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

Biomass 2013

Bioenergy Technologies Office

July 31, 2013

Valerie Reed

Acting Director

Welcome

BIOMASS 2013:

HOW THE ADVANCED BIOINDUSTRY IS RESHAPING AMERICAN ENERGY

6th Annual EERE Conference

Co-hosted by Advanced Biofuels USA

Social Media at Biomass 2013

- Live social media coverage of Biomass 2013 via the Bioenergy Knowledge Discovery Framework's (KDF) Facebook and Twitter accounts. Coverage will include live tweeting, Facebook posts, photography, and blog posts.

- Follow the Bioenergy KDF to monitor updates from the conference:

Tweet to #Biomass2013 or @BioenergyKDF

Comment on posts at Facebook.com/BioenergyKDF

- We will be running a live twitter cluster on the screens during conference breaks.

The Bioenergy KDF is an online, GIS-based framework (funded by BETO) that facilitates informed decision making by providing a means to synthesize, analyze, and visualize vast amounts of information in a spatially integrated manner. The GIS-based framework allows users to analyze the economic and environmental impacts of various development options for biomass feedstocks, biorefineries, and infrastructure.

Agenda Highlights

DOE Keynotes

- Wednesday, 8:30-9:00 AM – **Michael Carr**, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Department of Energy
- Thursday, 2:00-2:30 PM– **Ernest Moniz**, Secretary of Energy, U.S. Department of Energy

White House and USDA Keynotes

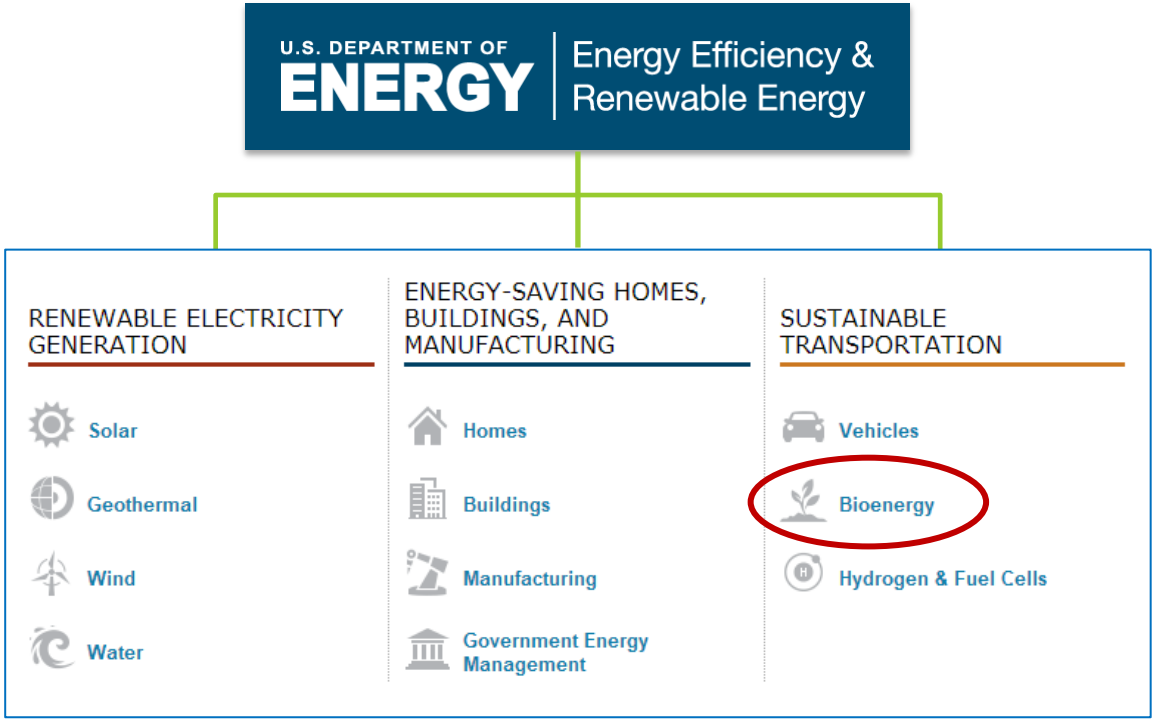
- Wednesday, 9:00-9:30 AM – **Dan Utech**, Deputy Director for Energy and Climate Change at the White House Domestic Policy Council
- Thursday, 8:30-9:00 AM – **Tom Vilsack**, Secretary of Agriculture, U.S. Department of Agriculture

Congressional Keynotes

- Wednesday, 8:00-8:30 AM – **Chuck Grassley**, U.S. Senate (R–IA)
- Thursday, 8:00-8:30 AM – **John Garamendi**, U.S. House of Representatives (D-CA)

Lunch - Screening of *Chasing Ice*, Directed by Jeff Orlowski (2012)

Working Within EERE

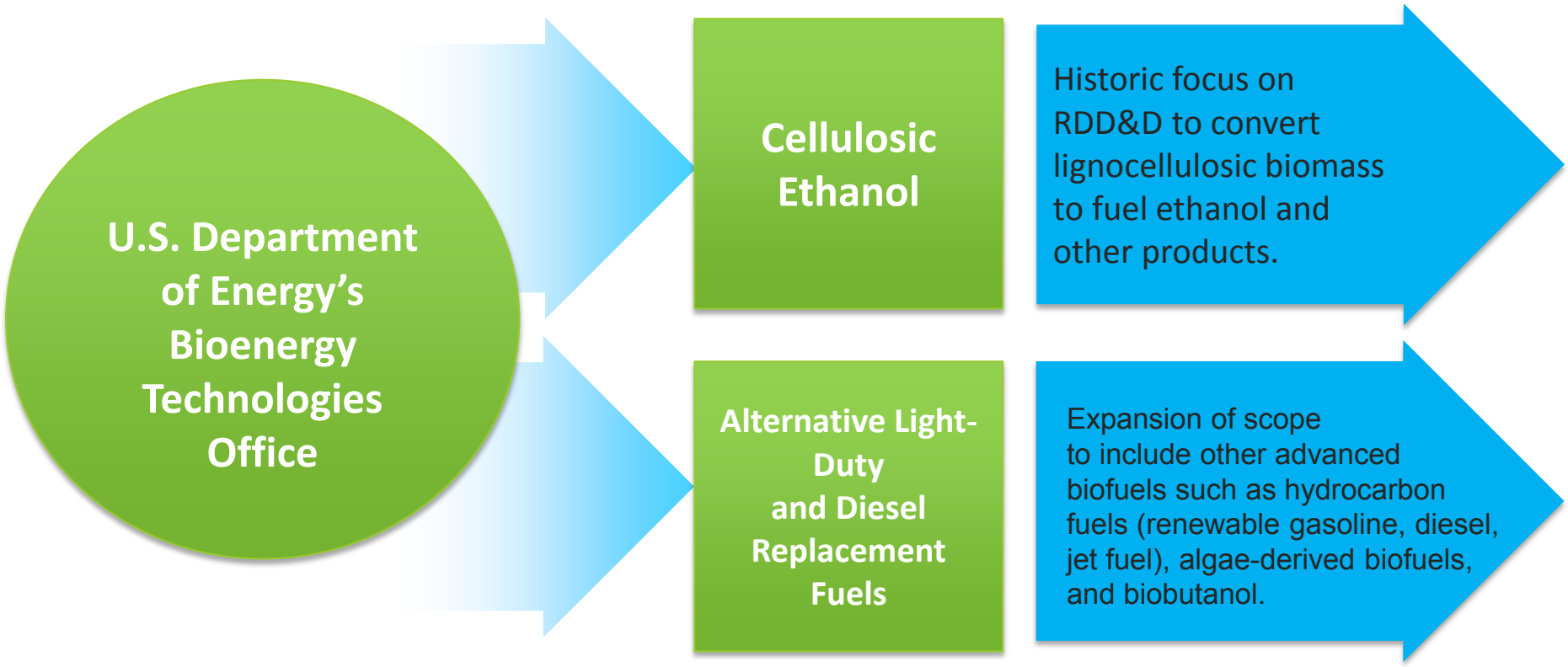


The Vehicle Technologies Office partners with the Bioenergy Technologies Office to support fuel characterization and combustion testing for novel biofuels and biofuel blends, including work with Clean Cities.

The Bioenergy Technologies Office also works with the Advanced Manufacturing Office on the Clean Energy Manufacturing Initiative in support of Carbon Fiber production from biomass.

Office Scope

BETO forms cost-share partnerships with key stakeholders to develop, demonstrate, and deploy technologies for advanced biofuels, bioproducts, and biopower from lignocellulosic and algal biomass.



DOE's Current Role in the Global Biorefinery Industry

"While proven in lab scale, testing and demonstration at larger scale is necessary before these technologies can successfully be implemented commercially…

The first facilities are most likely not to make any profit. Large investments are required and public funding needs to complement private investments[1]."

[1] *Bacovsky, Ludwiczek, Ognissanto, Wörgetter* Status of Advanced Biofuels Demonstration Facilities, IEA Task 39-P1b *March 2013*

[2] *Cellulosic Biofuels Industry Progress Report 2012-2013, Advanced Ethanol Council (AEC), December 2012*

Facing the Challenges

- Energy projects are facing multi-decade time horizons, creating a role for government to assist in lowering the risks of development.
- Rapid growth in deployment is needed to meet the approaching RFS2 targets.
- This means financing 500+ biorefineries, totaling at least $168 billion.[1]

Risks Include[2]	Mitigation Strategies
Technology	Validation of R&D at pilot scale
Construction	Engineering, procurement and construction performance guarantees at demonstration scale
Operations	Validate operations performance at Pilot and Demo scales
Finance	Competitive awards, Loan guarantees, IPOs, Debt finance
Feedstock Supply	Develop harvest and logistics operations at pioneer scale
Product Off-take	Advocate long-term purchase agreements

1 – A USDA Regional Roadmap to Meeting the Biofuels Goals of the Renewable Fuels Standard by 2022

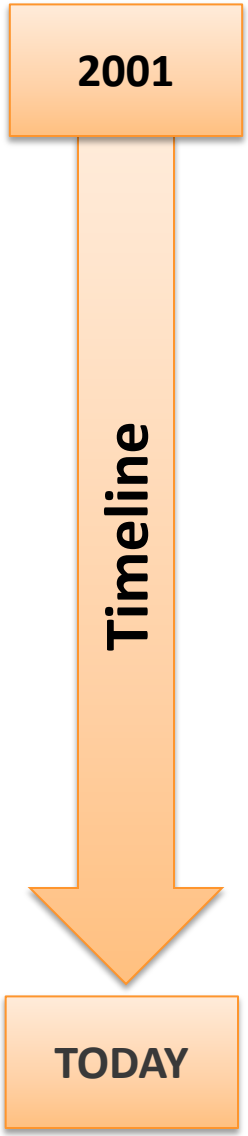
2 – Koonin S, Gopstein A, *Accelerating the Pace of Energy Change*, Issues in Science and Technology, Dec 2010

Leveraging State Financing

- In addition to Federal-level financing, State sponsored programs to assist bioscience companies are vital to the growth of the bioenergy industry in the U.S.
- States seek to attract high-paying jobs to their region through selective infrastructure and development incentives for new enterprises.
- The Bioenergy Technologies Office has an annual Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) solicitation.

Data: Bioscience Economic Development: Legislative Priorities, Best Practices, And Return On Investment, BIO, 2013

Programmatic Strategic Goals and Legislative Drivers



- 2001: Program pursues an integrated biorefinery strategy to address fuels, power and products from biomass;
- 2005's Energy Policy Act – Section 932: authorizes the Office to pursue deployment at commercial-scale to accelerate the industry; and lead to 4 pioneer plants that are being constructed;
- 2007's Energy Independence and Security Act (EISA) of 2007 sets aggressive initial goals in RFS;
- 2009: ARRA funding of $800 million directed to Program allowing for multiple pilot and demonstration facilities to be funded
- 2009: Cost target for cellulosic ethanol set at **$2.00/gal,** for mature plant cost validated at pilot scale;
- 2011: Program sets target for hydrocarbon fuels at **$3/gge cost** mature cost, validated at pilot scale;
- 2012: BETO hits cellulosic ethanol R&D cost targets in support of Biochemical and Thermochemical design cases (mature plant modeled cost projections);
- 2013: New design cases are being developed for Biochemical and Thermochemical routes to gasoline, diesel, and jet fuel that will support the $3/gge programmatic cost target.

Thank You