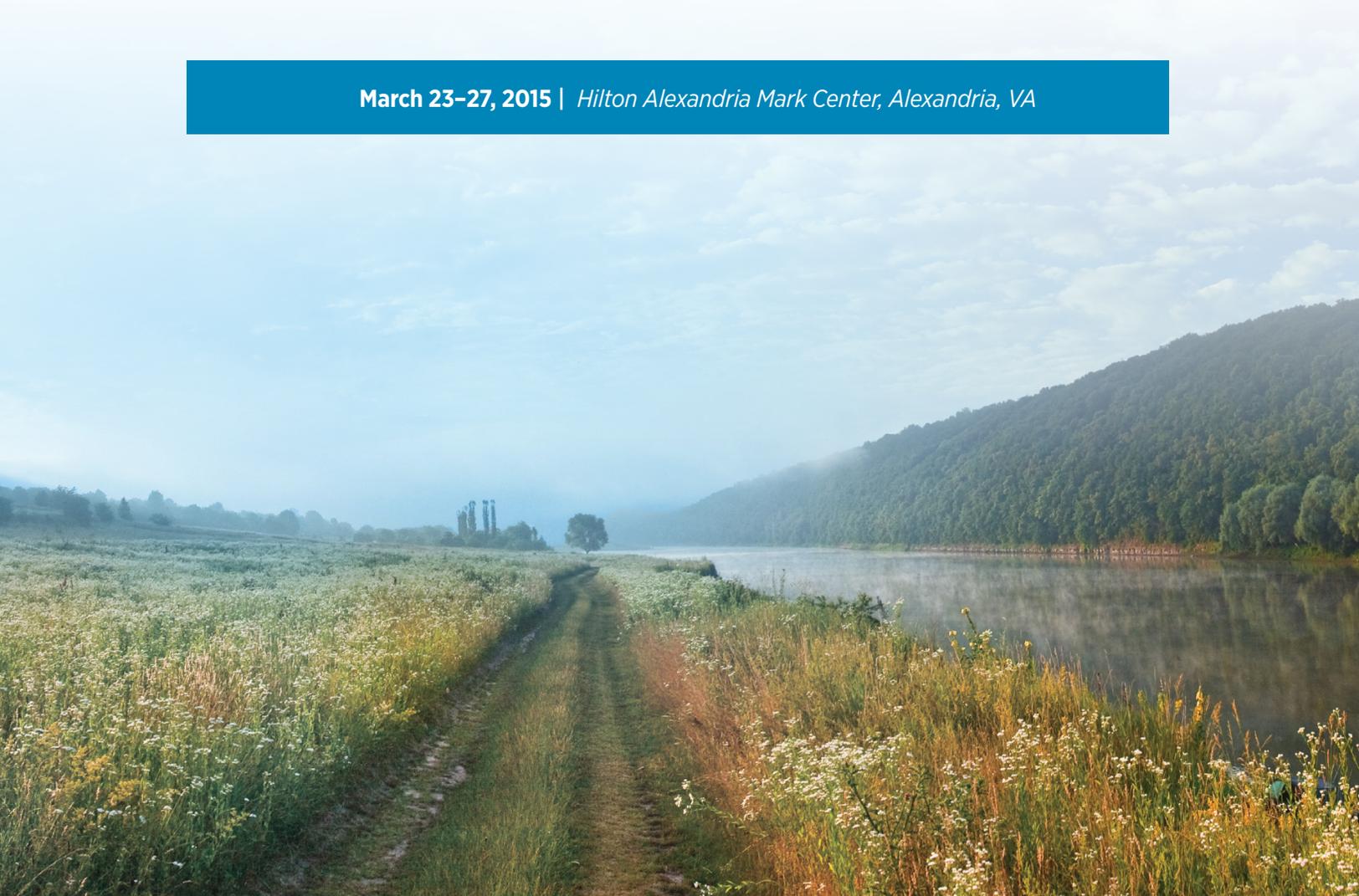


2015 PROJECT PEER REVIEW

U.S. DEPARTMENT OF ENERGY
BIOENERGY TECHNOLOGIES OFFICE

March 23–27, 2015 | *Hilton Alexandria Mark Center, Alexandria, VA*



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WELCOME MESSAGE

Dear Project Peer Review Attendees,

On behalf of the U.S. Department of Energy, I would like to welcome you to the Bioenergy Technologies Office (BETO) 2015 Project Peer Review. This review is critical to the success of our core mission: to invest in the research, development, and demonstration of new technologies that will help accelerate the commercialization of an advanced and sustainable bioenergy industry. Our nation's abundant biomass resources present a tremendous opportunity to sustainably produce high performance bio-based fuels and renewable chemicals and help realize national goals for the future bioeconomy.

This year's review features 190 projects across seven key technology areas, representing a combined value of approximately \$403 million from Fiscal Years 2013-2014. The Energy Department believes in the importance of accountability and in being responsible stewards of taxpayer dollars, therefore, BETO actively manages our projects for the best possible outcomes in partnership with project performers. The Project Peer Review is an invaluable opportunity for external experts to rigorously evaluate the relevance, context, technical approach, progress, results, and overall merit of all the projects supported by our Office. We also rely on the peer review process to provide an overall assessment of our management of each technology area and the overall strategic direction and future outlook for BETO.

Thank you to our 48 reviewers and steering committee members for participating in this year's biennial review. These individuals represent diverse areas of expertise: 52% from industry, 17% from universities, 19% from government, and 12% from the non-profit sector. We are proud to have some of the most experienced and knowledgeable experts in the bioenergy community participating in this process, and we look forward to receiving their constructive assessment of the projects in the BETO portfolio.

Results of the 2015 Project Peer Review, which will be synthesized in a final report made available on our website, will be presented during the Program Management Review on June 25, 2015, at the Walter E. Washington Convention Center in Washington, D.C. The Program Management Review will also be open to the public and will follow the BETO annual conference—*Bioenergy 2015: Opportunities in a Changing Energy Landscape*—which will take place June 23–24, 2015, at the same location.

We look forward to seeing you at our upcoming events this summer!

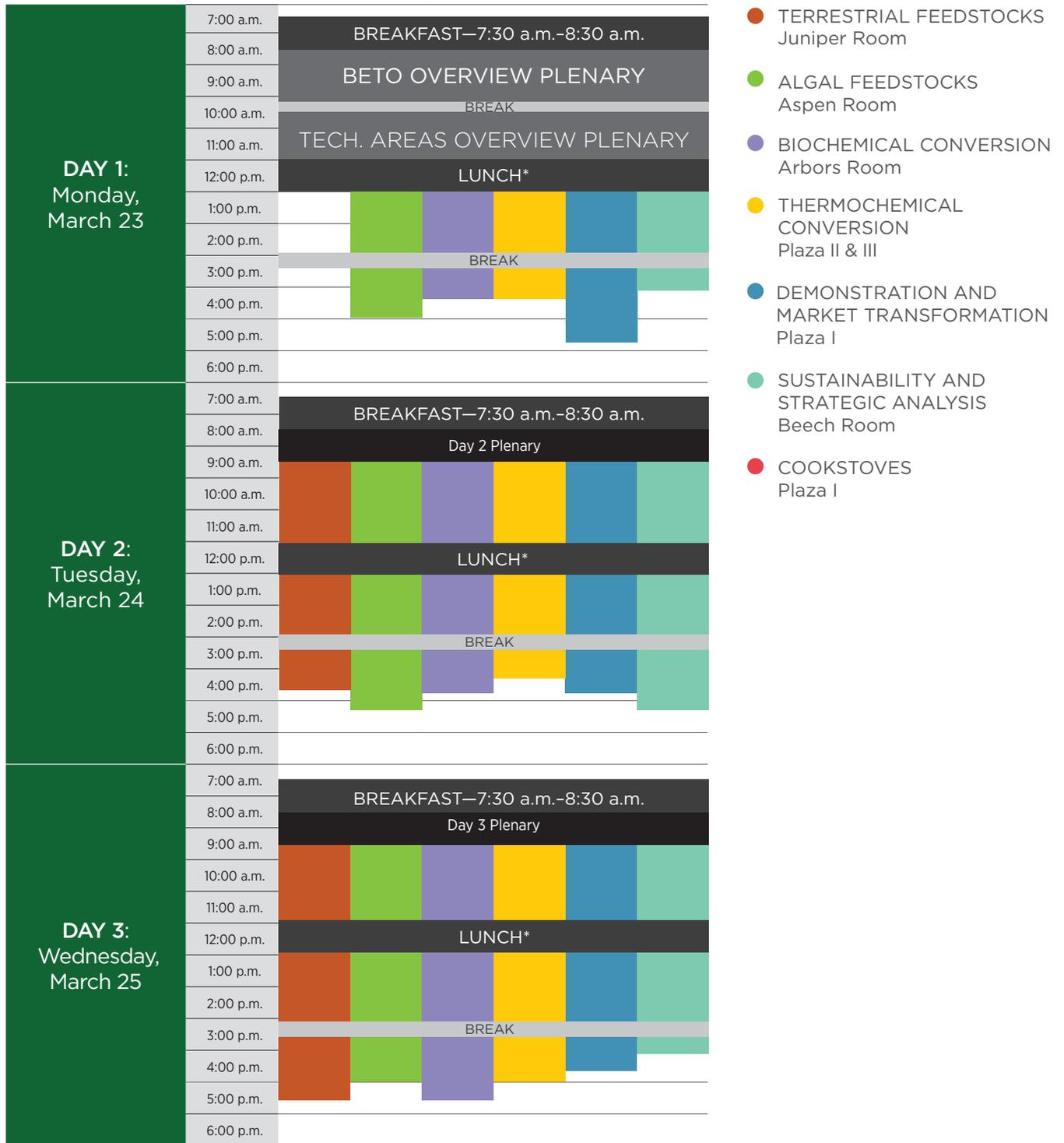
Yours sincerely,



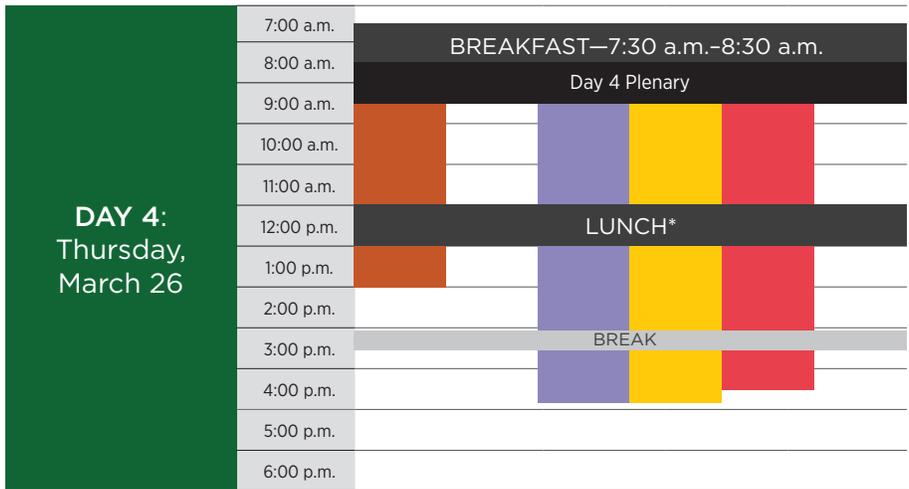
Jonathan Male

Director, Bioenergy Technologies Office
Energy Efficiency and Renewable Energy

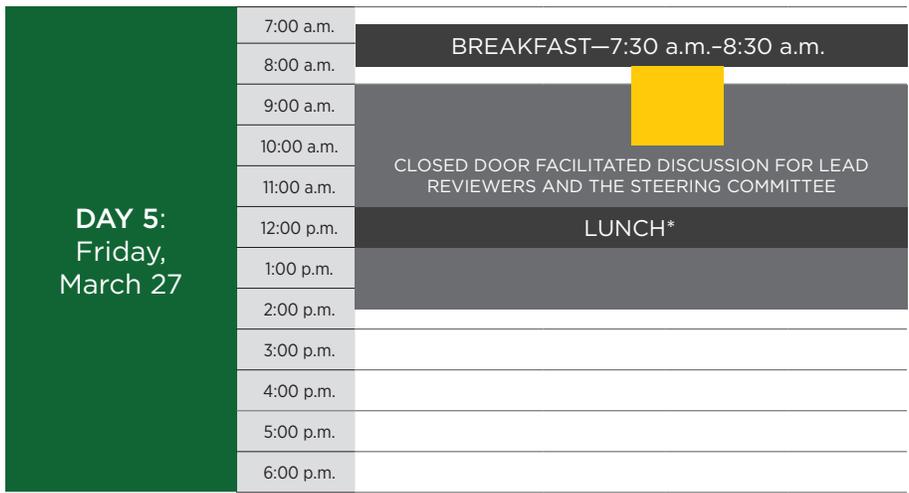
AGENDA AT A GLANCE



*Lunch will be provided for reviewers and members of the Steering Committee each day.



- TERRESTRIAL FEEDSTOCKS
Juniper Room
- ALGAL FEEDSTOCKS
Aspen Room
- BIOCHEMICAL CONVERSION
Arbors Room
- THERMOCHEMICAL CONVERSION
Plaza II & III
- DEMONSTRATION AND MARKET TRANSFORMATION
Plaza I
- SUSTAINABILITY AND STRATEGIC ANALYSIS
Beech Room
- COOKSTOVES
Plaza I



*Lunch will be provided for reviewers and members of the Steering Committee each day.

PLENARIES OVERVIEW

Day 1: PLENARY SESSION SCHEDULE

TIME	Technology Area	Presenter
8:30 a.m.–8:40 a.m.	Introduction	Valerie Sarisky-Reed
8:40 a.m.–9:10 a.m.	BETO Overview	Jonathan Male
9:10 a.m.–9:35 a.m.	Sustainability and Strategic Analysis	Kristen Johnson
9:35 a.m.–10:00 a.m.	Terrestrial Feedstocks	Alison Goss Eng
10:00 a.m.–10:15 a.m.	BREAK	
10:15 a.m.–10:40 a.m.	Algal Feedstocks	Alison Goss Eng
10:40 a.m.–11:20 a.m.	Conversion—Biochemical and Thermochemical	Bryna Guriel
11:20 a.m.–11:45 a.m.	Demonstration and Market Transformation	Jim Spaeth

Days 2-4: PLENARY SESSION SCHEDULE

DAY	TIME	Title	Presenter/Panel
Tuesday	8:30 a.m.–9:30 a.m.	Aviation and Marine: Early Market Adopters	Zia Haq
Wednesday	8:30 a.m.–9:30 a.m.	Pathways to Hydrocarbon Biofuels: Update on the Office’s Techno-Economic Analysis Efforts	Alicia Lindauer and Jay Fitzgerald
Thursday	8:30 a.m.–9:00 a.m.	Biomass Potential in the U.S.: A 2016 Update	Alison Goss Eng and Bryce Stokes
Thursday	9:00 a.m.–9:30 a.m.	Collaborations with the Vehicle Technologies Office: Driving Biofuels End Use	Kevin Stork

Day 1: MONDAY, MARCH 23, 2015

No projects reviewed for the Terrestrial Feedstocks Technology Area

Day 2: TUESDAY, MARCH 24, 2015

TIME	TERRESTRIAL FEEDSTOCKS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
9:45 a.m.–10:15 a.m.	Welcome and Introduction	U.S. DOE-BETO	Alison Goss Eng and Steven Thomas
10:15 a.m.–10:25 a.m.	Biomass Feedstock Regional Partnership—Introduction (Goals & Objectives)	South Dakota State University	Vance Owens
10:25 a.m.–10:55 a.m.	Biomass Feedstock Regional Partnership—Woody Crops	South Dakota State University	Tim Rials, Bill Berguson, Tim Volk
10:55 a.m.–11:25 a.m.	Biomass Feedstock Regional Partnership—Herbaceous Crops	South Dakota State University	Vance Owens
11:25 a.m.–11:55 a.m.	Biomass Feedstock Regional Partnership—Geographic Information System Yield Mapping	South Dakota State University	Mike Halbleib
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Biomass Feedstock Library and Least Cost Formulation	INL	Garold Gresham
1:30 p.m.–2:00 p.m.	Supply Forecasts and Analysis	ORNL	Matt Langholtz
2:00 p.m.–2:30 p.m.	International Feedstocks	INL	Patrick Lamers
2:30 p.m.–3:00 p.m.	U.S.-India Consortium for Development of Sustainable Advanced Lignocellulosic Biofuel Systems	University of Florida	Wilfred Vermerris
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Development of High Yield Tropical Feedstock	University of Hawaii	Andrew Hashimoto
3:45 p.m.–4:15 p.m.	Renewable Enhanced Feedstocks for Advanced Biofuels and Bioproducts (REFABB)—Development Program	Metabolix, Inc.	Oliver Peoples and Kristi Snell
4:15 p.m.–4:45 p.m.	Research and Technology Development for Genetic Improvement of Switchgrass	University of Rhode Island	Albert Kausch

Day 3: WEDNESDAY, MARCH 25, 2015

9:45 a.m.–10:00 a.m.	Introduction	U.S. DOE-BETO	Steven Thomas
10:00 a.m.–10:30 a.m.	Feedstock Supply Chain Analysis	INL	Jacob Jacobson
10:30 a.m.–11:00 a.m.	Biomass Engineering: Harvest, Collection, and Storage	INL	William Smith
11:00 a.m.–11:30 a.m.	Biomass Engineering: Size Reduction, Drying, and Densification	INL	Jaya Tumuluru
11:30 a.m.–12:00 p.m.	Biomass Engineering: Transportation and Handling	INL	Tyler Westover
12:00 p.m.–1:00 p.m.	LUNCH		

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Day 3: WEDNESDAY, MARCH 25, 2015

TIME	TERRESTRIAL FEEDSTOCKS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:50 p.m.–2:20 p.m.	Biomass—Feedstock User Facility	INL	Kevin Kenney
2:20 p.m.–2:25 p.m.	Objectives of the FY09 Logistics FOA	U.S. DOE-BETO	Steven Thomas
2:25 p.m.–3:05 p.m.	High-Tonnage Forest Biomass Production Systems from Southern Pine Energy Plantations	Auburn University	Steve Taylor
3:05 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:55 p.m.	Development and Deployment of a Short-Rotation Woody Crops Harvesting System Based on a Case New Holland Forage Harvester and SRC Woody Crop Header	State University of New York College of Environmental Science and Forestry	Tim Volk
3:55 p.m.–4:35 p.m.	Design and Demonstration of an Advanced Agricultural Feedstock Supply System for Lignocellulosic Bioenergy Production	FDC Enterprises	Kevin Comer
4:35 p.m.–5:15 p.m.	Development of a Bulk-Format System to Harvest, Handle, Store and Deliver High-Tonnage, Low-Moisture Switchgrass Feedstock	TennEra, LLC	Sam Jackson

Day 4: THURSDAY, MARCH 26, 2015

9:45 a.m.–10:00 a.m.	Introduction	U.S. DOE-BETO	Steven Thomas
10:00 a.m.–10:30 a.m.	Feedstock Supply Modeling	ORNL	Erin Webb
10:30 a.m.–11:20 a.m.	Biomass Feedstock Regional Partnership	South Dakota State University	Vance Owens
11:20 a.m.–11:25 a.m.	Objectives of the FY13 Logistics FOA	U.S. DOE-BETO	Steven Thomas
11:25 a.m.–12:05 p.m.	Demonstration of an Advanced Supply Chain for Lower-Cost, Higher-Quality Biomass Feedstock Delivery	FDC Enterprises, INL, ORNL	Kevin Comer
12:05 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:20 p.m.	Improved Advanced Biomass Logistics Utilizing Woody and Other Feedstocks in the Northeast and Pacific Northwest	State University of New York College of Environmental Science and Forestry, INL, ORNL	Tim Volk
1:20 p.m.–1:40 p.m.	Next-Generation Logistics Systems for Delivering Optimal Biomass Feedstocks to Biorefining Industries in the Southeastern United States	University of Tennessee, INL	Tim Rials
1:40 p.m.–2:00 p.m.	Wrap-Up	U.S. DOE-BETO	Alison Goss Eng and Steven Thomas

Day 1: MONDAY, MARCH 23, 2015

TIME	ALGAL FEEDSTOCKS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.–1:30 p.m.	Algae Program Overview	U.S. DOE-BETO	Alison Goss Eng
1:30 p.m.–2:00 p.m.	National Alliance of Advanced Biofuels and Bioproducts (NAABB)	Donald Danforth Plant Science Center	Jose Olivares
2:00 p.m.–2:30 p.m.	Large-Scale Production of Fuels and Feed from Marine Microalgae	Cornell University	Mark Huntley
2:30 p.m.–3:00 p.m.	Algal Biodiesel via Innovative Harvesting and Aquaculture Systems	Renewable Algal Energy	Jeff Kanel
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Algae Biotechnology	LANL	Babetta Marrone
3:45 p.m.–4:15 p.m.	Multi-Scale Characterization of Improved Algae Strains	LANL	Taraka Dale
4:15 p.m.–4:45 p.m.	Producing Transportation Fuels Via Photosynthetically Derived Ethylene	NREL	Jianping Yu
4:45 p.m.–5:15 p.m.	Managing the Microbial Ecology of a Cyanobacteria-Based Photosynthetic Factory Direct	Arizona State University	Bruce Rittman

Day 2: TUESDAY, MARCH 24, 2015

9:45 a.m.–10:00 a.m.	Algae Program Opening	U.S. DOE-BETO	Daniel Fishman
10:00 a.m.–10:30 a.m.	Polyculture Analysis	INL	Deborah Newby
10:30 a.m.–11:00 a.m.	Algae Polyculture Conversion and Analysis	SNL	Ronald Pate
11:00 a.m.–11:30 a.m.	Sustainable Development of Algae for Biofuel	ORNL	Virginia Dale and Matthew Langholtz
11:30 a.m.–12:00 p.m.	Microalgae Analysis	PNNL	Mark Wigmosta
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Hydrocyclone Separation of Targeted Algal Intermediates and Products	ANL	Philip Laible
1:30 p.m.–2:00 p.m.	Consortium for Algal Biofuels Commercialization	University of California at San Diego	Stephen Mayfield
2:00 p.m.–2:30 p.m.	Algal Biomass Conversion	NREL	Philip Pienkos
2:30 p.m.–3:00 p.m.	Algal Biomass Valorization	NREL	Lieve Laurens
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Protein Fermentation	SNL	Ryan W. Davis

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Day 2: TUESDAY, MARCH 24, 2015

TIME	ALGAL FEEDSTOCKS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
3:45 p.m.–4:15 p.m.	Algal Biofuels Techno-Economic Analysis	NREL	Ryan Davis
4:15 p.m.–4:45 p.m.	Hydrothermal Liquefaction Model Development	PNNL	Sue Jones
4:45 p.m.–5:15 p.m.	Thermochemical Interface	PNNL	Daniel Anderson

Day 3: WEDNESDAY, MARCH 25, 2015

9:45 a.m.–10:00 a.m.	Algae Program Opening	U.S. DOE-BETO	Roxanne Dempsey and Christy Sterner
10:00 a.m.–11:00 a.m.	Algae Testbed Public-Private Partnership (ATP ³)	Arizona State University	Gary Dirks
11:00 a.m.–11:30 a.m.	Regional Algal Feedstock Testbed Partnership	University of Arizona	Kimberly Ogden
11:30 a.m.–12:00 p.m.	Advancing Commercialization of Algal Biofuels through Increased Biomass Productivity and Technical Integration	Cellana	David Anton
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Integration of Nutrient and Water Recycling for Sustainable Algal Biorefineries	University of Toledo	Sridhar Viamajala
1:30 p.m.–2:00 p.m.	Major Nutrient Recycling for Sustained Algal Production	SNL	Todd Lane
2:00 p.m.–2:30 p.m.	Recycling of Nutrients and Water in Algal Biofuels Production	California Polytechnic State University	Tryg Lundquist
2:30 p.m.–3:00 p.m.	Scale-Up of Algal Biofuel Production Using Waste Nutrients	California Polytechnic State University	Tryg Lundquist
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Biomass Productivity Technology Advancement Towards a Commercially Viable, Integrated Algal Biomass Production Unit	Sapphire Energy, LLC	Yan Poon
3:45 p.m.–4:15 p.m.	Realization of Algae Potential (REAP)	New Mexico State University	Peter Lammers
4:15 p.m.–4:45 p.m.	Development of Algal Biomass Yield Improvements in an Integrated Process	Hawaii Bioenergy, LLC	Joel Matsunaga
4:45 p.m.–5:00 p.m.	Wrap-Up	U.S. DOE-BETO	Alison Goss Eng

Day 1: MONDAY, MARCH 23, 2015

TIME	BIOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.–1:10 p.m.	Biochemical Conversion Process Overview	U.S. DOE-BETO	Bryna Guriel
1:10 p.m.–1:55 p.m.	Biochemical Conversion Feedstock Supply Interface	NREL	Nick Nagle
1:55 p.m.–2:25 p.m.	Determining the Impact of Municipal Solid Waste as a Feedstock Blending Agent on Pretreatment Efficacy, Hydrolysate Production, and Convertibility	SNL	Seema Singh
2:25 p.m.–2:55 p.m.	Biochemical High-Throughput Characterization of Feedstocks	INL	Gary Gresham
2:55 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Biochemical Platform Analysis	NREL	Ryan Davis
3:45 p.m.–4:15 p.m.	Technical Market Analysis	PNNL	Jim Collett
4:15 p.m.–4:45 p.m.	Pretreatment and Process Hydrolysis	NREL	Melvin Tucker

Day 2: TUESDAY, MARCH 24, 2015

9:45 a.m.–10:15 a.m.	New Catalytic Conversion of Lignocellulosic Biomass to Hydrocarbon Fuels	PNNL	Mike Lilga
10:15 a.m.–10:45 a.m.	Process Improvements to Biomass Pretreatment for Fuels and Chemicals	Michigan Biotechnology Institute (MBI)	Farzaneh Teymouri
10:45 a.m.–11:15 a.m.	Biochemical Conversion Validation Activities	NREL	Jim McMillan
11:15 a.m.–11:45 a.m.	Waste-to-Energy Life-Cycle Analysis, Waste-to-Energy Techno-Economic Analysis	ANL	Jeongwoo Han
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Enhanced Anaerobic Digestion	ANL	Meltem Urgun-Demirtas
1:30 p.m.–2:00 p.m.	Biogas to Liquid Fuels and Chemicals Using a Methanotrophic Microorganism	NREL	Mike Guarnieri
2:00 p.m.–2:30 p.m.	Biological and Chemical Upgrading & Renewable Carbon Fibers Overview	U.S. DOE-BETO	Bryna Guriel
2:30 p.m.–3:00 p.m.	Targeted Microbial Development	NREL	Michael Himmel
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Direct Catalytic Upgrading of Current Dilute Alcohol Fermentation Streams to Hydrocarbons for Fungible Fuels	ORNL	Brian Davison
3:45 p.m.–4:15 p.m.	Catalytic Upgrading of Sugars	NREL	David Johnson
4:15 p.m.–4:45 p.m.	Lignin Utilization	NREL	Gregg Beckham

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Day 3: WEDNESDAY, MARCH 25, 2015

TIME	BIOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
9:45 a.m.–10:15 a.m.	Synthetic Metabolic Pathways for Bioconversion of Lignin Derivatives to Biofuels	ORNL	Adam Guss
10:15 a.m.–10:45 a.m.	Biological Lignin Depolymerization	NREL	Gregg Beckham
10:45 a.m.–11:15 a.m.	Fungal Genomics	PNNL	Jon Magnuson
11:15 a.m.–11:45 a.m.	Hydrolyzed Lignocellulose as a Feedstock for Fuels Synthesis	LANL	Andy Sutton
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Biological Upgrading of Sugars	NREL	Gregg Beckham
1:30 p.m.–2:00 p.m.	Development of an Integrated Biofuel and Chemical Refinery	Genomatica	John Trawick
2:00 p.m.–2:30 p.m.	Development of a Thermophilic Consolidated Bioprocessing Organism for Butanol Production	INL	Vicki Thompson
2:30 p.m.–3:00 p.m.	Bench Scale Integration	NREL	Nancy Dowe
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Separations Development and Application	NREL	Jim McMillan
3:45 p.m.–4:15 p.m.	Pilot Scale Integration	NREL	Dan Schell
4:15 p.m.–4:45 p.m.	Cellulosic Biomass Sugars to Advantaged Jet Fuel	Virent	Randy Cortright
4:45 p.m.–5:15 p.m.	LBNL Process Demonstration Unit	LBNL	Todd Pray

Day 4: THURSDAY, MARCH 26, 2015

9:45 a.m.–10:15 a.m.	Analytical Development and Support	NREL	Ed Wolfrum
10:15 a.m.–10:45 a.m.	Biochemical Process Modeling and Simulation	NREL	Michael Crowley
10:45 a.m.–11:15 a.m.	Advanced Supervisory Control and Data Acquisition (SCADA) for Biochemical Process Integration (with Bend)	PNNL	Jim Collett
11:15 a.m.–11:45 a.m.	Enzyme Engineering and Optimization	NREL	Michael Himmel
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Maximizing Multi-Enzyme Synergy in Biomass Degradation in Yeast	J. Craig Venter Institute	Yo Suzuki
1:30 p.m.–2:00 p.m.	SynTec: Synthetic Biology for Tailored Enzyme Cocktails	Novozymes	Sarah Teeter
2:00 p.m.–2:30 p.m.	Design, Construction, and Implementation of Novel Biofuel Production Capabilities in Filamentous Fungi—SynBio	PNNL	Kenneth Bruno
2:30 p.m.–3:00 p.m.	Design and Optimization of Biofuel Production with Biosensor-Guided Synthetic Evolution	Lygos, Inc.	Eric Steen
3:00 p.m.–3:15 p.m.	BREAK		

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Day 4: THURSDAY, MARCH 26, 2015

TIME	BIOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
3:15 p.m.–3:45 p.m.	Synthetic Design of Microorganisms for Lignin Fuel	Texas Agri-Life Research	Joshua Yuan
3:45 p.m.–4:15 p.m.	Advanced Biofuels from Cellulose via Genetic Engineering of Clostridium Thermocellum	NREL	Pin-Ching Maness
4:15 p.m.–4:45 p.m.	Low-Energy Magnetic-Field Separation using Magnetic Nanostructured Absorbents	ANL	Phil Laible

Day 1: MONDAY, MARCH 23, 2015

TIME	THERMOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.–1:20 p.m.	Thermochemical Conversion Overview Presentation	U.S. DOE-BETO	Liz Moore
1:20 p.m.–1:50 p.m.	Analysis and Sustainability Interface	PNNL	Sue Jones
1:50 p.m.–2:35 p.m.	Computational Pyrolysis Consortium	ORNL	Stuart Daw
2:35 p.m.–3:05 p.m.	Development and Standardization of Techniques for Bio-Oil Characterization	NREL	Jack Ferrell
3:05 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Feedstock Characterization for Thermochemical Conversion Specifications	INL	Tyler Westover
3:45 p.m.–4:15 p.m.	High-Throughput Characterization	INL	Gary Gresham
4:15 p.m.–4:45 p.m.	Thermochemical Feedstock Interface	NREL	Danny Carpenter

Day 2: TUESDAY, MARCH 24, 2015

8:30 a.m.–9:00 a.m.	Electrochemical Methods for Upgrading Pyrolysis Oils	INL	Tedd Lister
9:00 a.m.–9:30 a.m.	Novel Electro-Deoxygenation Process for Bio-Oil Upgrading	Ceramatec	Elango Elangovan
9:30 a.m.–9:45 a.m.	BREAK		
9:45 a.m.–10:15 a.m.	Advanced Membrane Separations to Improve Efficiency of Thermochemical Conversion	ORNL	Michael Hu
10:15 a.m.–10:45 a.m.	Biological Pyrolysis Oil Upgrading	NREL	Gregg Beckham
10:45 a.m.–11:15 a.m.	Cascade reactions with Technische Universität München (TUM) and University of Toronto (U of T)	PNNL	Mariefel Olarte

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Day 2: TUESDAY, MARCH 24, 2015			
TIME	THERMOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
11:15 a.m.–11:45 a.m.	Bio-Oil Upgrading with Novel, Low-Cost Catalysts	ORNL	Jae-Soon Choi
11:45 a.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Novel and Robust Catalysts for Bio-Oil Hydrotreating	PNNL	Corinne Drennan
1:30 p.m.–2:00 p.m.	Upgrading of Intermediate Bio-Oil Produced by Catalytic Pyrolysis	Battelle Memorial Institute	Zia Abdullah
2:00 p.m.–2:30 p.m.	Catalytic Upgrading of Pyrolysis Products	NREL	Josh Shaidle
2:30 p.m.–3:00 p.m.	Catalyst Development/Testing: Deconstruction	NREL	Kim Magrini
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Bio-Oil Quality Improvement and Catalytic Hydrotreating of Bio-Oils	PNNL	Mariefel Olarte
3:45 p.m.–4:15 p.m.	Catalytic Upgrading of Thermochemical Intermediates to Hydrocarbons	Research Triangle Institute	David Dayton
Day 3: WEDNESDAY, MARCH 25, 2015			
9:45 a.m.–10:15 a.m.	Biomass-Derived Pyrolysis Oils Corrosion Studies	ORNL	Jim Keiser
10:15 a.m.–10:45 a.m.	Refinery Upgrading of Hydropyrolysis Oil from Biomass	Gas Technology Institute	Terry Marker
10:45 a.m.–11:15 a.m.	Optimizing Co-Processing of Bio-Oil in Refinery Unit Operations Using a Davison Circulating Riser	PNNL	Corinne Drennan
11:15 a.m.–11:45 a.m.	Mild Biomass Liquefaction Process for Economic Production of Stabilized Refinery-Ready Bio-Oils	Southern Research Institute	Santosh Gangwal
11:45 a.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	Production and Upgrading of Infrastructure Compatible Bio-Oil with VTT (Technical Research Center of Finland)	PNNL	Doug Elliott
1:30 p.m.–2:00 p.m.	New Ebullated Bed Technology for Hydroprocessing Bio-Oils to Produce Gasoline, Diesel, and Jet Fuels	W.R. Grace & Co.	Corinne Drennan
2:00 p.m.–2:30 p.m.	Brazil Bilateral—Petrobras—NREL CRADA	NREL	Helena Chum and Andrea Pinho
2:30 p.m.–3:00 p.m.	Integration and Scale-Up	NREL	Esther Wilcox
3:00 p.m.–3:15 p.m.	BREAK		

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Day 3: WEDNESDAY, MARCH 25, 2015

TIME	THERMOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
3:15 p.m.–3:45 p.m.	Demonstration of Pyrolysis Based Biorefinery Concept for Biopower, Biomaterials, and Biochar	<i>Avello Bioenergy</i>	<i>Dennis Bansiak</i>
3:45 p.m.–4:15 p.m.	Catalytic Upgrading of Thermochemical Intermediates to Hydrocarbons: Conversion of Lignocellulosic Feedstocks to Aromatic Fuels and High-Value Chemicals	<i>Virent, Inc.</i>	<i>Randy Cortright</i>
4:15 p.m.–4:45 p.m.	Improved Hydrogen Utilization and Carbon Recovery for Higher-Efficiency Thermochemical Bio-Oil Pathways	<i>Research Triangle Institute</i>	<i>David Dayton</i>

Day 4: THURSDAY, MARCH 26, 2015

9:45 a.m.–10:15 a.m.	Thermochemical Platform Analysis	<i>NREL</i>	<i>Abhijit Dutta</i>
10:15 a.m.–10:45 a.m.	Liquid Fuels via Upgrading of Syngas Intermediates	<i>NREL</i>	<i>Jesse Hensley</i>
10:45 a.m.–11:15 a.m.	Liquid Fuels via Upgrading of Syngas Intermediates	<i>PNNL</i>	<i>Rob Dagle</i>
11:15 a.m.–11:45 a.m.	A Hybrid Catalytic Route to Fuels from Biomass Syngas	<i>LanzaTech, Inc.</i>	<i>Alice Havill</i>
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:30 p.m.	City of Gridley Biofuels Project	<i>City of Gridley</i>	<i>Matt Michaelis</i>
1:30 p.m.–2:00 p.m.	Testing, Evaluation, and Qualification of Bio-Oil for Heating	<i>BNL</i>	<i>Tom Butcher</i>
2:00 p.m.–2:30 p.m.	Renewable Energy Center	<i>North Carolina Agricultural & Technical State University</i>	<i>Abolghasem Shahbazi</i>
2:30 p.m.–3:00 p.m.	Hydrothermal Processing of Biomass	<i>PNNL</i>	<i>Richard Hallen</i>
3:00 p.m.–3:15 p.m.	BREAK		
3:15 p.m.–3:45 p.m.	Liquefaction of Agricultural and Forest Biomass to "Drop-In" Hydrocarbon Biofuels	<i>Iowa State University</i>	<i>Doug Elliott</i>
3:45 p.m.–4:15 p.m.	Fractional Multistage Hydrothermal Liquefaction of Biomass and Catalytic Conversion into Hydrocarbons	<i>Virent, Inc.</i>	<i>Randy Cortright</i>
4:15 p.m.–4:45 p.m.	Fractionation and Catalytic Upgrading of Bio-Oil	<i>University of Oklahoma</i>	<i>Daniel Resasco</i>

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Day 5: FRIDAY, MARCH 27, 2015			
TIME	THERMOCHEMICAL CONVERSION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
8:30 a.m.-9:00 a.m.	Catalytic Pyrolysis Science	<i>NREL</i>	<i>Mark Nimlos</i>
9:00 a.m.-9:30 a.m.	Characterization and Valorization of Aqueous Phases Derived From Liquefaction and Upgrading of Bio-Oils	<i>PNNL</i>	<i>Karl Albrecht</i>
9:30 a.m.-10:00 a.m.	Reforming Pyrolysis Aqueous Waste Streams to Process Hydrogen and Hydrocarbons	<i>NREL</i>	<i>Kim Magrini</i>
10:00 a.m.-10:30 a.m.	Renewable Hydrogen Production from Biomass Pyrolysis Aqueous Phase	<i>ORNL</i>	<i>Abhijeet Borole</i>

Day 1: MONDAY, MARCH 23, 2015			
TIME	DEMONSTRATION AND MARKET TRANSFORMATION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.-1:45 p.m.	Demonstration and Market Transformation Introduction and Discussion	<i>U.S. DOE-BETO</i>	<i>Jim Spaeth</i>
1:45 p.m.-2:15 p.m.	BNL Bio-Oil Deployment in the Home Heating Market	<i>BNL</i>	<i>Thomas Butcher</i>
2:15 p.m.-3:00 p.m.	Waste to Wisdom: Utilizing Forest Residues for the Production of Bioenergy and Biobased Products	<i>Humboldt State University</i>	<i>Han-Sup Han</i>
3:00 p.m.-3:15 p.m.	BREAK		
3:15 p.m.-4:15 p.m.	Increasing Biofuel Deployment and Utilization Through Development of Renewable Super Premium	<i>ANL, NREL, ORNL</i>	<i>Jeongwoo Han, Bob McCormick, Tim Theiss</i>
4:15 p.m.-5:00 p.m.	Innovative Gasification to Produce Fischer-Tropsch Jet and Diesel Fuel	<i>Frontline BioEnergy, LLC</i>	<i>Jerod Smeenk</i>
5:00 p.m.-5:45 p.m.	Pilot Integrated Cellulosic Biorefinery Operations to Fuel Ethanol	<i>ICM, Inc.</i>	<i>Douglas Rivers</i>

Day 2: TUESDAY, MARCH 24, 2015			
9:45 a.m.-10:30 a.m.	Pilot-Scale Mixotrophic Algae Integrated Biorefinery (IBT)	<i>BioProcess Algae</i>	<i>Toby Ahrens</i>
10:30 a.m.-11:15 a.m.	Integrated Pilot-Scale Biorefinery for Producing Ethanol from Hybrid Algae	<i>Algenol</i>	<i>Ed Legere</i>
11:15 a.m.-12:00 p.m.	No project reviews scheduled		
12:00 p.m.-1:00 p.m.	LUNCH		

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Day 2: TUESDAY MARCH 24, 2015

TIME	DEMONSTRATION AND MARKET TRANSFORMATION TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.–1:45 p.m.	Sapphire Integrated Algal Biorefinery (IABR)	<i>Sapphire</i>	<i>Dean Venardos</i>
1:45 p.m.–2:30 p.m.	Pilot Scale Biorefinery: Sustainable Transport Fuels from Biomass and Algal Residue via Integrated Pyrolysis and Catalytic Hydroconversion	<i>UOP, LLC</i>	<i>Ray Wissinger</i>
2:30 p.m.–3:15 p.m.	Green Gasoline from Wood Using Carbona Gasification and Topsoe TIGAS Processes	<i>Haldor Topsoe</i>	<i>Rick Knight</i>
3:15 p.m.–3:30 p.m.	BREAK		
3:30 p.m.–4:15 p.m.	INP BioEnergy Indian River County Facility	<i>INEOS New Planet (INP) Bioenergy</i>	<i>Kelly Russell</i>
4:15 p.m.–4:45 p.m.	High-Yield Hybrid Cellulosic Ethanol Process Using High-Impact Feedstock for Commercialization by 2013	<i>Zechem</i>	<i>Tim Eggeman</i>

Day 3: WEDNESDAY, MARCH 25, 2015

9:45 a.m.–10:30 a.m.	LIBERTY—Launch of an Integrated Biorefinery with Eco-Sustainable and Renewable Technologies in Y2009	<i>POET-DSM</i>	<i>Larry Ward</i>
10:30 a.m.–11:15 a.m.	BEI—Myriant Succinic Acid Biorefinery (MySAB)	<i>Myriant</i>	<i>Mark Shmorhun</i>
11:15 a.m.–12:00 p.m.	Conversion of Lignocellulosic Biomass to Ethanol and Ethyl Acrylate	<i>Archer Daniels Midland</i>	<i>Tom Binder</i>
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:45 p.m.	Alpena Prototype Biorefinery	<i>American Process, Inc.</i>	<i>Theodora Retsina</i>
1:45 p.m.–2:30 p.m.	Integrated Biorefinery for Conversion of Biomass to Ethanol, Synthesis Gas, and Heat	<i>Abengoa</i>	<i>Joseph Bradford</i>
2:30 p.m.–3:15 p.m.	Renewable Acid-Hydrolysis Condensation Hydrotreating (REACH) Pilot Plant	<i>Mercurius</i>	<i>Karl Seck</i>
3:15 p.m.–3:30 p.m.	BREAK		
3:30 p.m.–4:15 p.m.	Fire Standards Codes and Prevention in IBRs	<i>ORNL</i>	<i>Erin Webb</i>

Day 1: MONDAY MARCH 23, 2015

TIME	SUSTAINABILITY AND STRATEGIC ANALYSIS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:00 p.m.–1:15 p.m.	Sustainability and Strategic Analysis Introduction	<i>U.S. DOE-BETO</i>	<i>Kristen Johnson</i>

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Day 1: MONDAY MARCH 23, 2015

TIME	SUSTAINABILITY AND STRATEGIC ANALYSIS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
1:15 p.m.–1:45 p.m.	Bioenergy Sustainability: How to Define and Measure It	ORNL	Virginia Dale
1:45 p.m.–2:15 p.m.	Integrated Landscape Management	INL	Jacob Jacobson and Ian Bonner
2:15 p.m.–2:45 p.m.	Biomass Production and Nitrogen Recovery	ANL	Cristina Negri
2:45 p.m.–3:00 p.m.	BREAK		
3:00 p.m.–3:30 p.m.	Watershed Scale Optimization to Meet Sustainable Cellulosic Energy Crop Demands	Purdue University	Indrajeet Chaubey and Ben Gramig
3:30 p.m.–4:00 p.m.	Optimization of Southeastern Forest Biomass Crop Production: A Watershed Scale Evaluation of the Sustainability and Productivity of Dedicated Energy Crop and Woody Biomass Operations	North Carolina State University	George Chescheir
4:00 p.m.–4:30 p.m.	Short Rotation Woody Biomass Sustainability	ORNL, U.S. Forest Service	Natalie Griffiths and Rhett Jackson

Day 2: TUESDAY MARCH 24, 2015

TIME	SUSTAINABILITY AND STRATEGIC ANALYSIS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
9:45 a.m.–10:00 a.m.	Day Two Introduction	U.S. DOE-BETO	Alicia Lindauer
10:00 a.m.–10:30 a.m.	Systems Analysis	NREL-SI	John Lewis
10:30 a.m.–11:00 a.m.	Biomass Scenario Model	NREL-SI	Brian Bush
11:00 a.m.–11:20 a.m.	Economic Analysis of Policy Effects	INL	Jake Jacobson and Jason Hansen
11:20 a.m.–11:40 a.m.	Biofuels National Strategic Benefits Analysis	ORNL	Paul Leiby
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:45 p.m.	Strategic Analysis and Modeling	NREL	Mary Bidy
1:45 p.m.–2:05 p.m.	High-Level Techno-Economic Analysis of Innovative Technology Concepts	PNNL	Sue Jones
2:05 p.m.–2:35 p.m.	Refinery Integration	NREL, PNNL	Mary Bidy and Sue Jones
2:35 p.m.–2:55 p.m.	Biofuels Information Center (BIC)	NREL	Kristi Moriarty
2:55 p.m.–3:20 p.m.	BREAK		
3:20 p.m.–3:40 p.m.	Integration of Sustainability Metrics into Design Cases and State of Technology Assessments	NREL, PNNL	Mary Bidy and Lesley Snowden-Swan
3:40 p.m.–4:25 p.m.	GREET Development and Biofuel Pathway Research and Analysis	ANL	Michael Wang

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TIME	SUSTAINABILITY AND STRATEGIC ANALYSIS TECHNOLOGY AREA		
	Project Title	Organization	Presenter
4:25 p.m.–4:45 p.m.	Carbon Cycling, Environmental & Rural Economic Impacts of Collecting & Processing Specific Woody Feedstocks in Biofuels	<i>CORRIM</i>	<i>Steve Kelley</i>
4:45 p.m.–5:15 p.m.	Pathways Towards Sustainable Bioenergy Feedstock Production in the Mississippi River Watershed	<i>University of Minnesota</i>	<i>Jason Hill</i>

Day 3: WEDNESDAY, MARCH 25, 2015

9:45 a.m.–10:00 a.m.	Day Three Introduction	<i>U.S. DOE-BETO</i>	<i>Kristen Johnson</i>
10:00 a.m.–10:20 a.m.	NREL Sustainability Analysis	<i>NREL</i>	<i>Daniel Inman</i>
10:20 a.m.–10:50 a.m.	Impact of Projected Biofuel Production on Water Use and Water Quality	<i>ANL</i>	<i>May Wu</i>
10:50 a.m.–11:20 a.m.	Forecasting Water Quality and Biodiversity	<i>ORNL</i>	<i>Henrietta Jager</i>
11:20 a.m.–11:50 a.m.	Biofuel Production in the Western U.S.	<i>PNNL</i>	<i>Mark Wigmosta</i>
12:00 p.m.–1:00 p.m.	LUNCH		
1:00 p.m.–1:20 p.m.	Land-Use Change Data and Analysis	<i>ORNL</i>	<i>Nagendra Singh</i>
1:20 p.m.–1:40 p.m.	Global Feedstock Supply Modeling and Land Use	<i>ORNL</i>	<i>Gbadebo Oladosu</i>
1:40 p.m.–2:00 p.m.	Global Change Assessment Model (GCAM) Bioenergy and Land-Use Modeling	<i>PNNL</i>	<i>Marshall Wise</i>
2:00 p.m.–2:20 p.m.	Bioenergy Knowledge Discovery Framework	<i>ORNL</i>	<i>Aaron Myers</i>
2:20 p.m.–2:35 p.m.	BREAK		
2:35 p.m.–3:05 p.m.	Addressing Global Barriers to Growth of the U.S. Bioeconomy	<i>ORNL</i>	<i>Keith Kline</i>
3:05 p.m.–3:50 p.m.	International Sustainability and Support to IEA Bioenergy Task 38	<i>NREL</i>	<i>Helena Chum</i>
3:50 p.m.–4:00 p.m.	Closing Remarks	<i>U.S. DOE-BETO</i>	<i>Kristen Johnson</i>

Day 4: THURSDAY, MARCH 26, 2015

TIME	COOKSTOVES TECHNOLOGY AREA		
	Project Title	Organization	Presenter
9:45 a.m.–10:05 a.m.	Cookstoves Introduction	<i>U.S. DOE-BETO</i>	<i>Elliott Levine</i>
10:05 a.m.–10:50 a.m.	Thermoelectric-Enhanced Cookstove Add-On (TECA) for Clean Biomass Cookstoves	<i>Research Triangle Institute International</i>	<i>David Stokes</i>
10:50 a.m.–11:35 a.m.	Achieving Tier 4 Emissions and Efficiency in Biomass Cookstoves	<i>Colorado State University</i>	<i>Morgan DeFoort</i>

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Day 4: THURSDAY, MARCH 26, 2015

TIME	COOKSTOVES TECHNOLOGY AREA		
	Project Title	Organization	Presenter
11:35 a.m.–12:20 p.m.	Heart of the Hearth: Making the Popular Clean, not the Clean Popular	<i>BioLite LLC</i>	<i>Ryan Gist</i>
12:20 p.m.–1:20 p.m.	LUNCH		
1:20 p.m.–2:05 p.m.	Multidisciplinary Design of an Innovative Natural Draft, Forced Diffusion Cookstove for Woody and Herbaceous Biomass Fuels	<i>University of Washington</i>	<i>John Kramlich</i>
2:05 p.m.–2:50 p.m.	Technology Innovations to Improve Biomass Cookstoves to Meet Tier 4 Standards	<i>Aprovecho Research Center</i>	<i>Dean Still</i>
2:50 p.m.–3:35 p.m.	An Affordable Advanced Biomass Cookstove with Thin Film Thermoelectric Generator	<i>LBNL</i>	<i>Ashok Gadgil</i>
3:35 p.m.–3:50 p.m.	BREAK		
3:50 p.m.–4:35 p.m.	Combustion Materials Durability Relationships for Improved Low-Cost Clean Cookstoves	<i>ORNL</i>	<i>Tim Theiss</i>

Reviewer and Steering Committee Information

PROJECT PEER REVIEW STEERING COMMITTEE	
Jim Dooley	Forest Concepts, LLC
Dean Draemel	ExxonMobil/University of California, Berkeley
Jim Kellis	DuPont
Mike Lakeman	Boeing and Algae Biomass Organization
Valri Lightner	DOE Loan Programs Office
Jack McDonald	Independent Contractor
Shelie Miller	University of Michigan
Carol Werner	Environmental and Energy Study Institute

TERRESTRIAL FEEDSTOCKS	
REVIEWERS	
Bruce Dale (Lead Reviewer)	Michigan State University
Harry Baumes	U.S. Department of Agriculture
Daniel Cassidy	U.S. Department of Agriculture
Beth Dodson	University of Montana
Harrison Pettit	PacificAg
Bob Rummer	University of Kansas

ALGAL FEEDSTOCKS	
REVIEWERS	
Emilie Slaby (Lead Reviewer)	Independent Consultant
David Babson	Union of Concerned Scientists
F. Glenn Gallagher	DuPont
Joanne Morello	Northrop Grumman
Roger Prince	ExxonMobil
Jennifer Stewart	University of Delaware

BIOCHEMICAL CONVERSION	
REVIEWERS	
Carol Babb (Lead Reviewer)	Leidos
Kevin Gray	Intrexon
Daniel Lane	Saille Consulting, LLC
Justin Stege	Independent Consultant
Bob Wooley	Biomass Ad Infinitum, LLC

THERMOCHEMICAL CONVERSION

REVIEWERS

Don Stevens (Lead Reviewer)	Cascade Science and Technology Research
Dan Burciaga	TRI
George Huff	BP
George Parks	Retired ConocoPhillips
John Persichetti	Colorado School of Mines
Richard Quann	ExxonMobil

DEMONSTRATION AND MARKET TRANSFORMATION

REVIEWERS

Bill Crump (Lead Reviewer)	Leidos
James Doss	Professional Project Services, Inc.
Brian Duff	Northrup Grumman
Alan Propp	Merrick & Company
Dan Strope	Refining Sciences, LLC
John Wyatt	Carmagen Engineering, Inc.

SUSTAINABILITY AND STRATEGIC ANALYSIS

REVIEWERS

John Sheehan (Lead Reviewer)	Colorado State University
Stephen Costa	U.S. Department of Transportation
Jody Endres	University of Illinois at Urbana-Champaign
Michael Shell	U.S. Environmental Protection Agency
Candace Wheeler	General Motors

COOKSTOVES

REVIEWERS

Ranyee Chiang (Lead Reviewer)	Global Alliance for Clean Cookstoves
Jim Jetter	U.S. Environmental Protection Agency
Michael Johnson	Berkeley Air Monitoring Group
John Mitchell	U.S. Environmental Protection Agency
Jacob Moss	U.S. Department of State
Sheila Moynihan	EERE International

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