

**Biomass Research & Development
Technical Advisory Committee**

June 2-3, 2009

Meeting Summary

(Released July 30, 2009)

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List of Acronyms and Abbreviations (in order of use)

Committee – Biomass Research and Development Technical Advisory Committee

R&D – Research and Development

DOE – United States Department of Energy

USDA – United States Department of Agriculture

Board – Biomass Research and Development Board

FY – Fiscal Year

Biomass Act – Biomass Research and Development Act of 2000

ORNL – Oak Ridge National Laboratory

KDF – Knowledge Discovery Framework

OBP – Office of the Biomass Program

Recovery Act – American Recovery and Reinvestment Act of 2009

IBR – Integrated Biorefinery

IWG – Interagency Working Groups

BES – Basic Energy Sciences

BER – Biological and Environmental Research

ARS – Agricultural Research Service

USFS – United States Forest Service

Farm Bill – Food Conservation and Energy Act of 2008

GHG – Greenhouse gas

NRCS – Natural Resources Conservation Service

EQIP – Environmental Quality Incentives Program

CSP – Conservation Stewardship Program

REAP – Rural Energy for America Program

FSA – Farm Service Agency

BCAP – Biomass Crop Assistance Program

ILUC – Indirect land use change

NEPA – National Environmental Policy Act of 1969

DOT – United States Department of Transportation

NAREEE – National Agricultural Research, Extension, Education, and Economics

REE – Research, Education and Economics

EPA – United States Environmental Protection Agency

RFS – Renewable fuel standard

EISA – Energy Independence and Security Act of 2007

I. Purpose

On June 2-3, 2009, the Biomass Research and Development Technical Advisory Committee (Committee) held its second quarterly meeting of calendar year 2009. The one and a half-day meeting was held in Washington, DC. 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 fiscal year (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 Board was established under the Biomass Act to coordinate activities across the Federal agencies. The Committee is tasked with advising the Secretaries of Energy and Agriculture on the direction of biomass R&D.

II. Knowledge Discovery Framework

Budhu Bhaduri, Oak Ridge National Laboratory

Budhu Bhaduri from Oak Ridge National Laboratory (ORNL) kicked off the meeting with a presentation on a recently started DOE project, the Knowledge Discovery Framework (KDF). The KDF is a Web-based tool being designed to facilitate informed decision-making by providing a means to synthesize, analyze and visualize vast amounts of data in a meaningful way. Built around a GIS-based framework, the KDF will comprehensively analyze the economic and environmental impacts of various development options for biomass feedstocks, biorefineries, and infrastructure. Currently in its alpha phase, the KDF is populated with a variety of datasets and models; however, once it goes live, users will be able to upload, comment on, and change the data that makes up the KDF. The data will pertain to the United States initially, with a future possibility of expanding the framework internationally. ORNL hopes to analyze data and build new models by the end of 2009 and be able to conduct a user evaluation during the summer of 2010. It was stressed that since the datasets will develop from user interaction, the KDF will be a constantly evolving project.

When asked about how ORNL plans to manage access to the database, it was explained that the owner of the data decides the accessibility of the data. In some instances, they

may only share the data with particular people or groups; right now, it is unclear whether user interactions will need any governance or if they can be self-regulated. When asked about potential information partners like the American Society of Agronomy, the speaker clarified that ORNL was concentrating on procuring data from the DOE Office of the Biomass Program (OBP) first; data desired by OBP stakeholders will be sought next, followed by other outside stakeholders. Although USDA is providing their input, OBP receives priority as the project is being funded by OBP.

III. DOE Budget Overview

DOE provided budget overviews from OBP, Basic Energy Sciences, and Biological and Environmental Research.

A. OBP Budget Overview

Valri Lightner, Biomass Program, U.S. Department of Energy

Valri Lightner, acting program manager of OBP, gave an overview of the OBP budget concentrating on FY 2009 and the American Recovery and Reinvestment Act of 2009 (Recovery Act) monies, plus FY 2010 requests. More than half (61%) of OBP's funds for FY 2009 have been invested in biorefinery demonstrations (\$131.5 million). Other FY 2009 funding areas are Biochemical R&D (15%), Thermochemical R&D (9%), Feedstock Infrastructure (7%), Products Development (7%) and SBIR/STTR* (1%). FY 2010 requests remain similar with the largest increases in Thermochemical R&D (up to 12%) and Feedstock Infrastructure (up to 11%). Ms. Lightner detailed these FY 2010 requests for each funding area in her presentation (available at biomass.govtools.us).

Although OBP plans on continuing its current activities, it has identified four areas of importance in moving forward to mirror the U.S. President's objectives:

- Science and discovery
- Clean, secure energy
- Economic prosperity
- Climate change

Following the presentation, Ed White asked to confirm that woody feedstocks would be included in OBP's plans and Ms. Lightner assured him anything that fits the definition of a renewable feedstock would be included. Jim Matheson inquired about leveraging public-private partnerships in reference to the Integrated Biorefinery (IBR) funds. Cost-share requirements are 60% for a commercial-scale plant, 50% for a demo-scale, and 20% for a pilot-scale. Unfortunately, securing that extra capital has been a problem of late for many of the commercial-scale IBRs.

Lastly, Mark Maher asked about the Interagency Working Groups (IWG) and the Board's recent level of participation. Ms. Lightner said that IWGs are working to make sure there is not duplication of effort within the Federal government. However, it is much harder to

* SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) are programs within the Office of Technology.

discern duplication within private industry as much of this information is proprietary. In reference to the Board, Ms. Lightner reported that it had not been officially re-established. Board members are White House appointees, many of who are not in place, so it is currently functioning as a Continuity Committee. The Continuity Committee includes senior Federal staff from the member agencies. The only Board member who has continued is the National Science Foundation representative, Arden Bement. Meanwhile the Continuity Committee has continued to meet about once every two months. Once the new Board members are confirmed (expected late summer 2009), a transition group will brief them on their duties as members. Henson Moore suggested the Committee invite the DOE and USDA Board co-chairs to the December meeting.

B. Basic Energy Sciences Budget Overview

Eric Rohlfling, Basic Energy Sciences, Office of Science, U.S. Department of Energy

Eric Rohlfling from DOE's Office of Science, Basic Energy Sciences (BES) gave a budget overview focused on their fundamental science research. Their appropriated FY 2009 funding is \$1,572 million with a portion of additional funds coming from the \$1,600 million in Recovery Act funds provided to the Office of Science. With these funds, BES's main goals are to expand their core research program, support world-class scientific user facilities, and conduct new construction and instrumentation. It was unclear what percentage of these funds were devoted to biomass R&D. FY 2010 requests total \$1,685 million and are broken down similar to FY 2009 appropriations.

After the presentation, a question was asked regarding the timeline for selecting the energy innovation hubs. Dr. Rohlfling was unsure, although he said it needed to be appropriated by 2010 and hinted it could be as early as this summer. Gil Gutknecht inquired as to the status and structure of the new ARPA-E organization, namely whether it would mirror DARPA. Dr. Rohlfling said that there was currently no director for this project, but that he expected it to be similar to DARPA. Henson Moore closed with suggesting including a page in the September meeting binder that covers the loan guarantee program.

C. Biological and Environmental Research Budget Overview

John Houghton, Biological and Environmental Research, Office of Science, U.S. Department of Energy

John Houghton, from DOE's Office of Science, Biological and Environmental Research (BER), gave a budget overview of the Office's programs and biomass research. BER manages a diverse portfolio of fundamental research and technology development to achieve a predictive, systems-level understanding of complex biological systems to advance DOE missions, including biofuel production. The Office also manages the DOE Bioenergy Research Centers, working to achieve the transformational breakthroughs in basic sciences needed to enable commercially viable production of next-generation biofuels from lignocellulose, or plant fiber, on a national scale. The BER FY 2010 budget

most relevant to biomass R&D includes about \$165 million for genomic science and another \$85 million for user facilities, including the DOE Joint Genome Research and Structural Biology Facilities. Requested increases in FY 2010 include building a systems biology knowledgebase (\$3.8 million) and augmenting the DOE Joint Genome Research Facility (\$4.0 million).

IV. USDA Budget Overview

USDA provided budget overviews from the Office of Budget and Program Analysis, Agricultural Research Service, U.S. Forest Service, Natural Resources Conservation Service, and Rural Development.

A. USDA Broad Budget Overview

Diem-Linh Jones, Office of Budget and Program Analysis, U.S. Department of Agriculture

Diem Linh Jones from USDA’s Office of Budget and Program Analysis presented the Committee with a broad overview of USDA’s main spending thrusts. Most of USDA spending does not apply to this Committee as 70% of its \$134 billion FY 2010 budget request will be spent on nutrition assistance. A much smaller chunk of \$648 million will go toward renewable energy in FY 2010. This funding is distributed as follows:

USDA Renewable Energy Programs				
Budget Authority (Dollars in Million)	FY 2007	FY 2008	FY 2009	FY 2010
Commercialization	\$45	\$60	\$244	\$478
Research & Development	114	120	142	149
Education & Outreach	5	4	4	4
Energy Efficiency & Conservation	7	21	23	17
Total	171	205	413	648

The organizations within the USDA making subsequent presentations all draw from this portion of USDA’s budget and fall into the above categories.

B. Agricultural Research Service Budget Overview

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

Bob Fireovid from USDA’s Agricultural Research Service (ARS) gave a budget overview focused on the ARS’s bioenergy research. ARS is USDA’s primary research agency covering everything from production to consumption with a \$1.1 billion FY 2009 budget. The bioenergy research funding (FY 2010 \$41 million) is distributed amongst feedstock development (FY 2010 19%), feedstock production (42%), and biorefining (38%).

C. U.S. Forest Service Budget Overview

Marilyn Buford, U.S. Forest Service

Dr. Marilyn Buford from the U.S. Forest Service (USFS) gave a budget overview of biomass-related activities of USFS, namely commercialization and R&D.

Commercialization includes investments in both traditional and renewable energy encompassing everything from permitting to timber sales. Major R&D areas presented were as follows:

- Sustainable and economical forest biomass management and production systems
- Competitive biofuels and biopower conversion technologies and bioproducts that reduce greenhouse gas (GHG) emissions and fossil fuel use
- Information and tools for decision-making and policy analysis

After the presentation, Henson Moore asked about how much funding had increased in the areas described. Dr. Buford said there was no increase expected from 2009 to 2010 and that to the best of her knowledge, the language of the Recovery Act did not direct funding specifically to Forest Service research. Furthermore, Sections 9012 and 9013 of the Food Conservation and Energy Act of 2008 (commonly known as the Farm Bill) also did not receive funding in 2009 or in the 2010 President's budget request.

A discussion was prompted by a comment that the U.S. underutilizes its waste wood resources. A committee member commented that while there are 370 million dry tons of waste wood available per year, only approximately 150 million dry tons are currently being utilized as a biomass feedstock. Dr. Buford responded by stating that transportation and supply logistics are the major reasons these resources are not used. USFS is learning how to economically and sustainably collect and distribute the waste wood in question.

D. Natural Resources Conservation Service Budget Overview

Chuck Zelek, Natural Resources Conservation Service, U.S. Department of Agriculture

Chuck Zelek from USDA's Natural Resources Conservation Service (NRCS) gave a budget overview of their education and outreach, energy efficiency and conservation, and renewable energy production expenditures. NRCS education and outreach provides technical and financial assistance through programs such as the Conservation Innovation Grants and the Conservation Technical Assistance Programs. Examples of financial assistance projects under the Conservation Innovation Grants Program were in the \$500,000 range. NRCS's efforts in the energy efficiency and conservation, and renewable energy production areas are channeled through the Environmental Quality Incentives Program (EQIP), as well as the Conservation Stewardship Program (CSP). Both programs offer voluntary financial and technical assistance. When asked how producers can get funded through EQIP or CSP, Mr. Zelek said they can receive cost-share funding through the EQIP program or stewardship payments through the CSP program, based on competitive ranking processes developed for both programs. Funding from both programs can be applied for at local NRCS service centers.

E. Rural Development Budget Overview

Tony Crooks, Rural Development, U.S. Department of Agriculture

Tony Crooks from USDA's Rural Development gave a budget overview focusing on the agency's renewable energy programs. Rural Development receives the bulk of USDA's bioenergy funding (70%) and covers:

- **Biorefinery Assistance Program**
 - Guaranteed Loan Limitations:
 - Up to \$250 Million for Biorefineries
 - Grant Limitations: Pilot/Demonstration Scale:
 - Up to 50% of project costs (No grants available in 2009)
 - Mandatory Funding:
 - FY 2009 – \$75 Million
 - FY 2010 – \$245 Million available until expended
- **Repowering Assistance Program**
 - Mandatory Funding:
 - FY 2009 – \$35 Million
 - FY 2010 – \$15 Million
- **Bioenergy Program for Advanced Biofuels**
 - Mandatory Funding:
 - FY 2009 – \$55 Million
 - FY 2010 – \$55 Million + up to \$25 Million discretionary
- **Rural Energy for America Program (REAP)**
 - Grant Limits:
 - \$250,000 for Energy Efficiency Conversions
 - \$500,000 for Renewable Energy Systems
 - Loan Guarantee Limits:
 - \$25 Million Cap
 - Cap Federal share at 75% of project costs
 - Mandatory Funding:
 - FY 2009 – \$55 Million + \$5 Million discretionary
 - FY 2010 – \$60 Million + up to \$25 Million discretionary
- **Rural Energy Self-Sufficiency Initiative**
 - Authorized funding:
 - FY 2009 – \$5 Million
 - FY 2010 – \$5 Million

V. Biomass Crop Assistance Program

Kelly Novak, Farm Service Agency, U.S. Department of Agriculture

Kelly Novak presented on the Farm Service Agency's (FSA) Biomass Crop Assistance Program (BCAP). Established in Section 9011 of the Farm Bill, the purpose of BCAP is to support the establishment and production of eligible crops for conversion to bio-energy in selected BCAP project areas, and to assist agricultural and forest land-owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility.

The potential list, however, of excluded crops and lands seemed exhaustive to the Committee members, and a question was raised regarding the selection of the crop exclusions and the reasoning behind the action. Ms. Novak said the guidance came from the 2008 Farm Bill and that an Eligible Materials List would be released by the end of FY 2009 and posted on the FSA Energy BCAP Web page at www.fsa.usda.gov/energy. A follow-up question inquired into the assistance portion of BCAP. The first part of the program will provide matching payments of \$1 for each \$1 per dry ton (in an amount equal to but not more than \$45 per ton) to Eligible Material Owners that sell material to qualified biomass conversion facilities. Eligible Material Owners are limited to a period of two years to receive these matching payments. As BCAP is meant to increase the supply of biomass in the market, it is unclear what will happen after FY 2012 when the program's authorization expires. However, because the program has called for an initial conversion of cropland to help establish a market, this would be more difficult without extra funds.

The crop and woody biomass production and establishment assistance payments are intended to start at the beginning of the 2010 growing season. BCAP would pay producers to grow eligible crops and woody biomass, or if desired, receive a reduced payment when eligible materials were collected and harvested by themselves. The 2008 Farm Bill prescribes that up to 75% of establishment costs for perennial crops and nonindustrial private forestlands site preparation can be paid to producers as well. Contracts for producers, according to the Farm Bill, can be up to five years for annual crops and perennial crops, and up to 15 years for woody biomass.

VI. Subcommittee Report-Outs

The four Subcommittees met in closed session before the full Committee to continue discussions around their 2009 recommendations to the Secretaries of Energy and Agriculture. During the report-outs, the co-chairs directed all the Subcommittees to provide funding recommendations in each of their respective areas for the September meeting. The co-chairs also asked that each Subcommittee revisit their FY 2008 recommendations as the Annual Report with this information has still not been submitted to Congress (this excluded the Sustainability Subcommittee which was not established at the time of that report).

A. 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:

- USDA's Biomass Crop Assistance Program
- Indirect land use
- Carbon assessment programs
- Woody biomass
- Information development
- Economic impact study

After discussion with the Committee, it was determined their recommendation on indirect land use change (ILUC) should be handled by the Sustainability Subcommittee. In reference to their woody biomass recommendation, the crux of the issue was identified to be the lack of long-term supply contracts on Federal lands. There are also issues with actually harvesting and collecting the woody biomass from those Federal lands. The Subcommittee believes it would be easier if these contracts were 10 years long. There is current and pending legislation on this issue.

The Subcommittee's recommendations on information development stemmed from a need for regional baseline data covering amongst other things yield, productivity, and socio-economic issues. Ralph Cavalieri of the Committee said that there are two issues with gathering this data: scale of plots and yields; also social issues include several factors. Laura Neal of OBP noted that social issues are not part of Regional Partnership Project right now, so recommendations regarding this would be appreciated. Henson Moore suggested we need more information regarding these issues. The Committee asked for details on these recommendations, especially in terms of who would carry out the work, along with a better definition of "socio-economic" issues. Mr. Cavalieri said that each Subcommittee needs to have information on the joint solicitation awardees available for their review. Selections will be made by the September meeting, so the Subcommittees can review the winners then.

B. Conversion

Ralph Cavalieri, Washington State University

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

- Revisiting FY 2008 recommendations
- Streamlining the NEPA (National Environmental Policy Act of 1969) approval process

- Building a more comprehensive biofuels portfolio, specifically moving beyond a narrow focus on cellulosic ethanol to a broader focus that recognizes the desirability of “drop-in” replacement fuels
- Integrating conversion, feedstock and distribution R&D efforts

One of the Subcommittee’s FY 2008 recommendations dealt with the need for benchmarking. If funding is spread equally across the spectrum, it will not be effective, therefore, it must be targeted and benchmarking will help this process. Pam Contag requested clearer definitions on what pilot and demonstration scale actually mean. Valri Lightner explained that scale definitions are based on how much feedstock is going in (dry ton). Ms. Lightner also noted that building a more comprehensive biofuels portfolio is part of DOE’s longer-term goals. The recommendation regarding building a more comprehensive portfolio was clarified that it was the *exclusively* cellulosic ethanol target that the Subcommittee wanted changed and was not suggesting to abandon cellulosic ethanol completely.

C. Infrastructure and End Use

Doug Hawkins, Rohm & Haas

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

- Revisiting FY 2008 recommendations
- Consumer preference research
- Yearly presentation on goals and milestones
- Interagency infrastructure effort
- Removing biofuels distribution bottlenecks
- Defining sustainability in respect to infrastructure
- Researching CO₂ utilization by ethanol plants
- Implementing advanced biofuels in existing ethanol plants
- Constructing a funded infrastructure platform
- Performing a blending issues study

The main issue identified by the Infrastructure Subcommittee is that funding for infrastructure-related activities is inadequate. Valri Lightner explained that this will be difficult to change but that OBP is working toward this, and requested the Subcommittee recommend specific infrastructure activities to be performed. Most of the Subcommittee’s FY 2008 recommendations still stand, although a few need to be re-evaluated and made more explicit. It was suggested an education aspect might help in this regard. As noted many times by the Committee, bioproducts and biopower should also be included in these efforts. The Department of Transportation (DOT) should also be more involved especially on the infrastructure side of Biomass R&D. DOT, however, has had a more difficult transition than other agencies. It was suggested that DOT be invited to speak at the September meeting. Mark Maher, in reference to the funds appropriated to

the KDF, stressed the need to prioritize the limited resources available for infrastructure issues.

The recommendation regarding CO₂ utilization by ethanol plants should also include CO₂ capture and be more geared toward the Office of Science, Fossil Energy, rather than IBR. CO₂ issues need more analysis as there are many economic complexities. Blending issues, including the blender's credit, need to be investigated and will involve environmental, economic, and regulatory issues.

D. Sustainability and Environmental Health and Safety

Jim Martin, Omni Tech International

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

- Choice of models
- Indirect land use
- Water use/quality
- Resource conservation
- Biopower
- Sustainability regulation
- Funding

Richard Hamilton, in reference to the recommended model, asked that any predictive model used be validated with existing data. Mr. Martin reinforced that the models used must be based on sound science. Ralph Cavalieri cautioned that models are very expensive and take a long time to develop. The Subcommittee was asked to re-evaluate their indirect land use recommendation after the Environmental Protection Agency's Renewable Fuels Standard Rulemaking presentation in the afternoon.

In reference to the resource conservation recommendation, Read Smith suggested that all regions of the world need to be identified. Ms. Lightner explained that the recent IWG report on sustainability is still being reviewed, but that process should be expedited in future. Ms. Lightner also stated there will likely be a piece of funding for sustainability-related activities in the Analysis platform's next multiyear program plan. Therefore, giving recommendations on areas of sustainability-related research to be included within the OBP technology platforms would be helpful. Finally, Jim Martin pointed out the need for more funding on sustainability research.

VII. NAREEE Update

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

Carol Keiser-Long presented the recommendations of the USDA's National Agricultural Research, Extension, Education, and Economics (NAREEE) Committee. The NAREEE Renewable Energy Committee recommended the Research, Education and Economics (REE) mission area to take a leadership role in:

- research on feedstock sources and the sustainability of a bioeconomy;
- acquisition and analysis of data on land use, economics and energy balances;
- determining the sources of variation for specific aspects of analytical models, especially feedstock yields and bio-based co-products;
- disseminating information on current renewable energy technologies beneficial to rural communities; and
- R&D of bio-based co-products associated with the production of biofuels.

Carol Keiser-Long emphasized the desire of NAREEE to coordinate their activities with the Technical Advisory Committee and suggested they have a joint meeting in the future. Ralph Cavalieri was concerned about the USDA taking lead on all these items, mostly due to a lack of funding. Ms. Keiser-Long said that the intent is to take a leadership role within USDA and to coordinate with other agencies and committees on these issues. She also admitted that although they have other desirable resources, they are limited in funding. Rodney Williamson inquired whether these committees should also coordinate with the President's new Biofuels IWG. Valri Lightner felt that the new IWG is likely going to be more policy-focused rather than R&D-focused. The new IWG will develop a work plan and the Designated Federal Officer will let the Technical Advisory Committee know more about this soon.

VIII. Department of Energy Update

Valri Lightner, Acting Program Manager, Biomass Program, U.S. Department of Energy

Valri Lightner from OBP provided an update on her program's activities. She covered the recent platform peer reviews, status of solicitations, Recovery Act funding allocations (particularly IBR), and platform approaches. Overall, the program is pursuing pathways to lower technical hurdles, while proceeding to develop a broad range of clean biofuels from diverse domestic biomass resources.

Ralph Cavalieri commented that there should be a line item for OBP's analysis activities. Doug Hawkins wanted to know if there was funding for IBR prior to receiving the Recovery Act funding. Ms. Lightner explained that the ceiling was increased for the current IBR solicitations and that they are currently helping pay for phase two (construction) of the IBRs. Finally, Laura Neal discussed the Land Use Change Workshop, held recently in Tennessee. This workshop helped DOE identify areas to concentrate on concerning the land use change debate. The outcome was a white paper on

land use change. OBP will schedule a presentation on the output from the workshop at the Committee's September meeting.

IX. U.S. Department of Agriculture 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. This included information on the Biorefinery Assistance Program, Repowering Assistance Program, Bioenergy Program for Advanced Biofuels, and Rural Energy for America Program. He also provided an update on the current Biomass R&D Initiative solicitation as well as a proposed FY 2010 ARS bioenergy initiative.

Jim Martin wanted to know if biopower is getting any attention. Valri Lightner said that she has not heard anything in terms of a new direction for the program. David Bransby commented that feedstock issues seem to be slipping through cracks and there is no industry without them. Mr. Martin suggested some kind of standardized trading system for biomass and open discovery for these feedstocks. He further said that the infrastructure system needs more attention and that the business side needs to be developed in order for the industry to succeed.

Pam Contag inquired as to how groups are trying to reach out to get commercialization expertise. Commercialization funding in USDA is mostly in Rural Development and they work with the biorefinery model. Ms. Contag said that most bankers will not give a loan when a government loan guarantee is on a project. Valri Lightner further elaborated that everyone goes through the Federal finance bank to cover the remainder of the financing for a biorefinery project. Mr. Martin commented that it would be interesting to see where these projects are in terms of commercialization and the equity market for these projects. Ms. Lightner pointed out that the loan guarantee program within DOE helps get over this financing hurdle.

X. Renewable Fuel Standard Rulemaking

Sarah Dunham, U.S. Environmental Protection Agency

Sarah Dunham from the Environmental Protection Agency (EPA) gave a presentation covering EPA's new renewable fuel standard (RFS) rulemaking report. Dunham presented the new requirements of RFS2 vs. RFS1, the methodology and results of their lifecycle analyses (including GHG emissions from both direct and indirect land use change), the grandfathering of previous ethanol producers, the renewable biomass provision, waivers for cellulosic biofuels, the overall impacts of RFS2 and the necessary next steps. This presentation generated many questions and comments from the Committee.

Jim Martin wanted to know, in reference to GHG emissions, what threshold means. Ms. Dunham explained that in order to qualify under the program, the biofuel lifecycle GHG emissions will have to be 20, 50, or 60% below the lifecycle GHG emissions of the petroleum fuel that it would displace depending on the biofuel category the fuel is qualifying under. When asked who performs the lifecycle analysis, she explained that EPA has responsibility under the Energy Independence and Security Act of 2007(EISA) to determine if fuels meet the lifecycle GHG thresholds. EPA has worked closely with DOE, USDA and other governmental, industry, and expert stakeholders in performing the lifecycle analysis for the RFS2 proposed rulemaking.

Doug Hawkins inquired about flexibility on changing or improving feedstocks and technology for production. Ms. Dunham said that the public comment period allows for people to comment on this, which will help address issues with the program. David Vander Griend asked what would happen if Congress removed the ILUC clause. Ms. Dunham said EPA will do whatever Congress instructs.

Read Smith expressed concern about the accuracy of the models used for ILUC. Ms. Dunham said the rule is intended to be flexible and leave room for improvement over time. There was more than one member that asked the prudence of comparing lifecycle assessments of renewable- and petroleum-based fuels. The petroleum-based fuels are using a 2005 baseline whereas the renewable fuels are using a 2022 baseline due to an expectation that crop yields and emissions will improve. Jim Martin asked, in the case of petroleum fuels, if it is possible to project an increase in land use change due to inactivity of biomass in the U.S. Ms. Dunham said EPA is running models with and without an RFS policy in 2022 in order to isolate the impacts of the mandates. Rodney Williamson asked about looking at the indirect impacts of fossil fuels. Ms. Dunham responded by saying that EPA continues to consider this issue and the implications of the EISA-mandated 2005 average petroleum fuels lifecycle GHG baseline.

When asked if EPA was in dialogue with USDA, Ms. Dunham said most of their analytical assumptions for agriculture in the models came from USDA. Domestically, land use change is minimal and emissions are low, however, this is due in part to a shifting of production internationally to meet demand where the emissions and ILUC impacts are significant. Ed White wanted to know how woody feedstocks affect land use internationally. EPA has not looked at all of the different feedstocks. However, the opportunity costs of using feedstocks with existing international markets (e.g., food and feed) are the drivers for ILUC. Use of waste products is not expected to have the same international ILUC impacts. When asked why switchgrass is ranked very high in terms of ILUC, Ms. Dunham explained that of the fuels and feedstocks analyzed for the proposed rulemaking, switchgrass ethanol has one of the lowest ILUC impacts. The driver of ILUC from energy crops like switchgrass is the type of land the switchgrass is grown on. If it is displacing corn or other commodity cropland, then it would have similar ILUC impacts as corn ethanol. If switchgrass is grown on marginal land or land that does not impact other crop production, then the ILUC impacts would be smaller. EPA does include the emissions associated with the feedstock transportation to the facility in the lifecycle analysis.

XI. Closing Comments

The Committee came to a consensus that they should hold their September 15-16, 2009 meeting in Washington, DC rather than outside Pittsburgh, PA. The Committee determined it had too much work to do on its annual recommendations and that it should be made as easy as possible for Federal guests to attend the meeting. Regarding the next meeting's structure, it was decided the full Committee should gather first and give the Subcommittees specific tasks before their breakouts, especially concerning crosscutting issues. To make best use of the September meeting time, the Subcommittee members were encouraged to meet via conference calls before then to discuss Committee feedback on their report-outs, as well as any crosscutting issues.

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

Total – 20 of 30 members attended

Attachment B: Meeting Agenda

Day 1:

June 2, 2009

Subcommittee Breakout Meetings

- 7:30 am – 8:00 am *Breakfast (to be provided)*
- 8:00 am – 10:00 am Breakout: All Subcommittees – Budget Presentations
DOE and USDA FY 2009 appropriations, recovery and FY 2010 requests
Feedstocks: John Ferrell (DOE),
Ev Byington (USDA)
Conversion: Valerie Sarisky-Reed (DOE),
Paul Grabowski (DOE),
Melissa Klembara (DOE),
Robert Fireovid (USDA)
Infrastructure: Alicia Lindauer-Thompson (DOE),
Budhu Bhaduri (ORNL-KDF)
Sustainability, EH&S: Zia Haq (DOE),
Jeff Steiner (USDA)
- 10:00 am – 10:15 pm *Break*
- 10:15 am – 12:00 pm Breakout: All Subcommittees – Annual Recommendations
Discussions
Discuss Annual Recommendations to the Biomass R&D Board
Feedstocks, Conversion, Infrastructure, and Sustainability, EH&S
- 12:00 pm – 12:30 pm *Lunch (to be provided)*

Technical Advisory Committee Meeting

- 12:30 pm – 12:45 pm Welcome
Co-Chairs Henson Moore and Gil Gutknecht
- 12:45 pm – 1:15 pm Presentation: ORNL - KDF
Budhu Bhaduri, Oak Ridge National Laboratory
- 1:15 pm – 2:45 pm Presentation: DOE Budget Overview
*Valri Lightner, Biomass Program,
U.S. Department of Energy,
Eric Rohlfing, Basic Energy Sciences, Office of Science,*

*U.S. Department of Energy
John Houghton, Biological and Environmental Research,
Office of Science, U.S. Department of Energy*

2:45 pm – 3:00 pm *Break*

3:00 pm – 4:30 pm Presentation: USDA Budget Overview
*Diem-Linh Jones, Office of Budget and Program Analysis,
U.S. Department of Agriculture
Robert Fireovid, Bioenergy Program, Agricultural
Research Service, U.S. Department of Agriculture
Marilyn Buford, U.S. Forest Service
Chuck Zelek, Natural Resources Conservation Service,
U.S. Department of Agriculture
Tony Crooks, Rural Development,
U.S. Department of Agriculture*

4:30 pm – 5:00 pm Presentation: Biomass Crop Assistance Program
*Kelly Novak, Farm Service Agency,
U.S. Department of Agriculture*

5:00 pm – 5:30 pm Annual Ethics Training
Tina Hymer, U.S. Department of Energy

5:30 pm *Adjourn*

Day 2: **June 3, 2009**

Technical Advisory Committee Meeting

7:30 am – 8:00 am *Breakfast (to be provided)*

8:00 am – 10:00 am Report Out: All Subcommittees
*Feedstocks, Conversion, Infrastructure, and Sustainability,
EH&S*

10:00 am – 10:15 am *Break*

10:15 am – 12:15 pm Discussion: FY 2009 Annual Recommendations
Full Committee

12:15 pm – 12:45 pm *Lunch (to be provided)*

12:45 pm – 1:00 pm Presentation: NAREEE Update
Carol Keiser-Long, NAREEE Committee Chair

1:00 pm – 1:30pm	<u>Presentation:</u> DOE Update <i>Valri Lightner, Biomass Program, U.S. Department of Energy</i>
1:30 pm – 2:00 pm	<u>Presentation:</u> USDA Update <i>Robert Fireovid, Bioenergy Program, Agricultural Research Service, U.S. Department of Agriculture</i>
2:00 pm – 2:30 pm	<u>Presentation:</u> Renewable Fuel Standard Rulemaking <i>Sarah Dunham, U.S. Environmental Protection Agency</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>