Biomass Research and Development

Technical Advisory Committee

June 15–16, 2017

Meeting Summary

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List of Acronyms

BETO – Bioenergy Technologies Office
BIP – Biofuels Infrastructure Partnership
BRDI – Biomass Research and Development Initiative
Committee – Biomass Research and Development Technical Advisory Committee
CRS – Congressional Research Service
DOE – U.S. Department of Energy
FY – fiscal year
R&D – research and development
RFS – Renewable Fuel Standard
SBIR – Small Business Innovation Research
USDA – U.S. Department of Agriculture

I. Purpose

On June 15–16, 2017, the Biomass Research and Development (R&D) Technical Advisory Committee (Committee) held its second meeting of 2017. The Committee received updates from the U.S. Department of Energy's (DOE's) Bioenergy Technologies Office (BETO), as well as representatives from the U.S. Department of Agriculture (USDA) who delivered presentations about current USDA activities. Other presentations were given by the Congressional Research Service (CRS), staff from the House Agriculture Committee, the Tennessee and Washington State Departments of Agriculture, the Renewable Fuels Association, and the Biotechnology Innovation Organization.

See Appendix A for a list of meeting attendees and Appendix B to review the meeting agenda. Meeting presentations can be viewed on the Biomass R&D Initiative (BRDI) website.

Background:

The Committee was established by the Biomass Research and Development Act of 2000, which was later repealed and replaced by Section 9008 of the Food, Conservation, and Energy Act of 2008. The Biomass R&D Board was established under the same legislation to coordinate activities across federal agencies. The Food, Conservation, and Energy Act has recently been amended by the Agricultural Act of 2014. The Committee is tasked with advising the Secretary of Energy and the Secretary of Agriculture on the direction of biomass R&D.

II. Welcome

Kelly Tiller, Committee Co-Chair

Dr. Tiller welcomed the Committee to the second meeting of the year and called the meeting to order. The focus for the second quarterly meeting was "Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine." The Committee heard the following panels discuss the meeting topic:

- Congressional Point of View
  - *Congressional Research Service*
  - *Professional staff from House Agriculture Committee*
- States' Department of Agriculture Point of View
  - *Tennessee Department of Agriculture*
  - *Washington State Department of Agriculture*
- Industry Point of View
  - *Renewable Fuels Association*
  - *Biotechnology Innovation Organization.*

III. Committee Business for 2017 and DOE Updates

Mark Elless, Designated Federal Officer, DOE

Dr. Elless started his presentation by providing and update on the recently released BRDI Request for Applications. The request was released through the Office of Energy Efficiency and Renewable Energy Exchange on June 5, 2017, with a total of $9 million available from USDA and DOE combined. The expected award size is $0.5–$2 million per project; DOE is expected to award 1–6 projects, and USDA is expected to award 3–12. Concept papers are due July 7, 2017, and full applications will be due on September 22, 2017. The proposed criteria and weight for full applications are as follows:

- Criterion 1: Technical Relevance and Merit (Weight: 35%)
- Criterion 2: Technical Approach/Work Plan (Weight: 25%)
- Criterion 3: Technical, Management, and Facility Capabilities (Weight: 25%)
- Criterion 4: Rural Economic Development and Sustainability (Weight: 15 %).

Dr. Elless then provided general updates from BETO:

- BETO published the *Alternative Aviation Fuels Report* on March 28, 2017. The report provides an overview of the current state of alternative aviation areas, based on input from the Alternative Aviation Fuels Workshop held in September 2016.
- On April 21, 2017, DOE announced 38 small businesses that will collaborate with national laboratory researchers through the Small Business Vouchers Pilot. In the bioenergy area, five projects will be partnering with six national laboratories:

    - **Gevo:** Argonne National Laboratory and the National Renewable Laboratory will partner with Gevo to produce the next generation of biofuels that augment petrochemicals by creating a model that measures the synergistic and antagonistic relationship between gasoline and isobutanol.

    - **Cogent:** Idaho National Laboratory will assist Cogent in improving its small-scale gasifier for distributed waste-to-energy applications and markets. The gasifier can produce profitable end products like electricity, hydrogen and/or chemical precursors, and liquid fuels.

    - **Kalion**: Lawrence Berkeley National Laboratory and Kalion will work together to reach full manufacturing-scale production of glucaric acid and glucuronic acid by creating a manufacturing-ready production strain and scaling up that strain to generate an appropriate process.

    - **Synvitrobio:** Oak Ridge National Laboratory will work with Synvitrobio to develop cell-free-based analytical tools to convert renewable biomass into higher-order chemicals mevalonate and vanillin.

    - **ThermChem:** Pacific Northwest National Laboratory will partner with ThermChem to determine how to valorize the hydrothermal carbonization process liquids. This goal of this project is to identify the potentially valuable and intermediate chemicals in these aqueous phases and convert them into value-added biochemicals and bioproducts.

- On April 14, 2017, BETO launched the interactive Small Business Innovation Research (SBIR) Projects Map on the BETO website. The SBIR Map depicts all of the recent U.S. projects BETO has competitively awarded through the SBIR program.

- BETO and Argonne National Laboratory developed an innovative Bioenergy Career Map. The Bioenergy Career Map enables users of all ages to discover traditional and nontraditional career opportunities in the bioenergy industry.

- *Bioeconomy 2017* was held on July 11–12, 2017, at the Sheraton Pentagon City Hotel. Participants heard from key representatives from across the bioenergy supply chain, including industry, federal agencies, and Congress.

- The 2017 Program Management Review was held on July 13, 2017, at the Sheraton Pentagon City Hotel. Lead Reviewers presented the results of the Project Peer Review, and the Steering Committee presented an overall assessment of BETO's portfolio.

IV. USDA Update on Biomass R&D Activities

Harry Baumes, Director, Office of Energy Policy and New Uses, USDA

Dr. Baumes began by providing updates to USDA programs, starting with the 9003 Biorefinery, Renewable Chemicals, and Biobased Manufacturing Assistance Program. USDA recently approved nine new projects into phase 2 of the approval process, totaling approximately $819 million in loan guarantees and over $1.3 billion in leveraged private funding. The project outputs include advanced biofuels, renewable chemicals, and biobased products. USDA accepts applications on a rolling basis. The next application window cutoff date is October 1, 2017. The next program Dr. Baumes discussed was the Biomass Crop Assistance Program, which provides financial assistance to owners and operators of agricultural and non-industrial private forestland who wish to establish, produce, and deliver biomass feedstocks. $15.8 million was obligated to support the delivery of 790,000 dry tons to 60 biomass conversion facilities in 18 states. The Biomass Crop Assistance Program has incentivized nearly 1,000 growers and landowners, farming nearly 49,000 acres, to establish and produce dedicated, non-food energy crops. Facilities supported include biofuel, renewable electricity, and biobased products. Next, Dr. Baumes discussed the Biofuels Infrastructure Partnership (BIP). BIP offers competitive grants from USDA to state-led efforts to test and evaluate innovative and comprehensive approaches to marketing higher biofuel blends, such as E15 and E85. USDA awarded $100 million to 20 states in fiscal year (FY) 2015, with a more than 1:1 match from private and state resources. USDA estimates that the BIP grants will support nearly 5,000 pumps at over 1,500 fueling stations across the country. BIP-supported construction has been initiated in each of the 20 states and environmental assessments have been conducted on over 78% of the targeted fueling stations.

Next, Dr. Baumes presented highlights from research conducted by the USDA Agricultural Research Service. Research highlights included Napier grass hybrid research from the southeastern region, solid waste into bioenergy, guayule to develop natural latex rubber, estolides motor oil from plants, and heathy foods from biomass waste.

USDA National Institute for Food and Agriculture research highlights included the following: the 2017 Agriculture and Food Research Initiative's Foundational Program, Bioprocessing and Bioengineering, just closed. Integration of Bioenergy Systems into Multifunctional Landscape is currently open. The 2017 Agriculture and Food Research Initiative's Bioenergy and Biobased Product Challenge Area closes on June 28 for both (1) lignin or nano-cellulose co-products and (2) development and evaluation of biomass feedstocks.

The 2014 Farm Bill directs USDA to examine options for reorganizing the international trade functions at USDA. There is a proposal to create a new Undersecretary for Trade and Foreign Agricultural Affairs which will realign the Foreign Agricultural Service. USDA is also considering the creation of a new Undersecretary for Farm Production and Conservation, who will oversee the Farm Services Agency, National Resources Conservation Service, and Risk Management Agency. Additionally, the Undersecretary for Natural Resources and Environment will oversee the U.S. Forest Service. The proposed FY 2018 budget for USDA shows a 21% reduction from FY 2017, resulting in $4.7 billion in cuts, down to $21 billion (discretionary funds). Funding for mandatory programs in FY 2018 is estimated to be $116 billion, about $7 billion below FY 2017.

V. Congressional Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine

Brent D. Yacobucci, Research Manager—Energy and Minerals Section, CRS
Evan Jurkovich, Professional staff from the House Agriculture Committee

Brent Yacobucci from CRS and Evan Jurkovich from the House Agriculture Committee presented updates and overviews of federal biomass R&D programs. Their remarks to the Committee were solely their own and do not necessarily represent those of CRS or any others.

CRS provides authoritative, confidential, non-partisan, objective research and analysis for members of Congress and their staff. Mr. Yacobucci provided his outlook on the upcoming Farm Bill development. The 2018 Farm Bill will be a difficult process. Title IX, which includes BRDI and many other biomass-related programs, has been getting lower funds over time. The president's proposed budget showed many cuts to USDA. It is unclear at this time where the push and support for Farm Bill activities will come from. Mr. Yacobucci did feel that states are still committed to climate change activities and that California has established a model that could develop a market pull that other states could adopt.

Mr. Jurkovich from the House Agriculture Committee staff provided his thoughts on current biomass legislation. He stated that it is still a very new Congress, and there is a lack of appointees at the agencies to work with on these issues. The bioeconomy issues include uncertainty of benefits, but there is leadership from the Midwest. The Renewable Fuel Standard (RFS) has been questioned for a long period of time, and the House has started working groups to discuss what is next, after 2022. The Farm Bill is targeted to be approved by September 2018. There are competing priorities, however, including health care, budget, and confirmations.

Manuel Perez asked what the impact would be on the national laboratories. Mr. Jurkovich stated that national laboratories are elements that make the United States competitive. Mr. Yacobucci felt that national laboratories fulfill two functions: energy and national security. With half of the DOE budget going to the National Nuclear Security Administration, he felt the laboratories will play a necessary role in those functions.

Patricia Scanlan asked about the information that Congress is receiving and how the bioeconomy could best communicate. Mr. Yacobucci felt that the biggest issue was the lack of measurements for success and that the industry needs to provide real data. There is a lot of internal competition for early renewable energy sources, with associations providing mixed messages. Mr. Jurkovich felt that the bioeconomy is super niche and needs to engage the media to educate others.

Ray Huhnke said that there are a number of successes from the Energy Title and wants to know how best to communicate them. Mr. Jurkovich said there are many competing constituents already involved in the Farm Bill process and that they don't hear from the bioeconomy constituents on a regular basis.

VI. States' Department of Agriculture Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine

Louis Buck, Tennessee Department of Agriculture
Mary Beth Lang, Bioenergy and Special Projects Coordinator, Washington State Department of Agriculture

Mr. Buck from the Tennessee Department of Agriclture provided some insights from Tennessee's perspective. The bioeconomy needs to be more under the umbrella of the rural economy and exports. Tennessee is looking for direction from their CEOs over direction from Washinton, D.C

Ms. Lang from the Washington State Department of Agriclutre provided an overview of Washington State's bioenergy initiative. Their bioenergy goals are to reduce dependence on foreign oil, improve environment and public health, and support the state's agriculture and rural economy. Their drivers for biodiesel are the RFS and initiatives with the military and commercial avaation. Their strategy is to invest in cropping system research, incentivize invesments in prociessing facilities, and ensure quality for biodiesel use in the state.

Ray Miller asked if the benefits of the bioeconomy are too localized for federal policies to take the lead in the bioeconomy. Ms. Lang stated that the benefits are localized, but federal policy is providing drivers, such as the RFS.

Harry Baumes asked if promoting the bioeconomy for fuels and products is helpful. Mr. Buck stated that you must find ways to use social media and reach millenials. Ms. Lang said the term bioenergy does not have the same buzz as climate, sustainability, carbon intenisty, battery technology, wind, or solar.

Ray Huhnke asked what the main drivers are in Ms. Lang's and Mr. Buck's states. Mr. Buck stated that industry and developers are leading the way, such as UPS fleet operations. Ms. Lang stated that the avaiation industry and Green Cities are leading the way.

VII. Industry Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine

Bob Dinneen, President and CEO, Renewable Fuels Association
Paul Winters, Director, Communications, Biotechnology Innovation Organization

Mr. Dinneen from the Renewable Fuels Association provided an ethanol market and policy update to the Committee. The Renewable Fuels Association is a trade association representing U.S. ethanol producers. Their mission is to "drive expanded production and use of American-made renewable fuels and co-products worldwide." Member producers include large bioenergy companies and agribusinesses, as well as small, farmer-owned co-ops and LLCs. Associate members include vendors, suppliers, supporters, etc. Today's ethanol industry has 212 installed production facilities, with 199 in operation and 13 idle. Installed facilities have "nameplate" capacity to produce 16.1 billion gallons annually. Actual production capacity is likely ≈ 16.4 BG. Actual production in 2016 was 15.33 BG, which is about 96% capacity utilization. Corn is the largest feedstock; it accounts for almost 94% of capacity, while cellulosic biomass accounts for 0.6% of capacity.

Ethanol is primarily used for E10 blending, followed by exports, then blends higher than E15. E15 and E85 retail infrastructure expansion is accelerating due to the USDA BIP grant program, ethanol industry grant programs, RFS Renewable Identification Number values, and Low-Carbon Fuel Standard credit values (California). Major retail chains are adopting E15 and E85. Many stations are high-volume sites. There are 900–1,000 stations expected to sell E15 by the end of 2017. The U.S. Environmental Protection Agency's proposed rule for 2018 RFS requirements will be released very soon. There is still time to meet the statutory deadline of November 30, 2017, for the final rule if the proposal is released for public comment by mid-June. We expect conventional renewable fuel requirement to remain at a statutory level of 15 billion gallons and expect a very modest (100–200 million gallons, 2%–4%) increase to total advanced biofuel standard. We do not expect the 2018 proposed rule to address petitions related to moving the RFS point of obligation.

Oil companies continue to push for repeal or reform of the RFS. Reform focus is increasingly shifting to post-2022. The House Energy and Commerce Committee is holding roundtable discussions to solicit input on reform concepts and gauge appetite for modifications. The support for the RFS is bipartisan and falls along geographical lines. Forty-one Senators were on record last summer supporting the RFS and opposing legislative repeal or reform. No meaningful legislative action on the RFS is expected in the near term. President Trump continues to voice support for the RFS and ethanol, and Agriculture Secretary Sonny Perdue is a strong supporter of the RFS

Next, Mr. Winters from the Biotechnology Innovation Organization provided their perspective. Companies are developing biotech applications for a broad and growing variety of biobased industries, creating potential for new products, new markets, and new economic activity. All economic predictors we have seen suggest that the biobased economy is poised for growth. All of the necessary ingredients for growth are in place:

- An abundance of cost-competitive, renewable, raw material feedstocks
- Demonstrated commercial success of pioneer biorefineries and products
- A pipeline of innovative research undergoing commercialization.

However, those items aren't always enough, especially when it comes to commercializing new technologies and building new market value chains. To translate this pipeline of innovation into economic growth—to achieve what the economic indicators show is possible—we need to keep the "innovation ecosystem" healthy with stable, forward-looking policy that supports our efforts to build investment in the biobased economy. The first element of the innovation ecosystem is the demonstrated successes of pioneer biorefineries and biobased products, which is key to raising desperately needed capital in our industry. Over the past decade, forward-leaning investors have told us they are willing to fund construction of the second or third biorefinery—as long as the first one works and the concept is proved. The second element is a pipeline of products and technologies under development to keep the innovation ecosystem alive. The third element of the innovation ecosystem is the necessary raw material. Policy is perhaps the fourth element of the innovation ecosystem. Federal and state programs help the innovation ecosystem thrive by supporting R&D, supporting commercialization, and growing new markets for new products. There are good policies in place. There is an opportunity to improve them and make them work for new technologies. Across the board in federal policy, the Biotechnology Innovation Organization's priorities are as follows:

- Stable implementation of programs
- Over a multiyear horizon
- The broadest inclusion of new technologies and feedstocks—in fact, policies should be technology and feedstock neutral to the most practicable extent.

Within Title IX of the last Farm Bill, the Energy Title received $881 million in mandatory funds in 2014, representing less than 1% of the overall Farm Bill budget. This small amount of funding yields big results for the overall economy.

The fifth element of the innovation ecosystem is investment and capital. Between 2010 and 2015, investors pumped nearly $9.2 billion into the industrial biotechnology sector, primarily in renewable chemicals and biobased polymers. The funding came from a variety of sources, including private equity and some public investment. But, the majority of the investment and financing—$5.3 billion (57%)—came from venture capital.

Mike Wolcott asked who the strongest advocacy group is for the bioeconomy. Mr. Winters said that the Biotechnology Innovation Organization has built alliances with Farm Bill advocates. Mr. Baumes stated that the Biotechnology Innovation Organization played a role in getting bioproducts included in Title 9003 of the 2014 Farm Bill.

Matt Rudolf asked what will happen if cellulosic ethanol does not make recent mandatory volumes in the RFS. Mr. Dinneen stated that missing the targets two years in a row will increase risk. Mr. Rudolf said that bolt-on technology to existing facilities is playing a role in producing cellulosic ethanol, but

dedicated plants are needed to meet targets. Mr. Dinneen said that cellulosic ethanol is not easy to use. Current facilities are facing challenges. Support and policy need to be leveraged to address challenges.

Valerie Thomas asked what evidence there is of economic development from the biobased engine. Mr. Dinneen said that the value-added market is ethanol for rural America, providing employment and GDP. Other benefits include energy security, saving at the pump, and greenhouse gas emissions. Mr. Winters said that billions of dollars have been spent on capital investments; what is needed is stable policy to see those benefits.

VIII. Approved Meeting Recommendations

Full Committee

Source: Biomass R&D Technical Advisory Committee

Advisory To: Biomass R&D Board

Report Date: June 2017

Issue: ***Articulating the Benefits of Accelerated Development of a Biobased Economic Engine***

Action Items:

- ☐ Develop state- and district-level bioeconomy benefit highlights
- ☐ Encourage bioeconomy-focused Farm Bill field hearings (listening sessions)
- ☐ Communicate bioeconomy success stories

Statement of Need: The Farm Bill has been an important framework for the agencies coordinating and implementing bioeconomy initiatives. Given the narrow window to provide relevant information to decision makers relating to the Farm Bill and to the appropriation bills for energy and agriculture, there is an urgent need to better communicate the benefits, successes, and future needs of the bioeconomy.

Context

The "bioeconomy" is very real at present and is poised for substantial growth. Successes in biofuels, such as ethanol and biodiesel, and in biopower have created mature, efficient, commercially viable technology platforms with substantial economic impact. Biofuels, including corn-based ethanol and biodiesel, currently provide more than 16 billion gallons[i] of clean, U.S.-produced motor fuels annually. Woody biomass and biogas provide about 63,000 megawatt-hours of electricity[ii] per year, and the wood pellet industry produces about 12 million tons of product annually[iii] with a large export market.

Recent science and technology advances have resulted in the commercial production of advanced biobased fuels, chemicals, and products. The rapidly expanding cellulosic ethanol industry provided over

4 million gallons[iv] of motor fuels in 2016, and production of gasoline and diesel using next-generation technologies is starting. Production of advanced chemicals and plastics is also expanding[v] rapidly. These advances can potentially expand the bioeconomy by 2030,[vi] creating over 1 million *new* U.S. jobs while *increasing* direct economic impacts by $250 billion/year—and up to $660 billion/year including indirect impacts.

The significant investments made to date in building the U.S. bioeconomy have created many societal benefits. However, these benefits are so broad that it is difficult to identify specific advantages to state and local constituencies. The current dialogue on a national scale actually obscures the more immediate benefits at the regional, local, and personal levels. There is an urgent need to effectively communicate the benefits, successes, and future research needs of the bioeconomy at the state and district level.

Key Benefits of Bioeconomy Success

- ✓ Jobs (up to 1 million direct new jobs[vii] by ~2030)
- ✓ Economic development (increased direct impact of more than $250 billion/year by ~2030[viii])
- ✓ National security and energy diversification
- ✓ Rural revitalization and prosperity
- ✓ International competitiveness
- ✓ Environmental sustainability
- ✓ Revitalization of underused assets and infrastructure

Key Challenges

- Bioeconomy benefits accrue locally and regionally, while policies and major research investments are crafted nationally. The existing disconnect needs to be bridged.
- Readily available information showcasing these significant bioeconomy impacts does not currently exist at the state-by-state level but is urgently needed.
- Bioeconomy benefits are diverse and spread across a number of industries, markets, and constituencies. There is no single constituency championing the bioeconomy despite this potential.
- Future investments in the bioeconomy must provide a higher value proposition than any other alternative use of funds, particularly in a time of shrinking national budgets.
- Addressing research needs that simultaneously consider state and regional impacts is important.

Opportunity:	*Most efforts to quantify the benefits of the bioeconomy are at the national aggregate level. The strongest advocates for championing the bioeconomy are at the state and district level.*

Recommendations:	(1) Report key bioeconomy performance and benefit metrics (e.g., jobs, level of investment, etc.) in a quantitative, state-by-state way, using a very user-friendly format. (2) Make tailored user-friendly reports/data available to states, industry representatives, private industry, and others best positioned to use the materials to support the bioeconomy.
Opportunity:	*The Farm Bill is a powerful tool for accelerating bioeconomy growth, although the Energy Title of the Farm Bill is not the only opportunity to advance and grow the bioeconomy.*
Recommendations:	(1) Focus one or more Farm Bill field hearings (listening sessions) specifically on the needs of the bioeconomy. (2) Identify Farm Bill sections and titles beyond the Energy Title (IX) where support for the bioeconomy can be complemented or integrated.
Opportunity:	*There are clear successes in the bioeconomy, but they are not always well-known, publicized, or understood.*
Recommendations:	(1) Assemble a representative set of case studies and specific examples illustrating the reach and benefits of the bioeconomy. (2) Build on existing successes (e.g., corn ethanol), highlighting the additional innovations and improvements over time.

IX. Closing Comments

The meeting was adjourned.

Appendix A: Committee Member Attendance—June 15–16, 2017

Co-Chairs	Affiliation	Attended?
Kelly Tiller	Genera Energy Inc.	Yes

Members	Affiliation	Attended?
Charles Abbas	Archer Daniels Midland (ADM)	Yes
Dean Benjamin	Verso Corporation	Yes
Esteban Chornet	Enerkem	No
Katrina Cornish	Ohio State University	Yes
Steve Csonka	Commercial Aviation Alternative Fuels Initiative	Yes
Vonnie Estes	Consultant	No
William Frey	Georgia-Pacific	No
Emily Heaton	Iowa State University	No
Beth Hood	Arkansas State University	Yes
Raymond Huhnke	Oklahoma State University	Yes
Joseph James	Agri-Tech Producers LLC	Yes
Randy Jennings	Tennessee Department of Agriculture	No
Coleman Jones	General Motors	No
Man Kit Lau	BioAmber Inc.	Yes
Bruce McCarl	Texas A&M University	Yes
Christine McKiernan	BIOFerm Energy Systems	No
Ray Miller	Michigan State University	Yes
Shelie Miller	University of Michigan	No
Marina Moses	American Academy of Microbiology	No
Neil Murphy	State University of New York	No
Kimberly Ogden	University of Arizona	No
Manuel Garcìa Pèrez	Washington State University	Yes
Anna Rath	NEXSTEPPE	No
Matthew Rudolf	SCS Global Services	Yes
Patricia Scanlan	Scanlan Environmental LLC	Yes
Abolghasem Shahbazi	North Carolina A&T State University	Yes
Don Stevens	Cascade Science and Technology Research	Yes
Valerie Thomas	Georgia Institute of Technology	Yes
Alan Weber	MARC-IV Consulting/Weber Farms	Yes
Michael Wolcott	Washington State University	Yes

Total: 19 of 31 members attended

Appendix B: Agenda—June 15–16, 2017

Day 1: Technical Advisory Committee Meeting June 15, 2017

8:30 a.m.–8:45 a.m.	Welcome and Introduction of Quarterly Focus Topic *Committee Co-Chair(s)*
8:45 a.m.–9:10 a.m.	Presentation: Committee Business for 2017 and DOE Updates *Mark Elless, Designated Federal Officer, DOE*
9:10 a.m.–9:30 a.m.	Presentation: USDA Update on Biomass R&D Activities and Bioeconomy Initiative *Harry Baumes, Directory Energy Policy and New Uses, Office of the Chief Economist, USDA*
9:30 a.m.–10:30 a.m.	Panel: Congressional Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine o *Brent D. Yacobucci, Research Manager—Energy and Minerals Section, CRS* o *Evan Jurkovich, Professional staff from House Agriculture Committee*
10:30 a.m.–10:45 a.m.	*Break*
10:45 a.m.–11:45 a.m.	Panel: States' Department of Agriculture Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine. o *Louis Buck, Tennessee Department of Agriculture* o *Mary Beth Lang, Bioenergy and Special Projects Coordinator, Washington State Department of Agriculture*
11:45 a.m.–12:00 p.m.	Public Comment
12:00 p.m.–1:00 pm	*Lunch* *(Closed Session)*
1:00 p.m.–2:00 p.m.	Panel: Industry Point of View on Near-Term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine. o *Bob Dinneen, President and CEO, Renewable Fuels Association* o *Paul Winters, Director, Communications, Biotechnology Innovation Organization*

2:00 p.m.–2:30 p.m.	Discussion: Subcommittee Instructions	
	Committee Co-Chair(s)	
2:30 p.m.–5:00 p.m.	Breakout Session: Subcommittee Breakouts	*(Closed Session)*
5:00 p.m.–5:30 p.m.	Discussion: Subcommittee Day One Reports	

Day 2: Technical Advisory Committee Meeting June 16, 2017

8:30 a.m.–10:00 a.m.	Breakout Session: Subcommittee Breakouts	*(Closed Session)*
	Committee Co-Chair(s)	
10:00 a.m.–11:15 a.m.	Presentation: Subcommittee Breakout Reports	
11:15 a.m.–11:45 a.m.	Action: Recommendations on Near-term Motivations for and Benefits of Accelerated Development of a Biobased Economic Engine.	
11:45 a.m.–12:15 p.m.	Discussion: 3rd-Quarter Meeting Topic, Date, and Location	
12:15 p.m.–12:30 p.m.	Public Comment	
12:30 p.m.–1:30 pm	*Lunch*	
1:30 p.m.	Meeting Adjourned	

[i] Energy Information Administration (EIA), U.*S. Fuel Ethanol Plant Production Capacity Report* (Washington, DC: EIA, June 20, 2017).
[ii] Energy Information Administration (EIA), Electric Power Monthly (Washington, DC: EIA, March 2017).
[iii] Energy Information Administration (EIA), *Monthly Densified Biomass Fuel Report* (Washington, DC: EIA, March 2017).

[iv] "2016 Renewable Fuel Standard Data," Environmental Protection Agency, last modified August 10, 2017.

[v] Mary J. Biddy, Christopher Scarlata, and Christopher Kinchin, *Chemicals from Biomass: A Market Assessment of Bioproducts with Near-Term Potential* (Golden, CO: National Renewable Energy Laboratory, March 2016), NREL/TP-5100-65509.
[vi] Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).
[vii] Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).
[viii] Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).