**May 25, 2010**

**MEMORANDUM**

**TO:** Air Docket EPA-HQ-OAR-2005-0161

**SUBJECT:** Docket Key for Renewable Fuel Lifecycle Greenhouse Gas (GHG) Emissions Results

To facilitate docket navigation, EPA is providing the following directory to lifecycle analysis (LCA) results available on the rulemaking docket. EPA's lifecycle analysis as part of revisions to the Renewable Fuels Standard (RFS2) Program is explained in the preamble and in the Regulatory Impact Analysis for the RFS2 Final Rule. The documents listed below documents, as well as additional RFS2-related information, are available at www.regulations.gov under Docket ID: EPA-HQ-OAR-2005-0161.

| Subject Heading | Docket ID Number | Description / Scenario |
|---|---|---|
| **Lifecycle GHG Results** | | |
| | EPA-HQ-OAR-2005-0161-3173 | Memorandum describing spreadsheets that calculate fuel-specific lifecycle GHG emissions reductions compared to the petroleum baseline |
| | EPA-HQ-OAR-2005-0161-3173.6 | Corn ethanol |
| | EPA-HQ-OAR-2005-0161-3173.5 | Corn ethanol produced with CHP technologies |
| | EPA-HQ-OAR-2005-0161-3173.8 | Corn ethanol (high yield crop assumptions) |
| | EPA-HQ-OAR-2005-0161-3173.7 | Corn ethanol produced with CHP technologies (high yield crop assumptions) |
| | EPA-HQ-OAR-2005-0161-3173.1 | Corn-based butanol |
| | EPA-HQ-OAR-2005-0161-3173.9 | Biodiesel from soybean oil and waste grease |
| | EPA-HQ-OAR-2005-0161-3173.10 | Biodiesel from soybean oil and (high crop yield assumptions) |
| | EPA-HQ-OAR-2005-0161-3173.11 | Sugarcane ethanol |
| | EPA-HQ-OAR-2005-0161-3173.12 | Sugarcane ethanol with trash collected for process energy |
| | EPA-HQ-OAR-2005-0161-3173.2 | Corn stover ethanol produced with biochemical conversion technology |

| Subject Heading | Docket ID Number | Description / Scenario |
|---|---|---|
| | EPA-HQ-OAR-2005-0161-3173.3 | Corn stover biofuel produced with thermochemical Fischer-Tropsch conversion technology |
| | EPA-HQ-OAR-2005-0161-3173.4 | Corn stover biofuel produced with thermochemical mixed-alcohols conversion technology |
| | EPA-HQ-OAR-2005-0161-3173.13 | Switchgrass ethanol produced with biochemical conversion technology |
| | EPA-HQ-OAR-2005-0161-3173.14 | Switchgrass biofuel produced with thermochemical Fischer-Tropsch conversion technology |
| | EPA-HQ-OAR-2005-0161-3173.15 | Switchgrass biofuel produced with thermochemical mixed-alcohols conversion technology |
| | EPA-HQ-OAR-2005-0161-3173.16 | RFS2 full volumes scenario (i.e., the Control Case) |
| **2005 Petroleum Baseline Lifecycle GHG Results** | | |
| | EPA-HQ-OAR-2005-0161-3151 | Memorandum to docket describing spreadsheets that calculate petroleum baseline lifecycle GHG emissions |
| | EPA-HQ-OAR-2005-0161-3151.1 | Lifecycle calculations for the gasoline baseline, diesel baseline, tailpipe values for ethanol and biodiesel, and land-use change emissions due to oil sands production |
| | EPA-HQ-OAR-2005-0161-3144 | Documentation for the Petroleum-Based Fuels Lifecycle GHG Analysis-2005 Baseline Model |
| **Lifecycle GHG Impact Calculations** | | |
| | EPA-HQ-OAR-2005-0161-3174 | Memorandum describing spreadsheets that calculate GHG emissions per British thermal unit (BTU) of renewable fuel |
| | EPA-HQ-OAR-2005-0161-3174.6 | Corn ethanol |
| | EPA-HQ-OAR-2005-0161-3174.5 | Corn ethanol produced with combined heat and power (CHP) technologies |

| Subject Heading | Docket ID Number | Description / Scenario |
|---|---|---|
| | EPA-HQ-OAR-2005-0161-3174.7 | Corn ethanol produced with CHP technologies (high crop yield assumptions) |
| | EPA-HQ-OAR-2005-0161-3174.4 | Corn-based butanol |
| | EPA-HQ-OAR-2005-0161-3174.10 | Biodiesel from soybean oil and waste grease |
| | EPA-HQ-OAR-2005-0161-3174.11 | Biodiesel from soybean oil (high crop yield assumptions) |
| | EPA-HQ-OAR-2005-0161-3174.12 | Sugarcane ethanol |
| | EPA-HQ-OAR-2005-0161-3174.13 | Sugarcane ethanol with trash collected for process energy |
| | EPA-HQ-OAR-2005-0161-3174.8 | Corn stover biofuel |
| | EPA-HQ-OAR-2005-0161-3174.14 | Switchgrass biofuel |
| | EPA-HQ-OAR-2005-0161-3174.1 | Algae-based biofuel (aggressive case) |
| | EPA-HQ-OAR-2005-0161-3174.2 | Algae-based biofuel (base case) |
| | EPA-HQ-OAR-2005-0161-3174.3 | Algae-based biofuel (maximum case) |
| | EPA-HQ-OAR-2005-0161-3174.9 | RFS2 full volumes scenario (i.e., the Control Case) |
| **FAPRI-CARD Model Results** | | |
| | EPA-HQ-OAR-2005-0161-3153 | Memorandum describing spreadsheets with LCA results from the FAPRI-CARD model |
| | EPA-HQ-OAR-2005-0161-3153.1 | FAPRI-CARD model results for lifecycle GHG analysis |
| **FASOM Model Results** | | |
| | EPA-HQ-OAR-2005-0161-3150 | Memorandum describing spreadsheets with LCA results from the Forest and Agricultural Sector Optimization Model (FASOM) |
| | EPA-HQ-OAR-2005-0161-3150.1 | FASOM LCA results for ethanol from corn, corn residue and switchgrass, and biodiesel from soy oil and waste grease |
| | EPA-HQ-OAR-2005-0161-3150.2 | FASOM LCA results for corn ethanol and biodiesel from soy oil in high crop yield scenarios |

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|---|---|---|
| **International Land Use Change Stochastic Analysis** | | |
| | EPA-HQ-OAR-2005-0161-3152 | Memorandum describing documentation for EPA's stochastic analysis of biofuel-induced land use change GHG emissions impacts |
| | EPA-HQ-OAR-2005-0161-3152.1 | Documentation for EPA's stochastic analysis of biofuel-induced land use change GHG emissions impacts |
| | EPA-HQ-OAR-2005-0161-3152.2 | Spreadsheet model and results from EPA's stochastic analysis of biofuel-induced land use change GHG emissions impacts |
| | EPA-HQ-OAR-2005-0161-3152.3 | MODIS V5 satellite data confusion matrix calculations |
| **International Land Use Change Satellite Data and Emissions Factors** | | |
| | EPA-HQ-OAR-2005-0161-3163 | Report describing updates to the land cover change and emission factor estimates used in EPA's analysis |
| | EPA-HQ-OAR-2005-0161-3163.1 | Land use change emissions factors used in EPA's lifecycle analysis |
| **Foreign Agricultural Emissions Impacts** | | |
| | EPA-HQ-OAR-2005-0161-3175 | Memorandum describing data and results for foreign agricultural GHG emissions impacts |
| Foreign Agicultural Energy Use GHG Emissions Impacts | | |
| | EPA-HQ-OAR-2005-0161-3175.1 | Corn ethanol scenario |
| | EPA-HQ-OAR-2005-0161-3175.2 | Corn ethanol high crop yields scenario |
| | EPA-HQ-OAR-2005-0161-3175.14 | Soy-based biodiesel scenario |
| | EPA-HQ-OAR-2005-0161-3175.15 | Soy-based biodiesel high crop yields scenario |
| | EPA-HQ-OAR-2005-0161-3175.24 | Sugarcane ethanol scenario |
| | EPA-HQ-OAR-2005-0161-3175.29 | Switchgrass biofuel scenario |
| | EPA-HQ-OAR-2005-0161-3175.11 | RFS2 full volumes scenario (i.e., the Control Case) |
| GHG Emissions Impacts from the Use of Foreign Agricultural Inputs | | |
| | EPA-HQ-OAR-2005-0161-3175.7 | Corn ethanol scenario in 2022 |

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|---|---|---|
| | EPA-HQ-OAR-2005-0161-3175.8 | Corn ethanol high crop yields scenario in 2022 |
| | EPA-HQ-OAR-2005-0161-3175.20 | Soy-based biodiesel scenario in 2022 |
| | EPA-HQ-OAR-2005-0161-3175.21 | Soy-based biodiesel high crop yields scenario in 2022 |
| | EPA-HQ-OAR-2005-0161-3175.27 | Sugarcane ethanol scenario in 2022 |
| | EPA-HQ-OAR-2005-0161-3175.31 | Switchgrass biofuel scenario in 2022 |
| | EPA-HQ-OAR-2005-0161-3175.12 | RFS2 full volumes scenario (i.e., the Control Case) |
| Foreign Rice Methane Emissions Impacts | | |
| | EPA-HQ-OAR-2005-0161-3175.9 | Corn ethanol scenario |
| | EPA-HQ-OAR-2005-0161-3175.10 | Corn ethanol high crop yields scenario |
| | EPA-HQ-OAR-2005-0161-3175.22 | Soy-based biodiesel scenario |
| | EPA-HQ-OAR-2005-0161-3175.23 | Soy-based biodiesel high crop yields scenario |
| | EPA-HQ-OAR-2005-0161-3175.28 | Sugarcane ethanol scenario |
| | EPA-HQ-OAR-2005-0161-3175.32 | Switchgrass biofuel scenario |
| | EPA-HQ-OAR-2005-0161-3175.13 | RFS2 full volumes scenario (i.e., the Control Case) |
| **GREET Model Calculations** | | |
| | EPA-HQ-OAR-2005-0161-3176 | Memorandum describing spreadsheets with GREET model calculations used in EPA's LCA |
| | EPA-HQ-OAR-2005-0161-3176.1 | GREET assumptions on the marginal electricity production in Brazil for sugarcane ethanol LCA |
| | EPA-HQ-OAR-2005-0161-3176.2 | GREET modifications based on the assumption that back-haul emissions for ocean tankers for sugarcane ethanol are zero |
| | EPA-HQ-OAR-2005-0161-3176.3 | GREET estimates of the average emissions from the production of agricultural inputs |
| | EPA-HQ-OAR-2005-0161-3176.4 | GREET modifications based on revised assumptions for sugarcane ethanol feedstock transportation |