

**Biomass Research & Development  
Technical Advisory Committee**

**September 15-16, 2009**

*Meeting Summary*

**(Released November 20, 2009)**

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## List of Acronyms

DOE – United States Department of Energy  
USDA – United States Department of Agriculture  
NEPA – National Environmental Protection Act  
REE – Research Education and Economics  
CSREES – Cooperative State Research, Education, and Extension Service  
BCAP – Biomass Crop Assistance Program  
DOT – United States Department of Transportation  
RITA – Research and Innovative Technology Administration  
FAA – Federal Aviation  
FTA – Federal Transit Administration  
FRA – Federal Railroad Administration  
PHMSA – Pipeline and Hazardous Materials Safety Administration  
SCC – Stress Corrosion and Cracking  
NIST – National Institute of Standards and Technology  
iLUC – Indirect Land Use Change  
GHG – Green House Gas  
CARB – California Air Resources Board  
GTAP – Global Trade Analysis Project  
RFS – Renewable Fuel Standard  
DOC – United States Department of Commerce  
BEES – Building for Environmental and Economic Sustainability  
NAREEE – National Agricultural Research, Extension, Education, and Economics  
ARPA-E – Advanced Research Projects Agency - Energy

## I. Purpose

On September 15-16, 2009, the Biomass Research and Development Technical Advisory Committee (Committee) held its third quarterly meeting of calendar year 2009. The one and a half-day meeting was held in Alexandria, VA. The purpose of the meeting was to get a breakdown of the biomass research and development (R&D) activities funded by the U.S. Departments of Energy (DOE) and Agriculture (USDA). Additionally, the Committee received updates and discussed recent activities of the Biomass Research and Development Board (Board), DOE, and USDA. The subcommittees of the Technical Advisory Committee (Feedstocks; Conversion; Infrastructure and End Use; and Sustainability and Environmental Health and Safety) also provided report-outs from each of their breakout meetings. This and past information was used to further refine the Committee's recommendations to the Secretaries of Energy and Agriculture for FY 2009.

A list of attendees is provided in Attachment A and the meeting agenda in Attachment B. Meeting presentations can be viewed online at <http://biomass.govtools.us> (click on "Publications").

**Background:** The Committee was established by the Biomass R&D Act of 2000 (Biomass Act) which was repealed and replaced by Section 9008 of the Food, Conservation, and Energy Act of 2008. The Biomass R&D Board was established under the Biomass Act to coordinate activities across the Federal agencies. The Committee is tasked with advising the Secretary of Energy and the Secretary of Agriculture on the direction of biomass research and development.

## II. DOE Update

*Laura McCann, Designated Federal Officer, Biomass Program, U.S. Department of Energy*

Laura McCann, the new Designated Federal Officer, provided an update on the recent activities of DOE's Biomass Program. The Biomass Program review has been completed and the results were discussed. DOE's recent staffing changes were described including the Biomass Program naming a new acting program manager – John Ferrell. The Board's new members were also detailed, including the two new co-chairs: Under Secretary for Science Steven Koonin and Under Secretary for Rural Development Dallas Tonsager. Lastly, the Biomass Program's active solicitations were listed.

David Bransby asked about the status of the commercial biofuel projects. Range Fuels and POET have moved into construction, Abengoa and Blue Fire are in their engineering design and National Environmental Protection Act (NEPA) phases. The remainder of the funding was used to fund two additional projects.

### **III. USDA Update**

*Robert Fireovid, Bioenergy Program, Agricultural Research Service, U.S. Department of Agriculture*

Bob Fireovid from ARS provided an update on the USDA agencies concerned with biomass R&D. The REE priorities as they related to Secretary Vilsack's strategic goals were described. Only climate change and bioenergy directly applied to biomass R&D. A detailed update on the BCAP was given in response to the Committee's interest at the second quarter June 2-3, 2009 meeting. This included the qualified conversion facilities (based on the use of qualified feedstocks) as well as the Program's FY 2010 schedule. The Committee was perplexed by the large proportion of California facilities. This was apparently due to a local USDA official doing a better job of getting the word out about the program. The Committee also expressed concerns that \$25 million was not enough for the program's annual budget. It was explained that was just for FY 2009, and that more would be made available (potentially through the Commodity Credit Corporation – CCC) in FY 2010.

The funding and current status of the Biorefinery Assistance Program, the Repowering Assistance Program, the Bioenergy Program for Advanced Biofuels, and the Rural Energy for America Program (all part of the 2008 Farm Bill) were also described. Lastly, the awards for the Biomass R&D Joint Solicitation (handled by CSREES) were discussed, although specific awardees were not revealed. There were two awards under feedstocks, five under biofuels and biobased products, and two under analysis, with the average award totaling \$2 million.

### **IV. DOT Activities related to Biomass R&D**

*Jan Brecht-Clark, Research and Innovative Technology Administration, U.S. Department of Transportation*

Jan Brecht-Clark from the U.S. Department of Transportation's (DOT) Research and Innovative Technology Administration (RITA) reviewed DOT's Biofuels activities. RITA activities are conducted for the most part by the Sun Grant University Consortium and the Bio-Diesel Board (\$56 million in grants over the past 5 years). In addition, work is pursued by Universities funded as a University Transportation Center (\$80 million provided annually covering multiple transportation issues such as alternative fuels, climate change, safety, etc.). The Volpe Center, a RITA component, assembled and led the Federal Biofuels Distribution Infrastructure Interagency Working Group. Other efforts are pursued in other DOT Administrations. The Federal Aviation Administration (FAA) has been sponsoring biofuels tests in commercial airlines. The Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) are both working on rail engine testing and converting rail fleets to biofuels. The Pipeline and Hazardous Materials Safety Administration (PHMSA) has focused on the pipeline issues surrounding biofuels, especially ethanol.

A Committee member inquired as to the level of effort for electronic vehicles compared to alternative fuels vehicles. Electric vehicles are mostly local with DOT work centered on following the development of charging stations or fuel availability. However a 1-2 hour charge is not suited well for quick trips and there are questions as to who pays for the electricity at these stations. Either local or commercial support would make the electric vehicle much more viable, but that is still under development. As a follow-up the Committee inquired as to who would regulate “fueling” an electric car at home. Currently the Highway Trust Funds that cover surface transportation activities are fuel taxes collected at the pump. DOT is trying to encourage less gas consumption which will impact future level of the trust fund. Some initiatives have proposed tolls and vehicle miles traveled taxes. The 2010-2011 reauthorization of will have to deal with this issue of how our transportation activities are funded.

Gil Gutknecht inquired as to the lessons learned about blended fuels in aviation and rail. The aviation industry is extremely regulated and very difficult to break in to, making a timeline for widespread biofuels use a long one. At least three years would be required for engine testing and there is still a large barrier in terms of distribution. Rail is less heavily regulated and expectations are for a shorter integration period. DOT is partnered with Amtrak as it is government subsidized and thus easier to access for testing. Future testing will extend beyond Amtrak and DOT is in talks with the National Rail Association to further the emissions testing program. DOT is also partnering with GE for the engine testing portions of research as GE is the major engine manufacturer for trains.

The discussion wrapped up with pipelines, centering around the threats of stress corrosion and cracking (SCC) common with alternative fuels like ethanol. E20-E30 blends are where you start to see SCC occur, and DOT is monitoring new pipelines closely to minimize risks, partnering with the National Institute of Standards and Technology (NIST) and DOE. Research into E95 specifically is looking at chlorides, a primary SCC driver, and the steps that can be taken to mitigate their effects. That said, the current research push is away from ethanol and towards fuels like biodiesel and biogas.

## **V. Indirect Land Use Change**

*Dr. Tom Hertel, Distinguished Professor, and Executive Director, Center for Global Trade Analysis, Purdue University*

Dr. Hertel from Purdue University presented on the Analysis of Global Land Use Impacts of Corn Ethanol. He opened with a general discussion of the debate over “indirect” land use change (iLUC), a portion of the overall green house gas (GHG) emissions calculation for biofuels. A difficult phenomenon to quantify, the California Air Resources Board (CARB) commissioned a study to find a more precise measurement of iLUC. The Global Trade Analysis Project (GTAP), a publicly available model, was adapted for this purpose. The study results found that corn ethanol did not significantly reduce GHG emissions

when compared to gasoline. Dr. Hertel emphasized the importance of market-mediated effects in determining the final outcome. As with every model there are portions with greater amounts of uncertainty including crop yields and the global distribution of production response to U.S.-based programs, and this is where future research should be targeted.

The Committee had a lot of questions for Dr. Hertel although most were of a clarifying nature not recorded here. Eric Larson wanted Dr. Hertel's opinion on what sort of research we need to meet the renewable fuel standard (RFS). Second generation biofuels – they are big puzzle for economists as there is no historical data which is what they rely on to put parameters on the debate.

## **VI. DOC-NIST Activities related to Biomass R&D**

*Barbara Lippiatt, National Institute of Standards and Technology, U.S. Department of Commerce*

Barbara Lippiatt from the Department of Commerce (DOC) provided the Committee an overview of the Building for Environmental and Economic Sustainability (BEES) model developed by the National Institute of Standards and Technology as a sustainability metric. BEES is also sponsored by USDA, DOE and EPA. It takes a life cycle approach using a multitude of variables from acidification to manufacturing to measure both environmental and economic sustainability. In this way different products can be compared evenly across different factors, making BEES a powerful tool in assessing sustainability. The Committee had not questions.

## **VII. Subcommittee Report-Outs**

The four Subcommittees met to continue discussions around their 2009 recommendations to the Secretaries of Energy and Agriculture. Since the Committee has seen no responses from USDA or DOE regarding their 2008 recommendations it was decided to resubmit those without alteration. Their recommendations were presented to the Committee for comment to be finalized at their meeting in December.

### **A. Infrastructure and End Use**

*Doug Hawkins, Rohm & Haas*

Doug Hawkins, member of the Infrastructure Subcommittee, presented the Subcommittee's draft recommendations as discussed in their earlier breakout session. These recommendations concerned:

- Infrastructure funding increase
- Removing bottlenecks
- Blend level analysis
- Life cycle analysis

## **B. Feedstocks**

*Rodney Williamson, Iowa Corn Promotion Board*

Rodney Williamson, Co-chair of the Feedstocks Subcommittee, presented draft recommendations as discussed in the Subcommittee's earlier breakout session. These recommendations concerned:

- Woody biomass
- Choosing models
- Indirect land use
- Municipal solid waste
- Environmental, economic and social impacts
- Invasive species
- Funding opportunities
- Common application forms
- Rural communities
- Feed and feed
- Best management practices
- Productivity
- Waste

## **C. Conversion**

*Eric Larson, Princeton University*

Eric Larson, Co-chair of the Conversion Subcommittee, presented draft recommendations as discussed in the Subcommittee's breakout session. These recommendations concerned:

- ARPA-E
- Streamlining NEPA
- Non-ethanol biofuels
- Feedstock interface
- Algal biofuels
- Interagency Conversion Working Group project database

## **D. Sustainability, Environment, Health and Safety**

*Jim Martin, Omni Tech International*

Jim Martin, Chair of the Sustainability Subcommittee, presented the Subcommittee's draft recommendations as discussed in their earlier breakout session. These recommendations concerned:

- Water use/quality
- Resource conservation
- Biopower
- Funding
- Economic sustainability



## **VIII. 2010 Work Plan**

### *Full Committee Discussion*

The Committee held a preliminary discussion regarding their FY 2010 work plan. Next year the Committee would like to hear more about the following:

- Basic vs. applied research
- A more comprehensive discussion of agency foci and priorities related to biomass
- Presentations on algae and advanced biofuels – especially infrastructure compatible or “drop in” biofuels.
- More comprehensive budget presentations from the Biomass R&D Board member agencies
- More interaction with the Biomass R&D Board
- A presentation on the impact of earmarks
- More information regarding the difficulties of commercialization
- Presentations on climate change regulation and carbon trading with a specific focus on the impact of these policies on biomass
- Updates on DOE Biomass Program platform Statement of Technology Reports
- Better coordination with other FACA Committees
- More of a focus on agency R&D funding and results and less on government process/organization and.

## **IX. National Agricultural Research, Extension, Education, and Economics Update**

### *Carol Keiser Long, Chair, National Agricultural Research, Extension, Education, and Economics Committee*

Carol Keiser-Long presented an update of USDA’s National Agricultural Research, Extension, Education, and Economics (NAREEE) Committee. An outcome oriented Committee NAREEE focuses on bioenergy, food security, food safety, and child nutrition and health. The NAREEE Committee also invited the Biomass R&D Technical Advisory Committee to its October 2009 meeting.

## **X. Public Comment**

There were no public comments.

## Attachment A: Committee Member Attendees

Co- Chairs	Affiliation	Attended?
Gil Gutknecht		YES
W. Henson Moore		YES

Members	Affiliation	Attended?
Robert Ames	Tyson Food, Inc	NO
William Berg	Dairyland Power Cooperative	YES
David Bransby	Auburn University	YES
Ralph Cavalieri	Washington State University	NO
Pamela Reilly Contag	Cygnnet Biofuels	NO
Bob Dinneen	Renewable Fuels Association	YES
Scott Faber	Food Products Association (GMA/FPA)	NO
Richard Hamilton	Ceres Inc.	NO
Douglas Hawkins	Rohm & Haas	YES
Dermot Hayes	Iowa State University	YES
E. Alan Kennett	Gay & Robinson Sugar	NO
Charles Kinoshita	University of Hawaii	YES
Craig Kvien	University of Georgia	YES
Eric Larson	Princeton University	YES
Jay Levenstein	Florida Department of Agriculture and Consumer Services	YES
Mark Maher	General Motors	NO
Timothy Maker	Biomass Energy Resource Center, Inc.	NO
Jim Martin	Omni Tech International	YES
Jim Matheson	Flagship Ventures	YES
Mary McBride	CoBank	YES
Mitchell Peele	North Carolina Farm Bureau	YES
Michael Powelson	The Nature Conservancy	NO
J. Read Smith	Agricultural Energy Work Group	YES
David Vander Griend	ICM	YES
Edwin White	State University of New York	NO
Rodney Williamson	Iowa Corn Promotion Board	YES

**Total – 18 of 28 members attended**

## Attachment B: Meeting Agenda

**Day 1:**

**September 15, 2009**

### Technical Advisory Committee Meeting

- 8:00 am – 8:30 am      *Breakfast (to be provided for Committee)*
- 8:30 am – 8:45 am      Welcome  
*Co-Chairs Henson Moore and Gil Gutknecht*
- 8:45 am – 9:15 am      Presentation: DOE Update on Biomass R&D Activities  
*Laura Neal, Biomass Program, U.S. Department of Energy*
- 9:15 am – 9:45 am      Presentation: USDA Update on Biomass R&D Activities  
*Robert Fireovid, Bioenergy Program, Agricultural Research Service, U.S. Department of Agriculture*
- 9:45 am – 10:15 am      Presentation: DOT Activities related to Biomass R&D  
*Jan Brecht-Clark, U.S. Department of Transportation*
- 10:15 am – 10:30 am      *Break*
- 10:30 am – 11:15 am      Presentation: Indirect Land Use Change  
*Dr. Tom Hertel, Distinguished Professor, and Executive Director, Center for Global Trade Analysis, Purdue University*
- 11:15 am – 11:45 pm      Presentation: DOC-NIST Activities related to Biomass R&D  
*Barbara Lippiatt, National Institute of Standards and Technology, U.S. Department of Commerce*
- 11:45 pm – 12:45 pm      *Lunch (to be provided for Committee)*
- 11:45 pm – 12:45 pm      Discussion: FY 2009 Annual Recommendations  
*Full Committee*

### Subcommittee Breakout Meetings

- 1:00 pm – 5:00 pm      Breakout: All Subcommittees  
*Feedstocks, Conversion, Infrastructure, and Sustainability, EH&S*
- *Biomass R&D Board Interagency Working Groups*
  - *Discuss Annual Recommendations to the Biomass R&D Board*
  - *Discuss priorities for 2010 Work Plan*

**Technical Advisory Committee Meeting**

8:00 am – 8:30 am	<i>Breakfast (to be provided for Committee)</i>
8:30 am – 10:30 am	<u>Report Out</u> : 2009 Committee Recommendations <i>Feedstocks, Conversion, Infrastructure, and Sustainability, EH&amp;S</i>
10:30 am – 10:45 am	<i>Break</i>
10:45 am – 12:45 pm	<u>Report Out</u> : 2009 Committee Recommendations <i>Feedstocks, Conversion, Infrastructure, and Sustainability, EH&amp;S</i>
12:45 pm – 1:45 pm	<i>Lunch (to be provided for Committee)</i>
1:15 pm – 2:15 pm	<u>Discussion</u> : 2010 Work Plan <i>Full Committee</i>
2:15 pm – 2:30 pm	<u>Presentation</u> : NAREEE Update <i>Carol Keiser-Long, NAREEE Committee Chair</i>
2:30 pm – 2:45 pm	Public Comment
2:45 pm – 3:00 pm	Closing Comments <i>Co-Chairs Henson Moore and Gil Gutknecht</i>
3:00 pm	<i>Adjourn</i>