more stringent emission standards without first going through notice and comment rulemakings based on complete administrative records. (2241.1, p.6

The commenter (2241.1) recognizes the daunting challenges EPA faces in meeting the EISA mandate for 36 billion gallons of renewable fuel (including 16 billion gallons of cellulosic biofuel) by 2022. Adoption of provisions that promote mid-level ethanol will result in profound impacts on our nation's air quality and on the performance, efficiency, and operability of over 400 million pieces of legacy equipment. The commenter believes that EPA should promote fuels that will meet the EISA mandates and improve the emissions, performance and efficiency of engines, vehicles and equipment. Given the limited benefit that mid-level ethanol would have in helping EPA to achieve EISA mandates, the commenter believes it would be shortsighted to risk damaging vehicles and equipment that were not designed to operate on more than 10% ethanol. (2241.1, pp.7-8) (See Docket Number 2241.2 exhibit A, for more discussion on this issue)

To the extent EPA wants to pursue a "partial waiver" approach (or a similar approach), the commenter believes that EPA should initiate a separate future rulemaking process (under section 2118) and develop a well-supported, specific proposal and administrative record that carefully evaluates all the complex issues associated with potentially bifurcating the national fuel supply system through practical and specific proposals to avoid misfueling. (2241.1, pp.9-10) (See Docket Number 2241.1, pp.8-11 for more discussion on this issue)

The commenter also believes that the misfueling controls proposed by EPA fall short of those that were proven ineffective during the leaded gasoline transition. These include labeling of fuel inlets and pumps, notification to owners through outreach efforts and owner's manuals, and use of cards/transponders that would limit the dispensing of mid-level ethanol to flex-fuel vehicles. (2241.1, p.11) (See Docket Number 2241.1, pp.10-12 for more discussion on this issue)

The commenter is also concerned about the continued market availability of fuels with lower levels of ethanol. (2241.1, p.12) (See Docket Number 2241.1, pp.12-13 for more discussion on this issue)

Although not specifically mentioned in the RFS2 proposal, the commenter is concerned that illegal misfueling now occurs at existing blender pumps dispensing mid-level ethanol fuels and will continue to occur at even greater rates if gasoline stations are misled into believing they are not responsible, accountable, or liable for such misfueling. (2241.1, p.14) (See Docket Number 2241.1, pp.14-16 for more discussion on this issue)

The commenter noted that EPA solicited comment on the appropriateness of redefining the regulatory definition of ”substantially similar“ to include mid-level ethanol blends, specifically E12, thereby temporarily avoiding the need to obtain a waiver under CAA Section 211(f)(4). The commenter believes that this proposal would not appreciably affect the impending blend wall, as even E15 would only delay the blend wall for a few years. The commenter also believes that this would be contrary to Congress' clear intent in passing EISA. (2241.1, p.16) (See Docket Number 2241.1, pp.16-19 for more discussion on this issue)

The commenter does not believe it would be appropriate for EPA to institute a measurement tolerance for ethanol that would allow ethanol levels beyond 10%. The 10% ethanol limit has been in place for over thirty years without a measurement tolerance, which stands as clear evidence that such a tolerance is not needed to ensure that obligated parties can meet ethanol content limitations. (2241.1, p.20) (See Docket Number 2241.1, p.20 for more discussion on this issue)

Document No.: EPA-HQ-OAR-2005-0161-2312
Organization: LyondellBasell Industries
Comment:
The commenter (2312.1) believes that if EPA were to raise the oxygen level in the “Substantially Similar” interpretive rule for commercial gasoline so as to accommodate 12 volume percent ethanol or 15 volume percent ethanol, then the increased oxygen level should also apply to all aliphatic oxygenates compounds (alcohols and ethers) because these compounds have physical and chemical properties that make them more inert than ethanol blended in gasoline. The commenter also believes that if EPA should choose to relax any of the ASTM volatility specifications for the ethanol blended under the “sub-sim” rule, then it is appropriate to extend this same flexibility to blending the other oxygenates under the rule as well so as to not cause distorted incentives that make the fuel marketplace less efficient. (2312.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2328
Organization: Petroleum Marketers Association of America (PMAA)
Comment:
The commenter (2328.1) opposes any solution on overcoming an anticipated renewable fuel blend wall that includes introduction of a new mid-level ethanol blend without first fully addressing legacy equipment compatibility and liability issues. The commenter noted that EPA predicts that based on RVO mandates, a “blend wall” will be hit in 2013 without the approval of a new mid-level ethanol/gasoline blend in addition to the E-10 and E-85 blends currently available. Moreover, the EPA suggests the blend wall can be delayed until 2016 with an E-15 blend. The commenter also noted that there are many issues that must be resolved before a mid-level ethanol blend is an acceptable option to overcome a renewable fuel blend wall. The

proponents of a mid-level ethanol blend to meet renewable fuel volume mandates fail to properly consider the interaction of alcohol blends over 10 percent with the large and extensive network of existing petroleum storage and distribution equipment that is not designed to accommodate higher ethanol blends. (2328.1, p.4) [[See Docket Number 2328.1, pp.5-8 for a detailed discussion of the issues]]

Document No.: EPA-HQ-OAR-2005-0161-2358
Organization: Society of Independent Gasoline Marketers of America (SIGMA) and the National Association of Convenience Stores (NACS)
Comment:
The commenter (2358) states that the proposal to increase production of fuels containing more than 10% ethanol by providing waivers does not address the practical and legal problems with selling such fuels. One issue concerns the equipment used to store and deliver fuel to customers. A second set of issue concerns potential liability resulting from misfueling by customers. The commenter suggests that the only way to deal with these obstacles is for Congress to pass legislation insulating retails from liability, but if Congress doesn't act and EPA proceeds with the waiver, it should accompany the waiver with a notice and comment rulemaking on misfueling. [[Docket number 2358.1, pp. 12-13]]

Regarding redefining "substantially similar" to allow mid-level ethanol blends, the commenter states that they do not have sufficient information concerning the chemical and physical properties of mid-level ethanol blends and the effect such fuels have on emissions to comment on this issue. [[Docket number 2358.1, p. 15]]

Document No.: EPA-HQ-OAR-2005-0161-2383
Organization: Growth Energy
Comment:
The commenter (2383) is concerned that EPA's preliminary analysis and strategy, as described in the NPRM, appears flawed in that it fails to fully recognize the extent to which the petroleum "blend wall" hinders increased production and use of renewable fuels in the United States. EPA's strategy also relies too heavily on E-85 and flex fuel vehicles, and fails to recognize that approval and use of mid-level ethanol blends is essential to meeting EISA's mandates. The commenter believes that EPA should recognize and address the blend wall and also recognize and address that its reliance on E-85/FFVs is insufficient to meet near-term RFS2 volume mandates. The commenter urges EPA to support mid-level ethanol blends as the most efficient and effective way to satisfy EISA's volume mandates. [[Docket number 2382.1, pp. 63-64 and 2380.1, p. 3]] [[See docket number 2382.1, pp. 63-65 for further details of the blend-wall issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
The commenter (2384) states that in order to comply with the renewable fuel volume requirements, the industry will need to sell E10+ fuels throughout the country; however, it is not currently legal given the many federal and state laws governing fuel dispensing facility infrastructure nor has its safety for the public, workers, or the environment been demonstrated. [[Docket number 2384.1, p. 10]]

The commenter notes the current legal requirements for existing fuel dispensing facility infrastructure and suggests that the existing retail fuel outlet infrastructure cannot be legally used to dispense renewable fuels until further action is taken either by a nationally recognized testing laboratory to test those fuels with existing infrastructure or State Fire Marshals grant a waiver. [[Docket number 2384.1, p. 8]]

The commenter points out the significant risks to the motoring public, fuel dispensing facility workers, and the environment of renewable fuels incompatible with fuel dispensing facility infrastructure. Given the lack of testing of dispenser system components for use with E15+, the commenter believes that it is not yet possible to sell these fuels and comply with various legal requirements. [[Docket number 2384.1, p. 9]]

The commenter encourages EPA to consult with various Federal, State, and local agencies, associations, as well as other organizations to understand the issues related to the commenter's infrastructure concerns. [[Docket number 2384.1, pp. 10-11]]

The commenter is concerned with vehicle compatibility with E10+ blends and states that failing to properly test vehicles with new biofuel blends puts consumers and the environment at risk.

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) concludes that there are no easy answers to the E10 blend wall problem and encourages the Agency to provide clear and early general waiver notices to all stakeholders as the blend wall approaches. In addition, under the RFS1 obligated party requirements, some parties will reach the blend wall well in advance of others. Should this architecture be retained, the commenter believes that EPA must consider these aspects in its wavier analyses and response to blend wall issues. [[Docket number 2393.1, p. 19]]

The commenter does not support a "testing tolerance" approach to avoid the full testing and analysis requirements of a substantially similar (sub sim) waiver. The commenter believes that such a suggestion is merely an effort to avoid the substantive requirements of the Clean Air Act. The volume percentage of ethanol in gasoline is readily determined using very accurate volumetric ratio blending facilities now in place at most blending terminals. [[Docket number 2393.1, p. 28]]

The commenter has reviewed the Application for a Waiver Pursuant to Section 211(f)(4) of the Clean Air Act for E-1519 that was submitted to the EPA by Growth Energy on March 6, 2009. In the commenter's judgment, EPA should reject the current Growth Energy E15 waiver application because the technical justification is inadequate. [[See docket number 2393.2, Attachment 1 for comments on the E15 waiver request.]] The commenter believes that introduction of E15 blends is a significant fuel change that will result in oxygen content well outside the range for which U.S. vehicles and engines have been designed. Therefore, thorough vehicle and engine studies that develop robust, supportive data are needed to ensure that adverse

impacts are avoided. [[Docket number 2393.1, pp. 28-29]] [[See docket number 2393.1, pp. 28-32 and 2393.3, Attachment 2 for further discussion of this issue.]]

The commenter believes that the reasoning behind the Renewable Fuels Association's (RFA) request for a revised definition of "substantially similar" to allow for E12 blends and for those vehicle and engine types is flawed. RFA supports its request by claiming that E12 blends are substantially similar to fuels used in certified vehicles, but this is an incorrect comparison - by terms of the statute, the baseline for any comparison is the certification fuel. [[Docket number 2393.1, pp. 32-33]]

The commenter also requests that EPA require new vehicles be certified on E10 as it is clearly the prevailing fuel in the marketplace. [[Docket number 2393.1, pp. 33-34]]

Document No.: EPA-HQ-OAR-2005-0161-2394
Organization: National Marine Manufacturers Association (NMMA)
Comment:
The commenter's (2394.1) primary issue of concern is EPA's theoretical contemplation of the various mechanisms and desirability of introducing intermediate, or mid-level, ethanol blends into the fuels marketplace as a general purpose fuel. The commenter does not believe it is desirable to move to midlevel ethanol blends. (2394.1, p.2)

The commenter does not oppose the use of ethanol at 10 percent ("E10") or less in gasoline. There are cases where E10 has negatively and significantly impacted recreational marine engines and fuel systems, but through education regarding the proper storage of his type of fuel, boaters are slowly adjusting to managing this fuel in their marine applications. The commenter strongly encourages EPA to avoid utilizing mid-level ethanol fuel blends as a pathway to achieve RFS targets. (2394.1, p.2)

The commenter strongly urges the EPA to deny the Growth Energy waiver until a comprehensive evaluation of marine engines and fuel systems is conducted and the waiver requirements in the statute have been satisfied. (2394.1, p.3) [[See Docket Number 2394.1, pp.2-3 for a detailed discussion on the waiver of mid-level ethanol blends.]]

The commenter opposes any redefinition of "substantially similar," as is contemplated in the proposal. EPA solicits comment on whether it would be appropriate to redefine the regulatory definition in order to capture mid-level blends such as E12. The commenter does not believe such an action is appropriate, and would suggest that any internal agency action not subject to full public rulemaking with respect to mid-level ethanol blends would circumvent provisions in the Energy Independence and Security Act of 2007 (EISA), in which Congress clearly expressed its intention that mid-level fuels be fully studied. (2394.1, p.3)

The commenter noted that EPA solicited comment on the question of whether it is appropriate to institute a "measurement tolerance" and allow for the sale of E11. The commenter believes that this approach is neither appropriate nor helpful in meeting RFS targets, and therefore EPA should not pursue this. Allowing for E11, which is not tested, constitutes the first step toward and incremental creep of intermediate ethanol blends in the absence of a full and meaningful

dataset for the fuel on marine equipment and other on-road and non-road engines and vehicles. (2394.1, p.4)

The commenter also strongly opposes the granting of a so-called "partial" or "conditional" waiver that would allow the entry of mid-level ethanol blends in the market for general sale. (2394.1, p.4) [[See Docket Number 2394.1, pp.4-6 for a detailed discussion on this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2408
Organization: Advanced Biofuels Association
Comment:
One of the commenter's (2346) concerns about raising the blend wall is the degradation of ground level ozone associated with the higher vapor pressure associated with the higher blend. This is clearly a concern that EPA should weigh heavily in its protection of the public health and safety. Given that these advanced technologies may be available in the very near future, the commenter believes that EPA should seriously consider whether they might present a better environmental and market opportunity in lieu of waiving the current 10 percent blend requirements. (2346, p.5)

Document No.: EPA-HQ-OAR-2005-0161-2465
Organization: Ford Motor Company
Comment:
The commenter (2465.1) supports a renewable fuel standard as an enabler for the biofuel industry to expand production and distribution to meet our common energy security, climate change and economic goals. The goals of the RFS2 program will require a coordinated effort that:
- adequately informs consumers regarding pending changes to fuels; and
- protects manufacturers in cases of misfueling. (2465.1, p.2)

The commenter also endorses efforts to increase the ethanol content of base level blends beyond E10 provided collaboration with key stakeholders succeeds in addressing concerns with its use in the legacy fleet (i.e. vehicles that are on the road today, and that will continue to be on the road for the next several years, were not designed to operate on ethanol blends greater than 10% by volume). Expanding non-FFV capabilities beyond 10% by volume ethanol (E15 or E20) starting on some date certain in the future will help in achieving the RFS2 goals. (2465.1, p.2)

The commenter also noted that to successfully implement the RFS2 program, there is a need to expand vehicle and infrastructure compatibility in the form of expanding the capability of new non-FFV vehicles to accommodate ethanol blends beyond 10% by volume, while simultaneously implementing necessary improvements in refueling infrastructure. (2465.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2505
Organization: Shell Oil Products US
Comment:
The commenter (2505.2) does not believe that there is sufficient basis at this time to grant, in whole or in part, a substantially similar waiver for elevated levels of ethanol in gasoline. There is considerable ongoing effort to evaluate the potential effects of increased ethanol levels on

automobile emission control devices through the Coordinating Research Council. The commenter believes that EPA will not have sufficient data to consider the petition until such time that work is completed. EPA should also recognize that the blendwall is fast approaching and approving higher levels of ethanol in gasoline by issuing a substantially similar waiver is not a "silver bullet" solution. (2505.2, p.16)

Document No.: EPA-HQ-OAR-2005-0161-2309
Organization: Grocery Manufacturers Association, National Council of Chain Restaurants, and Snack Food Association
Comment:
Commenter [[2309]] urges EPA to oppose proposals by some corn ethanol companies to increase by 50 percent the amount of corn ethanol that can be blended into gasoline. [[#2309.1.p.2]] Bob

Our Response:

Comments related to the potential introduction of a mid-level ethanol blend for use in conventional vehicles (or a subset of conventional vehicles) will be addressed in EPA's response to the petition that EPA grant a waiver to allow the use of a mid-level ethanol blend in conventional vehicles.

13.4.4 General Waiver Authority

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
The commenter (2233) stated that EPA needs to be proactive in initiating waivers in order to fairly treat obligated parties and maintain market stability. Failure to issue timely of proactive waivers will risk the inability of the entire industry to comply and a complete collapse of the RFS2 program.

The commenter believes that EPA must immediately begin preparations for changing the regulations and granting appropriate waivers to keep the RFS2 program from becoming uncomplyable. EPA can not wait until a large number of obligated parties end a year in a RIN deficit position. The one year RIN deficit carryover provision should be designed to help individual company compliance not as a temporary patch for an infeasible biofuels program. It is illegal for EPA to establish a program where compliance is impossible. [[Docket number 2233.2, pp. 19-20]]

Document No.: EPA-HQ-OAR-2005-0161-2129
Organization: Clean Air Task Force, Environment America, Environmental Working Group, Friends of the Earth, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, Union of Concerned Scientists, The Wilderness Society and World Resources Institute

Comment:
The commenters (2129.1) noted that EPA has the authority under Section 211(o) of the Clean Air Act to issue a waiver that decreases the volume of renewable fuels required under the RFS in order to avoid severe environmental harm. The production of renewable fuel can be harmful to water quality, water quantity, biodiversity, soil health, and the climate, but it can also be done in a way that is beneficial to these natural resources. If it can be demonstrated that the RFS mandate is driving increased production of biofuels in a way that damages these resources, this would provide a basis for granting a waiver from the RFS. The EPA Administrator could target of the use of the waiver authority by decreasing the quantity of environmentally damaging conventional biofuels, such as corn ethanol, that is required under the RFS2, without reducing the volumes those types of biofuels that are not found to cause the same level of environmental damage. (2129.1, p.12)

The commenters are particularly concerned with environmental harm because a significant amount of ethanol will be grandfathered in this rule and will not have to comply with the GHG reduction requirement. Even if EPA adopts an appropriately narrow interpretation of the EISA's grandfathering provisions, approximately 13 billion gallons of corn ethanol will still be grandfathered under the RFS2, which could result in the adverse climate and water quality effects. Both of the major environmental problems associated with corn ethanol- nitrogen pollution and GHG emissions - would provide bases for granting a waiver from the RFS. (2129.1, p.12)

Document No.: EPA-HQ-OAR-2005-0161-2138
Organization: American Meat Institute, National Chicken Council, National Turkey Federation, Farm Econ LLC
Comment:
Commenter [[2138]] states our energy supply is currently based largely on petroleum and other fossil fuels. Annual variation in production of these fuels is very small compared to U.S. corn and soybeans. As the chart below shows year-on-year variation for both feedstock crops dwarfs the variability of both U.S. and global crude oil production. The potential consequences of this risk of production variation for the U.S. food and fuel economy are becoming more significant as the RFS grows and we become more dependent on agriculture for our fuel supply. More importantly, the RFS also creates inflexibility in the use of key crops for food versus fuel uses. In the event of a major crop production failure an unchanging RFS would force a disproportionate share of the adjustment on the food production sector. In the interest of transparency and market certainty we would strongly suggest that USDA and EPA establish published guidelines for adjustments to the RFS in the event of a shortage of biofuel feedstocks, most importantly corn and soybeans. This would offer all commodity users, including ethanol producers, a degree of certainty missing in the current RFS adjustment mechanism. We believe that such a system would fall within the language of EISA and the intent of Congress. [[2138 p.3]]

Document No.: EPA-HQ-OAR-2005-0161-2248
Organization: Iogen Corporation
Comment:

The commenter (2248.1) believes that EPA should give consideration to the significant potential for the market forces to play out in such a way as to resolve the blendwall without regulatory relief. If EPA wants to encourage market forces that can assist with its not insignificant efforts to address the challenges posed by the blendwall, it should make clear in the final RFS rule that high RIN prices alone would not constitute sufficient grounds for the government to waive the RFS. (2248.1, pp.9-10)

Document No.: EPA-HQ-OAR-2005-0161-2107
Organization: Goldsboro Milling Company
Comment:
The commenter (2107.1) would like to remind EPA that there remains no provisions in the RFS program that provide a safety net in the event of a corn supply shortfall or emergency. Without a safety net or the ability to predict Mother Nature, these policies continue to be inflexible mandates that have and will again cause devastating effects on consumers, producers, rural businesses, and even government feeding programs that rely livestock, poultry, and dairy products. (2107.1, p.2)

Our Response:

The issues raised by the commenters are outside the scope of the RFS2 rulemaking itself, but rather relate to potential future waivers of the RFS2 standards. EISA provides general waiver authority for the RFS2 standards similar to that provided for the RFS1 standards under EPAct 2005, as well as waiver authority specific to the biomass-based diesel standard and the cellulosic biofuel standard. This waiver authority will be exercised in the future as necessary and appropriate, and the nature of any waiver action taken will be determined based on the specific situation at the time. In the past EPA received a waiver petition for the RFS1 standards from the State of Texas. While we denied that petition, our response to it (*73 FR 47168, August 13, 2008*) provides guidance for future waiver petitions. Approval of a general waiver petition would impact the national RFS program even though a petition may be based on severe economic harm or severe environmental harm to a State, a region, or the U.S. as a whole, or inadequate domestic supply. Any petition for a waiver will be evaluated based on the sufficiency of information provided and merit of the petition. The guidance indicates that EPA will look for an applicant's petition to include information and robust analyses that address the impacts of implementing the RFS and the nature and degree of harm associated with the impacts of the RFS. The Agency may grant a waiver under its general waiver authority for no more than one year unless renewed by the Administrator, and suggests that an applicant's petition be received at least six months prior to the requested start date of the requested waiver or three months prior to termination of a waiver if renewal is desired.

13.4.5 EPA Requirements for E85 Blenders and Compositional Gasoline Blendstocks Used to Manufacture E85

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2393

Organization: American Petroleum Institute (API)
Comment:
The commenter (2393) strongly urges EPA to include, as EPA suggests, a separate section in the RFS2 discussing the rules for production of E85. The commenter believes that there are a sufficient number of issues raised by the overlap of regulations governing the manufacture and distribution of gasoline (some are raised by EPA in this rulemaking) to justify such an undertaking. In addressing E85, the commenter urges EPA to focus on:

1. The RFS2 NPRM statement: "The RFG and anti-dumping regulations currently require certified gasoline to be blended with denatured ethanol to produce E85." The commenter can find no explicit mention of this in the RFG or anti-dumping regulations nor any support for it.
2. The need for an E85 producer to register as a refiner.
3. Assurance that if E85 is made from a blendstock that is not finished gasoline, that the blending of the blendstock, vapor pressure enhancing material and ethanol does not produce an obligation for registration as a refiner under either RFG or the RFS or any other gasoline regulatory program.

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) objects to an E85 producer registering as a refiner. (2124.1, p.21)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
EPA states that the RFG and anti-dumping regulations currently require certified gasoline to be blended with denatured ethanol to produce E85. The commenter believes that EPA is incorrect in this interpretation. The hydrocarbon blend components for producing E85 do not have to meet gasoline regulations. This hydrocarbon blending component does not have any RFG and anti-dumping standards. The commenter also believes that EPA incorrectly states that if terminal operators add blendstocks to finished gasoline for use in manufacturing E85, the terminal operator would need to register as a refiner with EPA and meet all applicable standards for refiners. The commenter points out that ethanol producers are currently blending finished gasoline to produce E85 and EPA does not require them to register as refiners. EPA needs to treat terminal operators and ethanol producers in an equivalent manner when they blend E85. [[Docket number 2233.2, pp. 22-23]]

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter recommended giving E85 manufacturers who use blendstocks the maximum possible flexibility to blend ASTM compliant E85 using the lowest cost blendstocks, to help ensure a plentiful supply of competitively priced E85. [2132]

Document No.: EPA-HQ-OAR-2005-0161
Organization: Magellan Midstream Partners

Comment:
The commenter states that as a matter of fairness, E85 manufacturers who use blendstocks like butane to produce E85 should be required to fully comply with EPA's refiner requirements.

Our Response:

EPA's policy regarding the registration of E85 blenders and the compositional requirements for the gasoline blendstocks used in the manufacture of E85 is outside the context of this rule.

13.4.6 Other Comments Outside Scope of the Rule

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2143
Organization: New York State Department of Environmental Conservation
Comment:
The commenter suggests that the new vehicle and engine certification needs to be modified to reflect the use of ethanol and E85. (2143.2, p.11)

Document No.: EPA-HQ-OAR-2005-0161-2393
Organization: American Petroleum Institute (API)
Comment:
The commenter requests that EPA clarify the legality of the use of retail blender pumps for dispensing blends between E10 and E70. [[Docket number 2393.1, p. 70]] [[See docket number 2393.1, pp. 69-70 for discussion of this issue.]]

Our Response:

The potential need to modify EPA's vehicle and engine certification requirements associated with the use of ethanol and E85 is outside the context of this rule.

Regarding the comment on the legality of the use of retail blender pumps, EPA issued two letters regarding the status of blender pumps dispensing such ethanol blends. These letters state that the fuel dispensed from such pumps may only be used in flexible fuel vehicles.[3] EPA intends to evaluate whether additional EPA labeling requirements are needed for such blender pumps outside that context of this rule. We deferred the consideration of such potential labeling requirements until after EPA completes its evaluation of the petition to allow E15 blends to be used in conventional fuel vehicles since the decision on this petition may impact the text on the labels.

13.5 Other

[3] Letter from Adam Kushner, EPA to Bob Greco, API, dated July 31, 2008. Letter from Margo Oge, EPA, to Dawna Leitzke, South Dakota Petroleum and Propane Marketers Association, dated Nov 28, 2006.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2020
Organization: European Commission
Comment:
The commenter (2020) believes that the U.S. and EU should use procedures and definitions that as similar as possible in terms of sustainability and GHG requirements for biofuels, this will facilitate the trade between the two jurisdictions. (2020.1, p.3)

Our Response:

Many aspects of the RFS program were mandated by statute, including the definitions and GHG thresholds for renewable fuels. However, we agree that it would be beneficial to coordinate on other aspects of biofuels, such as lifecycle modeling, data and assumptions and tracking of sustainability measures for renewable biomass used to produce renewable fuels.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2124
Organization: National Petrochemical and Refiners Association (NPRA)
Comment:
The commenter (2124.1) understands that EPA's current interpretation of 40 CFR 80.78(a)(5) and (7) is that this regulatory section prohibits the addition of ethanol to a commingled mixture of RBOB and conventional gasoline (or "CBOB" blendstock material). The commenter proposes that the prohibitions in §80.78(a)(5) and (7) be appropriately changed to allow RBOB to be added to a tank of CG (or a tank of CBOB blendstock material) before the addition of ethanol at the terminal rack for sale in a conventional gasoline market. The additional flexibility being requested here would be most helpful in two areas: (1) achievement of the mandated renewable fuel mandates in RFS1, and the soon to be promulgated RFS2, and (2) help in relieving distribution and supply issues that occur unexpectedly, as well as during natural disasters such as during hurricane season. (2124.1, p. 40-41)

Document No.: EPA-HQ-OAR-2005-0161-2384
Organization: BP America (BP)
Comment:
Regarding the need for EPA to allow commingling of RBOB and conventional gasoline, the commenter (2384) points to issues with the sequence of commingling at §80.78(a)(5) and (7) and provides suggestions to allow for flexibility. [[Docket number 2384.1, pp. 12-13]]

Our Response:

The regulations cited in the comment do prohibit blending RBOB with, among other things, conventional gasoline or conventional gasoline blendstock. This is necessary, among other reasons, to assure that RBOB is blended with the proper amount and type of oxygenate, as directed by the refiner. After that blending takes place, the reformulated gasoline may be

distributed for use in RFG areas but may also be distributed into conventional gasoline areas. If blending with conventional gasoline or blendstock were allowed, the resultant product could not be sold as RFG and the refiner(s) who produced the RBOB would be giving themselves inappropriate credit for having produced RFG containing a certain amount of ethanol. The regulations do not currently have provisions for CBOB. There are only the provisions in §80.101(d)(4) (and related provisions in the Gasoline Sulfur rule and the Mobile Source Air Toxics (MSAT) rule) relating to when a refiner is allowed to count downstream added oxygenate in its anti-dumping compliance calculations. There are not regulations for CBOB that could be used to account for CBOB in fungible, complex distribution systems. To the extent that the commenters seek changes to existing regulations other than those implementing section 211(o), those comments are outside the scope of this rulemaking.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2521
Organization: Conservis Corporation
Comment:
The commenter (2521.1) noted that they are aware of certain industry challenges to the proposed rules on the grounds that the mandate would create an untenable information management burden to industry, and that implementation of the rules would be technologically infeasible. We respectfully submit that neither concern is well-founded. The commenter's compliance platform is currently being configured to work with the EPA's EMTS system for managing all aspects of the Renewable Identification Number (RIN) program. The commenter understands the many challenges that exist in implementing the Renewable Land Source Tracking Program. The commenter's compliance software is readily adaptable to meet the mandates of the Renewable Land Source Tracking Program, including registering land source uses with supporting documentation and, if desired, satellite imagery verification. If EPA would like to see this, the commenter would be pleased to demo the software any time. (2521.1, pp.1-2)

Our Response:

EPA has attempted, as the commenter notes, to adopt feasible information management requirements. The final rule has adopted requirements that producers or importers of renewable fuel provide mapping data for plots of land where certain types of feedstocks are harvested, except to the extent that their feedstock is verified as renewable biomass through the aggregate approach.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-1036
Organization: Vision FL I, LLC
Comment:

The commenter (1036.1) advises that EPA considers changing Tables III.A-1, and III.A.2-1 to reflect a stronger focus on GHG reductions, and not fuel category definitions as it currently stands. (1036.1, p.2)

Document No.: EPA-HQ-OAR-2005-0161-2233
Organization: Marathon Petroleum Company (Marathon)
Comment:
Referring to the review of EPA's RFS2 DRIA performed by the American Petroleum Institute (API), the commenter (2233) points to concerns with the DRIA's assumed renewable fuel types, fuel volumes, vehicle technology changes, and emission levels. [[Docket number 2233.2, p. 61]] [[See docket number 2233.2, pp. 60-63 for an extensive discussion of this issue.]]

Document No.: EPA-HQ-OAR-2005-0161-2147
Organization: Engine Manufacturers Association
Comment:
The commenter (2147.1) suggests that the final rule clarify that production requirements for renewable fuel volumes imposed by the regulation do not circumvent EPA's regulatory controls in place for gasoline or diesel fuel finished fuels. (Page 11)

Our Response:

We appreciate the commenters' concerns and comments, and we note that these items are responded to throughout the RIA and preamble to the final rule. Regarding the comment that EPA should change Tables III.A-1 and 2, please see Section II of the preamble (as well as §80.1426 of the regulations) for a discussion on changes to D codes and D code definitions. With regard to concerns with assumptions made in the Draft RIA, please see the Final RIA for a discussion on our analysis regarding these items.

What Commenters Said:

Document No.: EPA-HQ-OAR-2005-0161-2308
Organization: Environmental Defense Fund
Comment:
The commenter (2308.1) would like to state that ultimately the most effective tool to address emissions from tropical deforestation is the enactment of federal legislation and an international framework that compensate developing countries for reducing all emissions from deforestation and degradation. (Page 2)

Document No.: EPA-HQ-OAR-2005-0161-2048
Organization: BioPure Fuels
Comment:
The commenter (2048.1) recommends that EPA work to develop a guidance document for the sugar cane ethanol industry that suggests best practices for conversion of sugar cane to biofuel from an analysis of best available technology. This guide would immediately be used by the

U.S. and global sugar cane industry to achieve maximum biofuel production from all cane biomass that leads to the best possible carbon benefits. (2048.1, p.10)

Document No.: EPA-HQ-OAR-2005-0161-2155
Organization: Petroleum Marketers and Convenience Stores of Iowa (PMCI)
Comment:
The commenter (2155.1) believes that legislative solutions must be formulated in order to limit the liabilities put upon the retailer for those situations where an end-user places the fuel in a non-FFV which is not warranted for such a fuel. Furthermore, additional protections will be necessary for the equipment dispensing blends greater than E10. (2155.1, p.3)

Document No.: EPA-HQ-OAR-2005-0161-2132
Organization: Alliance of Automobile Manufacturers
Comment:
The commenter (2132.1) thinks that EPA's analysis of the current and future renewable fuel markets and the associated impacts of various scenarios to be commendable, especially considering the number of very complex and novel issues and the short amount of time available to conduct the analyses. The annual rulemaking process will allow EPA to adjust its volume targets as needed for the renewable fuel industry's production capabilities. (2132.1, p.7) [[See Docket Number 2132.1, pp.24-25 for a detailed discussion of this issue]]

Our Response:

We appreciate the commenters' concerns and comments, however these comments are not germane to finalizing the RFS2 final rule. Other government programs are designed to help assess and develop fuel and feedstock technology, and legislative measures are outside the scope of EPA's authority for this rule.