

Committee Business for 2013

Elliott Levine
DOE Bioenergy Technologies
Office
February 27, 2012

Travel Process

- Natalie Roberts is the point of contact for all questions related to TAC travel and reimbursement. She can be reached at natalie.roberts@ee.doe.gov or 202-586-2325.
- Reimbursement deadline for the February meeting: **March 15th**

Future Meeting Dates

- Tentative meeting dates for 2013 Q2-Q4 meetings have been identified below and will be discussed during the meeting:
 - Q2: June 3-7, 2013
 - Q3: August 12-16, 2013
 - Q4: November 18-22, 2013
- Possible locations for 2013 site visits will also be discussed and chosen based on the area of importance and availability of the host

Wednesday, February 27th

Introduction and Welcome

- 1:00-1:15: Welcome – *Co-Chair: Ronnie Musgrove*
- 1:15-1:30: Committee Business for 2013 – *Elliott Levine, DFO*
- 1:30-1:45: 2013 Work Plan for the Committee

DOE/USDA Updates

- 1:45-2:00: DOE Updates – *Elliott Levine (DOE)*
- 2:00-2:15: USDA Updates – *Todd Campbell (USDA)*

Presentations

- 2:15-2:45: Biomass Research and Development Initiative (BRDI) Update
- 2:45-3:00: *Break*
- 3:00-3:15: Public Comment
- 3:15-3:30: Review of Q2 Meeting Site Visit Options
- 3:30-4:15: Overview of DOE Biomass FY14 Budget and FOA – *Valerie Reed*
- 4:15-5:30: Overview of Other Agency Programs
- 5:30-6:30: Breakout: Subcommittees

Thursday, February 28th

- 8:15-8:45: *Breakfast*

Presentations

- 8:45-10:15: USDA/DOE R&D Program Overview
- 10:15-10:30: *Break*

2013 Committee Work Plan and Subcommittee Objectives

- 10:30-12:00: Breakout: Subcommittees
- 12:00-1:00: *Lunch (provided for Committee)*
- 1:00-2:30: Breakout: Subcommittees
- 2:30-2:45: *Break*
- 2:45-4:00: Subcommittee Report Outs

Presentations

- 4:00-4:30: Data and Topic Requests for Q2 Meeting
- 4:30-4:45: Public Comment
- 4:45-5:00: Closing comments

Contents

1. Biomass R&D Technical Advisory Committee Meeting Agenda
2. Biomass R&D Act (as amended)
3. Biomass R&D Technical Advisory Committee Charter
4. Biomass R&D Technical Advisory Committee Members
5. Biomass R&D Board Members
6. Speaker Bios
7. DOE and USDA Biomass Updates
8. 2012 TAC Recommendations
9. Proposed Meeting Dates for 2012
10. Site Visit Options

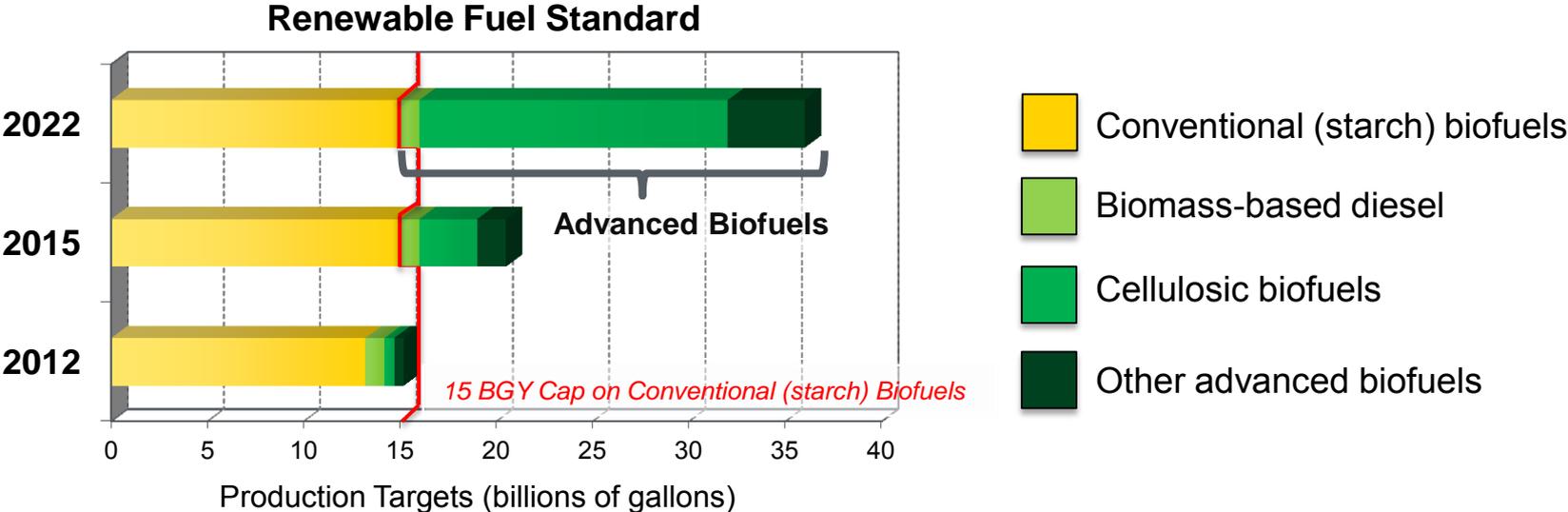
Key Policy Driver: Renewable Fuel Standard Program

The Energy Independence and Security Act (EISA) of 2007 sets aggressive goals:

- Move renewable fuels into the marketplace
- Reduce the nation’s dependence on foreign sources of energy
- Reduce GHG emissions from the transportation sector.

EISA established production volumes for the Renewable Fuel Standard Program (RFS), increasing the supply of renewable fuels to 36 billion gallons by 2022.

The U.S. Department of Energy’s (DOE) Biomass Program focuses on developing advanced biofuels to help meet the RFS goals.



- The Committee was established by the Biomass Research and Development Act of 2000 (Biomass Act). This has since been amended by the Food, Conservation and Energy Act of 2008 (FCEA). The revised Biomass R&D Act outlines the Committee's objectives, membership requirements, and duties.
- The Biomass R&D Act also established the Interagency Biomass R&D Board and the Biomass R&D Initiative.

See Tab 2 for full Biomass Research and Development Act.

Biomass R&D Act was extended through 2013 under House Resolution 8, the American Taxpayer Relief Act of 2012.

- While the legislation authorizing the TAC was extended by Congress, no Mandatory funding was set aside for BRDI, which leaves the annual solicitation, as well as some of the TAC responsibilities, on hold.
- Implications of HR 8?

Quoted below from the Biomass Research and Development Act:

(g) Reports.--For each fiscal year for which funds are made available to carry out this section, the Secretary of Energy and the Secretary of Agriculture shall jointly submit to Congress a detailed report....

(h) Funding.--

(1) Mandatory funding.--Of the funds of the Commodity Credit Corporation, the Secretary of Agriculture shall use to carry out this section, to remain available until expended--

- (A) \$20,000,000 for fiscal year 2009;
- (B) \$28,000,000 for fiscal year 2010;
- (C) \$30,000,000 for fiscal year 2011; and
- (D) \$40,000,000 for fiscal year 2012.

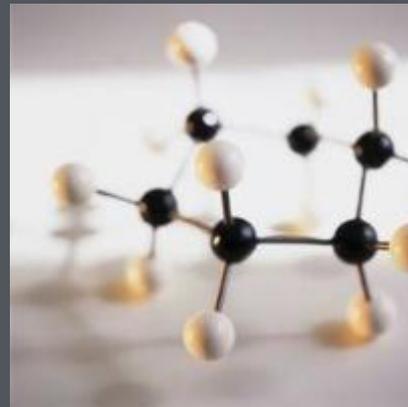
Official functions of the Biomass R&D TAC include:

- Advise the Secretary of Energy, the Secretary of Agriculture, and their points of contact concerning:
 - The technical focus and direction of requests for proposals issued under the Initiative.
 - Procedures for reviewing and evaluating the proposals.
- Facilitate consultations and partnerships among federal and state agencies, agricultural producers, industry, consumers, the research community, and other interested groups to carry out program activities relating to the Initiative.
- Evaluate and perform strategic planning on program activities relating to the Initiative.

The Committee Charter calls for the TAC to make recommendations related specifically to the BRD Initiative. DOE and USDA General Counsel have advised that a broader biomass R&D scope is permissible. The 2013 TAC recommendations will be written to address the findings and needs of the Committee in the following areas:

- Specific Committee Reporting Obligations
- Information Requests
- Feedstock Recommendations
- Conversion Recommendations
- Logistics, Storage, Handling, and Infrastructure Recommendations

Recommendations are used to inform the Biomass R&D Board and provided to DOE and USDA Programs.



U.S. Department of Energy Updates

Elliott Levine
DOE Bioenergy Technologies Office
February 27, 2012

- **Biomass Program Name Change**
 - As of January 1, 2013, the Office of the Biomass Program (OBP) was renamed the Bioenergy Technologies Office (BETO)
 - This rebranding effort is part of the recent reorganization of the Office of Energy Efficiency and Renewable Energy (EERE), and a uniform naming convention is now represented throughout this presentation.
- **The Multi-Year Program Plan (MYPP) Update**
 - In November 2012, an update to the Office's Multi-Year Program Plan was released.
 - The MYPP identifies the research, development, demonstration, and deployment (RDD&D) activities the Office will focus on over the next five years.
 - The November update includes major expansion of details on the Office's Algal Feedstocks work, incorporates more of the longer-term hydrocarbon-based fuels conversion strategy, and completion of ethanol conversion and infrastructure related work.

The Office has selected new "pathway" technologies that will enable the development of hydrocarbon fuels to meet national needs for aviation, heavy vehicle, and light vehicle transportation fuels. The 8 technology pathways were chosen based on:

- Feasibility of achieving programmatic cost goal of \$3/gal
- Near/Mid/Long-term techno-economic potential
- Potential national impact
- Feedstock availability/flexibility
- Data availability across the full pathway

Technology Area	Pathway
Sugars	Fermentation of Sugars to Hydrocarbons
	Catalytic Upgrading of Sugars to Hydrocarbons
Oils	Catalytic Pyrolysis – ex situ
	Catalytic Pyrolysis – in situ
	Fast Pyrolysis and Upgrading
Algae	Whole Algae Hydrothermal Liquefaction (HTL)
	Algal Lipid Extraction Upgrading to Hydrocarbons (ALU)
Gaseous Intermediates	Syngas to Mixed Alcohols to Hydrocarbons

- **Bioenergy Technologies Office 2013 Project Peer Review**

The Peer Review is designed to provide an opportunity for an independent panel of experts to review DOE-funded projects and provide recommendations on the status, technical progress, and relevance of each project in the Office's portfolio.

- **Featured Technology Areas**

The Peer Review will include separate, simultaneous review sessions of the projects in nine technology areas:

- Integrated Biorefineries
- Feedstock Production and Logistics
- Algae
- Biochemical Conversion
- Bio-Oils
- Gasification
- Analysis and Sustainability
- Heat and Power
- Biodiesel

Review Details:

May 20-23, 2013

Hilton Mark Center

5000 Seminary Rd

Alexandria, VA 22311

See more information about the Peer Review in the link on slide 15.

Program Management Review

- **July 30, 2013 (tentative)**
- This event is meant to promote public and stakeholder engagement surrounding the activities of the Bioenergy Technologies Office. The Program Management Review provides the results and findings of the biennial Project Peer Review for dissemination to the public and assessment of the Office's direction by the external Steering Committee.

Biomass 2013: How the Advanced Bioindustry is Reshaping American Energy

- **Washington Convention Center, July 31-August 1, 2013 (tentative)**
- This event will run in sequence with the Program Management Review
- Biomass 2013 will be a 360° review of the bioenergy industry, focusing on a celebration of the industry's achievements, contemporary trends, and the technology frontiers of the horizon.

Innovative Biosynthetic Pathways to Advanced Biofuels

On January 3, 2013 the Department of Energy (DOE) announced a \$10 million award for research and development in projects that use innovative synthetic biological and chemical techniques to convert biomass into processable sugars that can be transformed into bioproducts and drop-in biofuels for cars, trucks, and planes. The DOE selected five projects for negotiation of award:

- **J. Craig Venter Institute** (up to \$1.2 million; Rockville, MD) to develop new technologies to produce enzymes that more efficiently deconstruct biomass to make biofuel.
- **Novozymes** (up to \$2.5 million; Davis, CA) to expand their existing capabilities to find new sources of enzymes which can be targeted to deliver more cost-effective solutions for deconstructing biomass into processable components.
- **Pacific Northwest National Laboratory** (up to \$2.4 million; Richland, WA) to increase the production of fuel molecules in fungi growing on lignocellulosic hydrolysate.
- **Texas AgriLife Research** (up to \$2.4 million; College Station, TX) to develop a novel and integrated platform for converting lignin, a component of all lignocellulosic material, into biofuel precursors.
- **Lygos** (up to \$1.8 million; Berkley, CA) to develop efficient, inexpensive methods and tools to convert biomass into common and specialty chemicals.

Innovative Pilot and Demonstration Scale Production of Advanced Biofuels

On June 15, 2012, the Bioenergy Technologies Office released a solicitation for up to \$20 million to support the production of hydrocarbon fuels at pilot or demonstration scale facilities that meet military blend fuel specifications. Two topic areas will be supported:

- Technologies that utilize algae (micro, macro, cyanobacteria, heterotrophic)
- Technologies that utilize ligno-cellulosic biomass and other waste feedstocks

Proposals were due on September 13, 2012. The merit review process has been completed and announcements are anticipated in March.

See more information about BETO solicitations in the link on slide 15.

Carbon, Hydrogen and Separation Efficiencies in Bio-Oil Conversion Pathways (CHASE Bio-Oil Pathways)

On December 14, 2012, BETO released a solicitation for up to \$12 million to focus on three barriers repeatedly identified at CTAB and in the RFI:

- Carbon efficiency: developing selective fractionation and separation systems in bio-oil processing;
- Hydrogen efficiency: improving H₂ production, use, and transfer in biomass liquefaction and bio-oil upgrading; and
- Separations efficiency: developing technologies for use and mitigation of the aqueous fraction of bio-oil.

The solicitation closed on February 20, 2013 and is in the first stages of the review process.

See more information about BETO solicitations in the link on slide 15.

Advanced Biomass Feedstock Logistics Systems II

On January 25, 2013, this solicitation was released up to \$6 million to support developing and demonstrating strategies, equipment, and rapid analytical methods to manage feedstock quality within economic constraints throughout the feedstock supply chain. The main effort must be directed toward full-scale demonstration of integrated feedstock supply chain systems that can deliver:

- Large volumes of high quality feedstocks
- At an affordable price
- Over long distances

The solicitation is open, and full proposals are due by March 22, 2013.

See more information about BETO solicitations in the link on slide 15.

Advancements in Algae Biofuel Yield (ABY)

On January 15, 2013, BETO released a solicitation for up to \$10 million for the Advancements in Algal Biomass Yield, to demonstrate, at a process development unit scale of one acre cultivation equivalent, algal biofuel intermediate yield of 2,500 gallons of biofuel feedstock (or equivalent dry weight basis) per acre per year by 2018. This target is an important milestone in reducing the cost of algal biofuels to be cost-competitive. Research focuses on the following three main priority areas:

- Improvements in Algal Biomass Productivity;
- Improvements in Preprocessing Technologies; and
- Technical Advances that Enable Integration of Algal Biomass Unit Operations

The solicitation is still open, and full proposals are due by April 1, 2013.

See more information about BETO solicitations in the link on slide 15.

- In FY13 BETO released SBIR solicitations in the following technology areas:
 - Catalysis for the Production of Hydrocarbon Fuels or Chemicals from Mixed-Oxygenates Chemical Catalysis of Lignin
 - Measuring and Improving Biomass Quality Throughout the Feedstock Supply Chain Design and Fabrication of Solids Handling for Biomass Conversion Systems
- Phase 1 Awards(Catalysis):
 - Compact Membrane Systems, Inc.
 - Exelus, Inc.
 - KSE, Inc,
- Phase 1 Awards for Biomass Feedstock and Solids Handling will be announced at a later date.

See more information about the SBIR solicitations in the link on slide 15.

On February 7th, the Departments of Energy and Transportation announced the availability of \$150 million in Advanced Energy Manufacturing Tax Credits (commonly referred to as 48C) for clean energy manufacturing in the U.S.

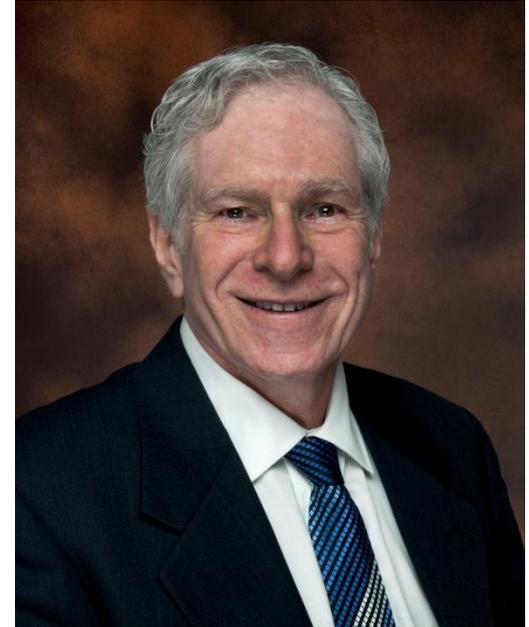
- These remaining tax credits will be allocated on a competitive basis. Projects will be assessed by the DOE based on the following criteria: commercial viability, domestic job creation, technological innovation, speed to project completion, and potential for reducing air pollution and greenhouse gas emissions.
- DOE hosted an informational webinar on the 48C Phase II Program on February 12, 2013 to provide initial information on the application process.
- Concept papers for the 48C Phase II Program must be submitted to DOE by April 9, 2013, and full applications will be due to both DOE and IRS by July 23, 2013.

(Link to the solicitation and fact sheet can be found on slide 13)

- On February 1, 2013 Secretary Chu announced his intention to step down as Secretary of Energy. He has agreed to stay until a successor was transitioned.
- Currently, no new Secretary of Energy has yet been announced.



- On February 12, 2013, Elliott received recognition from the BETO staff for his work with the Biomass R&D TAC.



“For shouldering the demanding requirements of serving the TAC.....A duty we are grateful Elliott has embraced and fulfilled.”

Bioenergy Technologies Office Links:

1. BETO Multi-Year Program Plan, November 2012 Update
http://www1.eere.energy.gov/biomass/pdfs/mypp_november_2012.pdf
2. Advanced Biomass Feedstock Logistics Systems II FOA Awards
http://www1.eere.energy.gov/biomass/financial_opps_news.html?sol_id=570Clean
3. Advancements in Algae Biofuel Yield FOA Awards
http://www1.eere.energy.gov/biomass/financial_opps_news.html?sol_id=566
4. CHASE Bio-Oil Pathways FOA Awards
http://www1.eere.energy.gov/financing/solicitations_detail.html?sol_id=558
5. BETO Funding Opportunities
http://www1.eere.energy.gov/biomass/biomass_solicitations.html
6. SBIR Program
<http://science.energy.gov/sbir/funding-opportunities/>
7. 2013 Peer Review
http://www1.eere.energy.gov/biomass/peer_review2013.html
8. Advanced Energy Credit for Manufacturers (IRC 48C)
[http://www.irs.gov/Businesses/Advanced-Energy-Credit-for-Manufacturers-\(IRC-48C\)](http://www.irs.gov/Businesses/Advanced-Energy-Credit-for-Manufacturers-(IRC-48C))
9. Fact Sheet: 48C Manufacturing Tax Credits
<http://energy.gov/downloads/fact-sheet-48c-manufacturing-tax-credits>