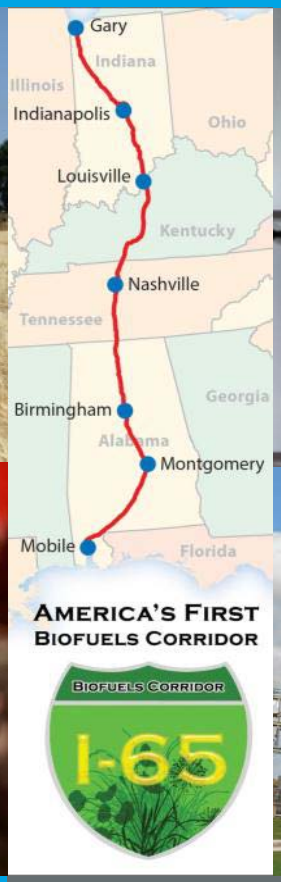
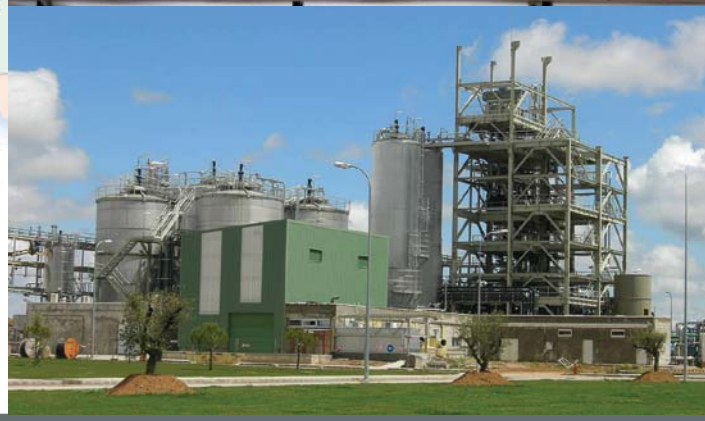
BIOENERGY TECHNOLOGIES OFFICE

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy





Biomass Research & Development Technical Advisory Committee

Mark P. Elless, Ph.D.
Designated Federal Officer

August 15, 2017
Los Angeles, CA

Outline

I. TAC Business

II. FY18 Budget Request

III. BETO R&D Updates

IV. Bioeconomy 2017 Conference & 2017 Program Management Review

Travel Reimbursement

- Traveler Information Form:
  - Please complete this form (except SSN) and submit to Shaune Gaither at DOE.
  - Shaune will make your travel arrangements (flights) and reimburse your allowable expenses.
  - Contact information is Lashaune.Gaither@ee.doe.gov or 202-586-5674.
- Allowable Expenses:
  - Flights will be arranged by Shaune Gaither
  - Lodging location will identified for you at government per diem rates. You will make and pay for your own reservation and be reimbursed.
  - Continental Breakfast and lunches will be provided for each day of the meetings. You will be reimbursed at the per diem rate for dinners.
  - Other Expectable Expenses: baggage fees; cab/shuttles; parking; Wi-Fi

Reimbursement deadline for this meeting: August 30th, 2017

2017 Work Plan and Meeting Dates

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Meeting	Objectives
Q1 March 30-31	• Receive overview presentation from BETO, USDA, NIFA, Office of Science, and EPA on priorities for 2017. • Review and select work plan for 2017 Committee activities. • Identify 1-4 quarterly focus topics.
Q2 June 15-16	• Receive key presentation of selected quarterly focus topic. • Work in subcommittees to further develop key themes, ideas, and recommendations for the quarterly focus topic.
Q3 August 15-17	• Receive key presentation of selected quarterly focus topic. • Work in subcommittees to further develop key themes, ideas, and recommendations for the quarterly focus topic. • Conduct a site visit.
Q4 Week of November 13-17	• Receive key presentation of selected quarterly focus topic. • Work in subcommittees to further develop key themes, ideas, and recommendations for the quarterly focus topic. • Vote on Q3 topic final recommendations.

FY18 Budget Requests for BETO

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Program Area	Presidential Request ($M)	House Mark ($M)	Senate Mark ($M)	Notes
Advanced Development & Optimization	6		50	
Advanced Algae Systems	5		30	
Conversion	34.6		85	Senate: $20M for Agile Biofoundry $5M for Biopower $5M for AD of wastes
Feedstock Supply and Logistics	6	27	20	
Strategic Analysis & Sustainability	5		5	
Total	**56.6**	**90**	**190**	

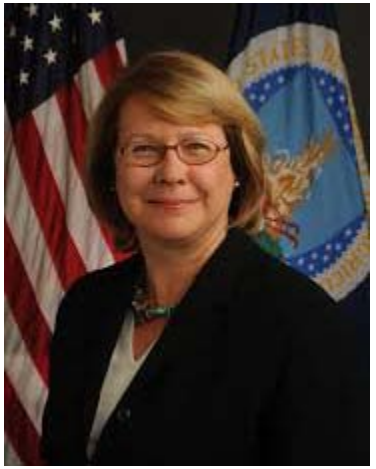
Senate Recommendation

- The National Academies of Sciences, Engineering, and Medicine has recognized that bioenergy with carbon capture sequestration [BECCS] has technical potential to provide a significant portion of the world's energy supply by the end of the century. If commercialized further, BECCS could be a baseload electricity resource with a net-negative carbon emission profile. *The Committee encourages BETO to continue its collaboration with FE on BECCS research, as well as research to advance net carbon-negative transportation fuels.*
- *The Committee encourages FE to collaborate with BETO within EERE to support projects that utilize carbon dioxide in the production of algae and other potentially marketable products.*

Biomass Board Updates

- Biomass R&D Board Co-Chairs
  - **Daniel Simmons, Assistant Secretary (Acting)**
    Before joining the Department of Energy, Daniel served as the Institute for Energy Research's Vice President for Policy, overseeing its energy and environmental policy work at the state and federal level. He previously served as director of the Natural Resources Task Force at the American Legislative Exchange Council, was a research fellow at the Mercatus Center.

  - **Dr. Ann Bartuska, Deputy Under Secretary for Research, Education, and Economics**
    Dr. Bartuska came to REE in September, 2010 from the USDA Forest Service, where she was Deputy Chief for Research & Development, a position she had held since January 2004.

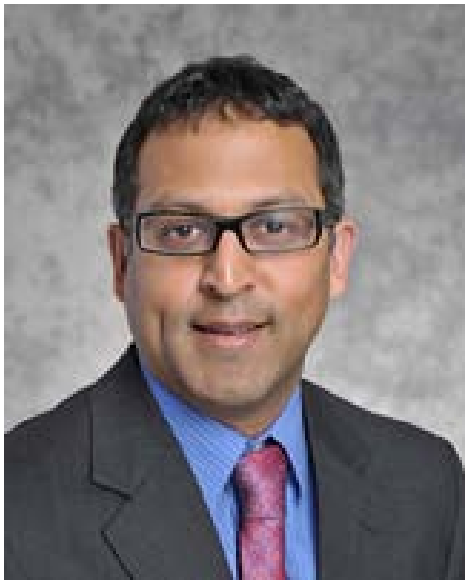


- Biomass R&D Board Co-Chairs have agreed to host a Board meeting in September at DOE.

EERE Updates

Reuben Sarkar, Deputy Assistant Secretary for Transportation has left DOE

- Oversaw EERE's Sustainable Transportation area, which includes the Vehicle, Fuel Cell, and Bioenergy Technologies offices.
- Oversaw annual investment of more than $600 million with a focus to reduce our oil dependence, avoid pollution, and create jobs by designing and manufacturing petroleum alternatives and more energy efficient cars and trucks.



Productivity Enhanced Algal Toolkit (PEAK)

FOA Objective: Increase algal areal and biofuel productivity to achieve targeted modeled minimum fuel selling prices and reducing the costs of producing algal biofuels and bioproducts by leveraging innovative pond ecology and strain biology strategies to grow healthy and productive algae crops.

LUMEN BIOSCIENCE

GLOBAL ALGAE INNOVATIONS

Los Alamos NATIONAL LABORATORY EST. 1943

Award Recipients:

- **Lumen Biosciences** (Seattle, WA): Lumen Biosciences is focusing on agricultural production of algae on otherwise non-productive land in rural eastern Washington State, with the ultimate goal of creating new agricultural jobs in that region.
- **Global Algae Innovations** (El Cajon, CA): Global Algae Innovations will deliver a tool for low cost, rapid analysis of pond microbiota, gather data on the impacts of pond ecology, and develop new cultivation methods that utilize this information to achieve greater algal productivity.
- **Los Alamos National Laboratory** (Los Alamos, NM): Los Alamos National Laboratory will evaluate rationally designed pond cultures containing multiple species of algae, as well as beneficial bacteria, to achieve consistent biomass composition and high productivity.

MEGA-BIO: Bioproducts to Enable Biofuels
Additional Selection Announced

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- The U.S. Department of Energy (DOE) announced on August 2nd that it will award a fourth project—up to $1.8 million—under the MEGA-BIO: Bioproducts to Enable Biofuels Funding Opportunity. In August 2016, BETO selected three projects for an initial round of funding. The total funding for the four MEGA-BIO awards is $13.1 million.
- DOE selected Michigan State University to manage the fourth project, which will work in partnership with the University of Wisconsin–Madison and MBI International to optimize a two-stage process for deconstruction of biomass into two clean intermediate streams: sugars for the production of hydrocarbon fuels and lignins for the production of multiple value-added chemicals. The project will work to overcome several existing challenges, such as lignin's low susceptibility to depolymerization, to help capture its full potential as an economically viable feedstock for renewable chemicals.

BETO SBIR Efforts

- In FY17 BETO is managing 8 Phase II and 10 Phase I awards with amounting to ~$8.5 M (thanks to Office of Science for funding ~$2.5 M of that total)
- Recent BETO SBIRs have largely focused on waste valorization, and BETO WTE efforts have expanded to waste gases
- Announcementssince last quad meetings
  - FY17 Release II Phase I Awards
    - *Biofuel and Bioproduct Precursors from Gaseous Waste Streams*
  - FY17 Phase II Awards
  - FY18 Release I Phase I Announcements (thanks to BES for sponsoring)
    - *Engineered Systems for Innovative Wet and Gaseous Waste Valorization*
      - Topic A – *Beyond Biogas: Valorization of Wet Organic Waste Streams*
      - Topic B – *Non-photosyntetic Carbon Dioxide Reduction and Biological*

Bioeconomy 2017

- Was held July 11-12, 2017 at the Sheraton Pentagon City Hotel
- Conference convened key representatives from across the bioenergy supply chain, including industry, federal agencies.
- Keynote speakers came from leaders in the bioeconomy including LanzaTech, Coca-cola, Impossible Foods, Ford Motor Company, ICM, and many more!
- Plenary topics included corporate and international interests in the bioeconomy, creating and communicating the bioeconomy value proposition, and a special extended shark tank style session.
- Breakouts covered 13 different topics including maritime, aviation, performance advantaged replacements and many more!

Program Management Review

- Was held July 13th at the Sheraton Pentagon City Hotel
- Results of the Project Peer Review were presented by Lead Reviewers, along with an overall assessment of BETO's portfolio presented by the Steering Committee
- 2017 Peer Review Report is expected to be published November, 2017