

U.S. Department of Energy Updates

Elliott Levine
DOE Biomass Program
November 14, 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 November meeting: **December 15th**

Future Meeting Dates

- Tentative meeting dates for 2013 Q1-Q4 meetings have been identified below and will be discussed during the meeting:
 - Q1: February 25-March 1, 2013
 - Q2: May 20-24, 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 consensus opinion and availability of the Committee members.

Wednesday, November 14th

Introduction and Welcome

- 1:00-1:10 Acting Committee Chair

DOE/USDA Updates

- 1:10-1:30: DOE Updates – Elliott Levine (DOE)
- 1:30-1:50: USDA Updates – Todd Campbell (USDA)

Presentations

- 1:50-2:40: BRDI Solicitation and New Awards Update
- 2:40-3:00: *Break*
- 3:00-5:00: Subcommittee Reports and Discussion of Recommendations
- 5:00-5:15: Vote – FY 2012 Annual Recommendations
- 5:15-5:30: Public Comments

Reception for Committee members

- 6:00-7:00: Refreshments and Cash Bar

Thursday, November 15th

- 8:30-9:00: *Breakfast*

Presentations

- 9:00-10:45: USDA/DOE Key Project Updates
- 10:45-11:00: *Break*
- 11:00-11:45: NSF Solicitations Data Collection
- 11:45-1:00: *Lunch (provided for Committee)*

2013 Committee Work Plan and Subcommittee Objectives

- 1:00-1:45: Develop Recommendations Presentation to the Board
- 1:45-2:30: Discussion: What are your needs for next year?
- 2:30-2:45: *Break*

Presentations

- 2:45-3:30: Update on Joint DPA Initiative
- 3:30-3:45: Public Comment
- 3:45-4:15: Closing comments

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Official functions of the BRDI 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 2012 TAC recommendations have been 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

Feedstock Logistics Request for Information (RFI)

- On November 7, 2012, the Program released an RFI to invite public comment on the *Biomass Densification Workshop Report: Transforming Biomass to Feedstocks*, a report based on the Biomass Densification Workshop held August 23-24, 2011 in Idaho Falls, Idaho.
- Interested stakeholders and the research community are encouraged to provide input regarding efficient strategies and technologies for reducing the delivered cost of lignocellulosic biomass, increasing industry-accessible biomass volumes, and ensuring input quality specifications required by a variety of biorefinery processes – an area considered extremely important to achieving the goals of the RFS.
- The Deadline to provide inputs is **November 21, 2012**

*More information about the RFI and the Report can be found in Tab 8
and in the link on slide 21.*

Conversion Technologies for Advanced Biofuels Request for Information

- On October 31, 2012, the Program released an RFI to invite public comment on the *Conversion Technologies for Advanced Biofuels (CTAB) Roadmap*, a report based on the CTAB Workshop held December 6-8, 2011 in Washington, D.C.
- Interested stakeholders and the research community are encouraged to provide input regarding technologies for the deconstruction of lignocellulosic biomass to intermediates and for the upgrading of biomass derived intermediates to hydrocarbon transportation fuels and blendstocks, as summarized in the accompanying draft Conversion Technologies for Advanced Biofuels (CTAB) Roadmap.
- The Deadline to provide inputs is **November 19, 2012**

More information about the RFI can be found in the link on slide 21.

Biomass Program International Webinar

On December 5, 2012, from 1:00-2:30 EST, the Program will hold an International Webinar detailing some of the Program's international collaborations. Topics and select speakers will include:

- U.S.-China collaborations on feedstock logistics, Chris Wright, INL
- U.S.-Canada collaborations on pyrolysis oil, Jonathan Male, PNNL
- U.S.-Brazil collaborations on advanced biofuels and sustainability, Helena Chum, NREL
- International standards for more sustainable bioenergy, Keith L. Kline, ORNL

More information about the Webinar can be found in the link on slide 21.

- **Biomass Program 2013 Platform Peer Review**
 - Renaissance Arlington Capital View Hotel
2800 South Potomac Ave.
Arlington, VA 22202
 - April 8-12, 2013
- **Program Peer Review and Biomass 2013**
 - Planning is currently underway for a combined three-day event in Washington, DC, to occur in the July/August timeframe.

If you would like to be considered for a reviewer for the Platform Peer Review, please contact Elliott at elliott.levine@ee.doe.gov or Andrew at agraves@bcs-hq.com.

The Biomass Program is developing a new "pathways" effort to identify the technologies that will enable the development of hydrocarbon fuels to meet national needs for aviation, heavy vehicle, and light vehicle transportation fuels. The following pathways were selected based on techno-economic potential and resource availability:

- Fermentation of Sugars to Hydrocarbons
- Catalytic Upgrading of Sugars to Hydrocarbons
- Fast Pyrolysis
- Catalytic Pyrolysis – ex situ
- Catalytic Pyrolysis – in situ
- Whole Algae Hydrothermal Liquefaction (AHTL)
- Algal Lipid Upgrading (ALU)
- Syngas to Methanol to Triptyls

This approach replaces and/or expands upon earlier efforts focused primarily on the following approaches:

- Biochemical Fermentation to Ethanol
- Gasification to Ethanol
- Fast Pyrolysis to Hydrocarbons

- The Department of Energy recently announced up to \$3.5 million for Iowa State University, collaborating with Catchlight Energy, LLC a 50/50 joint venture of Chevron Corporation and Weyerhaeuser NR Company.
 - This project is a three-year collaboration to develop an “end-to-end” system to produce bio-gasoline, bio-diesel and associated chemicals from corn stover, forest residuals and intercropped forest-grown switchgrass. Catchlight Energy will collaborate with ISU to relocate their pilot plant to advance the solvent liquefaction technology. This unique solvent system is a nearer-term technology to convert biomass to an advanced bio-crude which can be processed in a conventional refinery. These “drop-in” fuels are fully compatible with current vehicle engines and fuels infrastructure.

Bio-Oil Stabilization and Commoditization

On August 15, 2012, awards for up to \$15 M were announced to support production of stable bio-oils from lignocellulosic and algal biomass sources for blending within petroleum refineries to produce fungible transportation fuels with a renewable component.

- **Topic Area 1: Targeted for R&D to establish "proof of concept" bio-oil production systems with the objective of engaging a refinery partner by the end of the 1-year project period for bio-oil quality testing.**
 - Southern Research Institute (Durham, NC), up to \$654 K
 - Stevens Institute of Technology (Hoboken, NJ), up to \$651 K
 - Idaho National Laboratory (Idaho Fall, ID), up to \$750 K
 - Sapphire Energy (San Diego, CA), up to \$560 K
 - Iowa State University (ISU) (Ames, IA), up to \$750 K
 - University of Georgia (Athens, GA), up to \$531 K
- **Topic Area 2: Tailored for technology providers with an R&D plan and refinery partner at the onset with the goal of "process validation" at an engineering-relevant scale.**
 - Pacific Northwest National Laboratory (Richland, WA), up to \$4.0 M
 - Gas Technology Institute (Des Plaines, IL), up to \$ 3.2 M

(See Tab 7 for details. Also more information can be found at the link on slide 21)

Advancements in Sustainable Algal Production

On August 15, 2012, DOE announced awards of up to \$14 M to support outdoor phototrophic algae R&D. This research will support the Biomass Program's goals to model pathways for significant (>1 billion gallons per year) volumes of cost-competitive algal biofuels by 2022.

- **Topic Area 1: Nutrient and Water use in Algal Production Systems**
 - California Polytechnic State University (San Luis Obispo, CA), up to \$1.3 M
 - University of Toledo (Toledo, OH), up to \$2.99 M
 - Sandia National Laboratory (branch located in Livermore, CA), up to \$ 2.15 M
- **Topic Area 2: Development of Algal Technology Testbed Facilities**
 - Arizona State University (Tempe, AZ), up to \$ 8.3 M for two years

(See Tab 7 for details. Also more information can be found at the link on slide 21)

Technology Research, Development, and Tools for Clean Biomass Cookstoves

On October 18, 2012, DOE announced awards for up to \$2.5 Million for applied research to advance clean biomass cookstove technologies for use in developing countries. The funding will support the development of innovative cookstove designs that allow users to burn wood or crop residues more efficiently and with less smoke than open fires and traditional stoves.

- **Topic Area 1: Applied Research and Development for Products with Auxiliary Devices, including Fans, Sensors, and Controls**
 - BioLite LLC (Brooklyn, NY), up to \$ 949 K
 - Research Triangle Institute (RTP, NC), up to \$ 868 K
- **Topic Area 2: Combustion and Heat Transfer Research**
 - Colorado State University (Fort Collins, CO), up to \$ 999 K

(See Tab 7 for details. Also more information can be found at the link on slide 21)

Current OBP awards that are under review:

- **Innovative Pilot FOA**

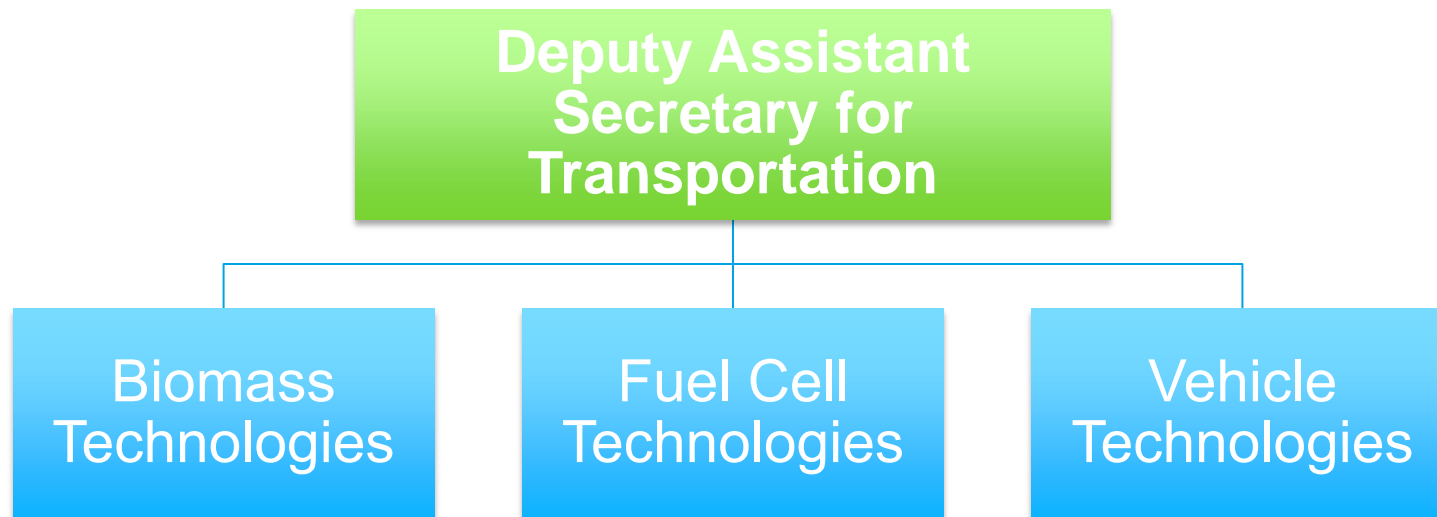
- Up to \$20 million to support production of hydrocarbon fuels (jet, diesel) at pilot or demonstration scale facilities that meet military blend specifications
- Award announcement targeted for November-December 2012

- **Synthetic Biology FOA**

- Up to \$12 million to support research on new techniques to enable the development of biological systems to produce advanced biofuels and bioproducts.
- Award announcement targeted for November-December 2012

Corporate-Level Reform:

- New position open for a Deputy Assistant Secretary for Transportation
 - Will supervise Biomass Technologies, Fuel Cell Technologies, and Vehicle Technologies programs.



Solicitations

- **Joint DOE-USDA Plant Feedstock Genomics for Bioenergy (DE-FOA-0000770)**
 - Interactions between bioenergy feedstock plants and their environment; development of new cultivars of regionally adapted bioenergy feedstock crops
 - *Long term goal:* Implement National strategy to deploy cultivars with enhanced biomass yield and sustainability characteristics
 - ***FOA release anticipated November, 2012***
- **DOE Joint Genome Institute (JGI): Emerging Technologies Opportunities Program**
 - Partner with the DOE JGI to provide its users with an evolving set of world-class genomic capabilities
 - Posted 10/4/2012; pre-proposals DUE December 15, 2012

Planned Solicitations

- **Genomic Sciences Program**
 - Roles of Microbial Communities in Carbon Cycling
- **DOE Systems Biology Knowledgebase**
 - Partner with KBase to address problems in microbial, metagenomic communities or plants
 - Large scale genomics data integration/visualization for functional annotation; dynamical pathway modeling; whole cell and community simulations

Reviews

Bioenergy Research Centers, Year 5 Reviews > On site, fall-winter 2012

Reports

- **DOE - Joint Genome Institute (JGI) Strategic Planning Workshop** (May 2012)
 - Major themes and needs outlined: Continue sequencing; HTP functional annotation of DNA; extended/improved bioinformatics capabilities; DNA synthesis; improved automation of biological experimentation; community organization

<http://genomicscience.energy.gov/userfacilities/jgi/futuredirections/index.shtml>
- **JGI Strategic Plan Completed:**
 - Path to transform JGI into a next generation genome science center
 - Emphasis on providing HTP functional information and analysis techniques to complement genomic data
 - Incorporate new capabilities and/or partners to enhance genotype to phenotype interpretations

<http://www.jgi.doe.gov/whoweare/10-Year-JGI-Strategic-Vision.pdf>

Biomass Program Links:

1. Bio-Oil Stabilization and Commoditization FOA Awards
http://www1.eere.energy.gov/biomass/thermochemical_conversion.html
2. Feedstock Logistics RFI and Workshop Report
<https://eere-exchange.energy.gov/default.aspx#Foalde29e9c86-254d-4adc-941c-48bd375058db>
3. CTAB RFI and Roadmap
<https://www.fedconnect.net/fedconnect/?doc=DE-FOA-0000775&agency=DOE>
4. International Webinar
http://www1.eere.energy.gov/biomass/events_detail.html?event_id=7419
5. Advancements in Sustainable Algal Production FOA Awards
<http://www1.eere.energy.gov/biomass/algae.html>
6. Clean Biomass Cookstoves FOA Awards
<http://www1.eere.energy.gov/biomass/biopower.html>
7. Funding Opportunities:
http://www1.eere.energy.gov/biomass/biomass_solicitations.html
8. 2011 Peer Review:
http://www1.eere.energy.gov/biomass/peer_reviews.html