

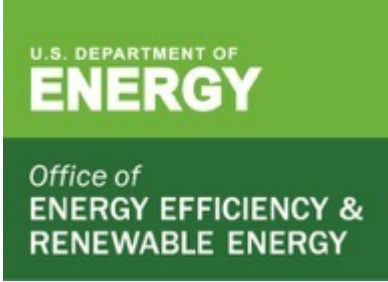
Welcome!

2021 PROJECT PEER REVIEW



U.S. DEPARTMENT OF ENERGY
BIOENERGY TECHNOLOGIES OFFICE

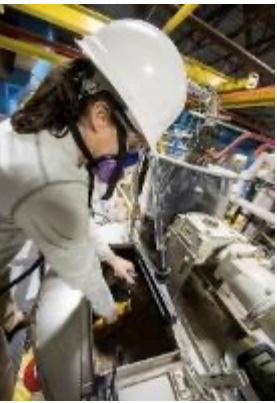
March 8-12, March 15-16, and March 22-26
Held Virtually for 2021



Daniel B. Fishman
Peer Review Chair
8 March 2021

2021 PROJECT PEER REVIEW

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What is the Biennial BETO Project Peer Review?

What is Reviewed?

- BETO Leadership present Office and Program mission, vision, and goals.
- BETO Managers present Technology Area strategy, relevance to BETO mission, and execution status.
- Project Performers give presentations on the status of their active awards.

How is it reviewed?

Independent Reviewers assess:

- **Individual Projects:**
 - Management
 - Approach
 - Impact
 - Progress and/or Results
- **Technology Areas:**
 - Strategy (mission, goals, scope)
 - Implementation and Progress (relevance of selected projects, progress of portfolios)

Why?

- Opportunity to review quality of project execution, progress towards programmatic goals, composition of portfolios, and is a requirement of all EERE programs.
- Review is conducted in public and results are broadly disseminated



Goals for the 2021 BETO Project Peer Review

1. Enhance the relevance, effectiveness, and productivity of BETO's projects.*
2. Provide robust, documented feedback to inform BETO program planning.*
3. Provide essential assessments of the quality and effectiveness of current projects and programs to enhance design of future programs and/or enhance existing efforts.*
4. Conduct all reviews in public and review, to extent possible, all active projects to:
 - Improve the transparency of the Peer Review process;
 - Strengthen integration networks for research, deployment, delivery, or business management;
 - Broaden public learning by providing an opportunity for individuals to hear firsthand what others are accomplishing and how they manage their work; and
 - Encourage participants to improve performance due to the pressures of presenting publicly to their peers.
5. Provide Project Investigators with timely, objective, actionable feedback on their project approach and results to-date.
6. Ensure virtual event is engaging, easy to navigate, and all participants feel their time was well spent.
7. Incorporate lessons learned from prior Peer Reviews.

*Adapted from EERE's Peer Review Guide

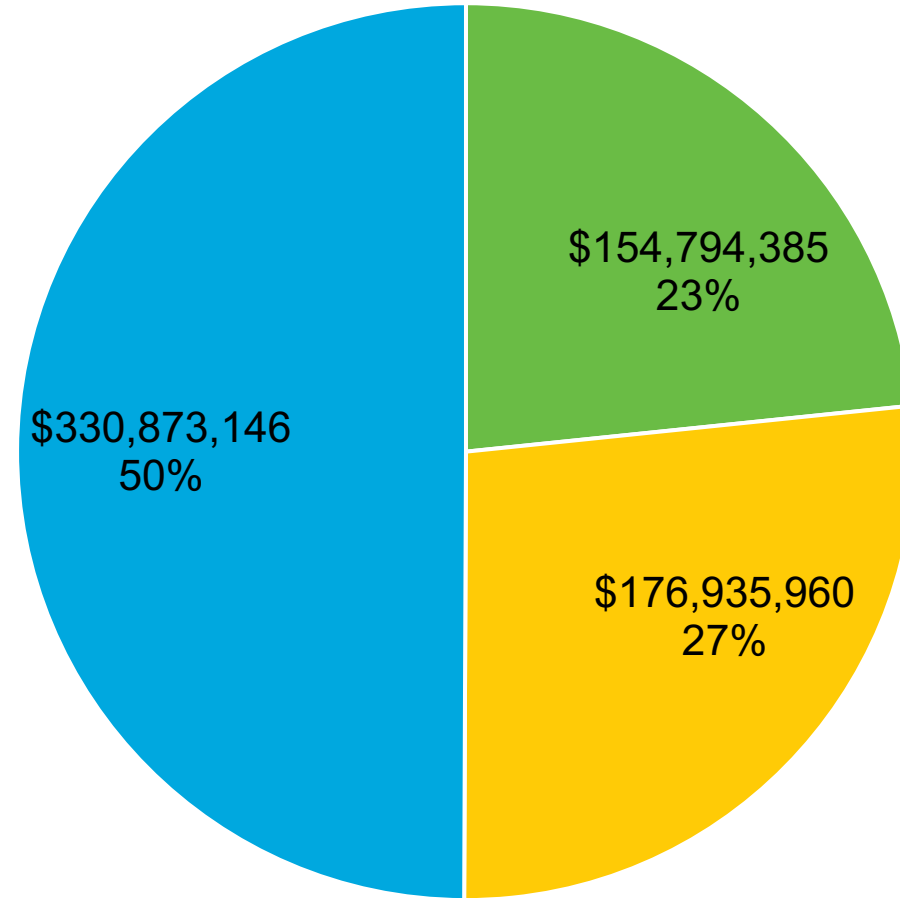
Projects by Affiliation of Prime Recipient of Federal Award

About \$660M of federal share is represented by the projects in this review.

This chart reflects the affiliation of the Lead recipients; many projects have subrecipients.

Projects led by DOE's National Labs represent about 50% of the BETO funding in this review.

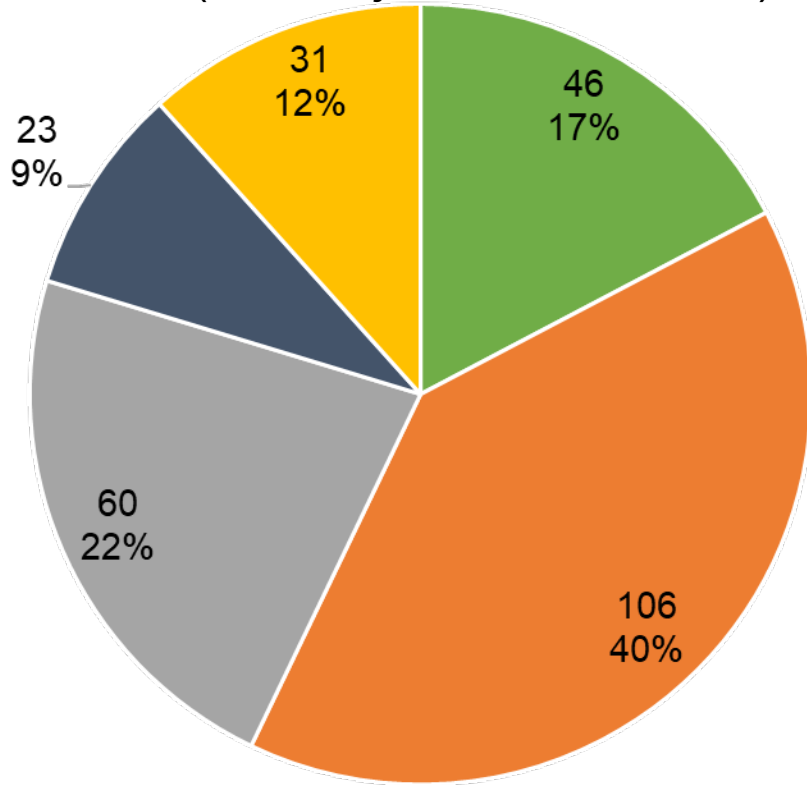
DOE's mission includes stewardship of the National Laboratories and their role is critical to BETO's strategy.



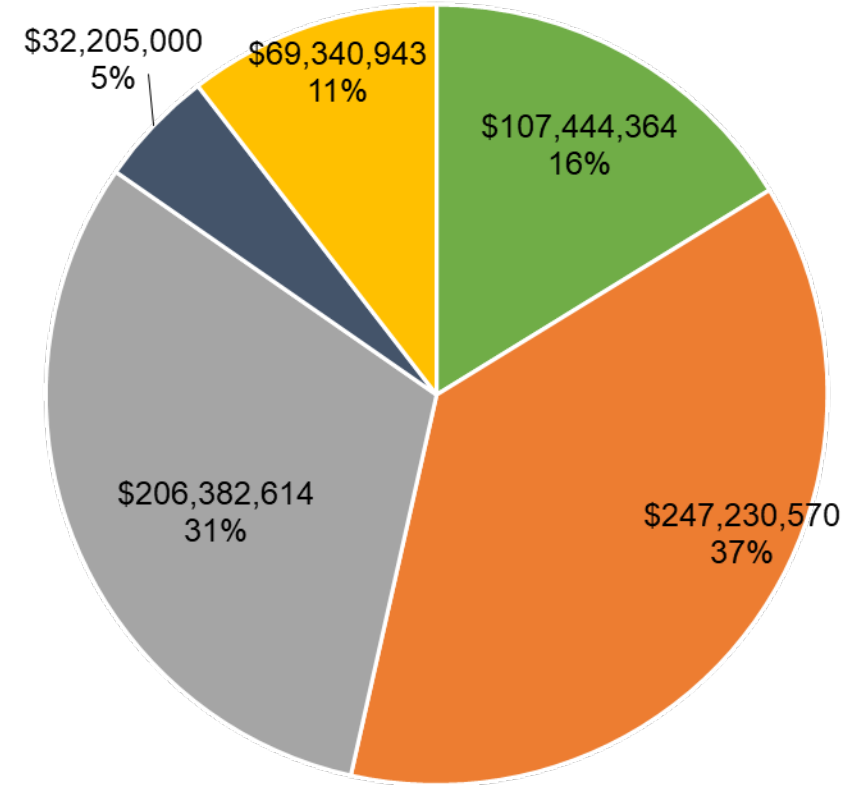
■ Academic ■ Industry ■ National Laboratory

Presentations and Projects by Program Area

By Presentations
(266 Project Presentations)



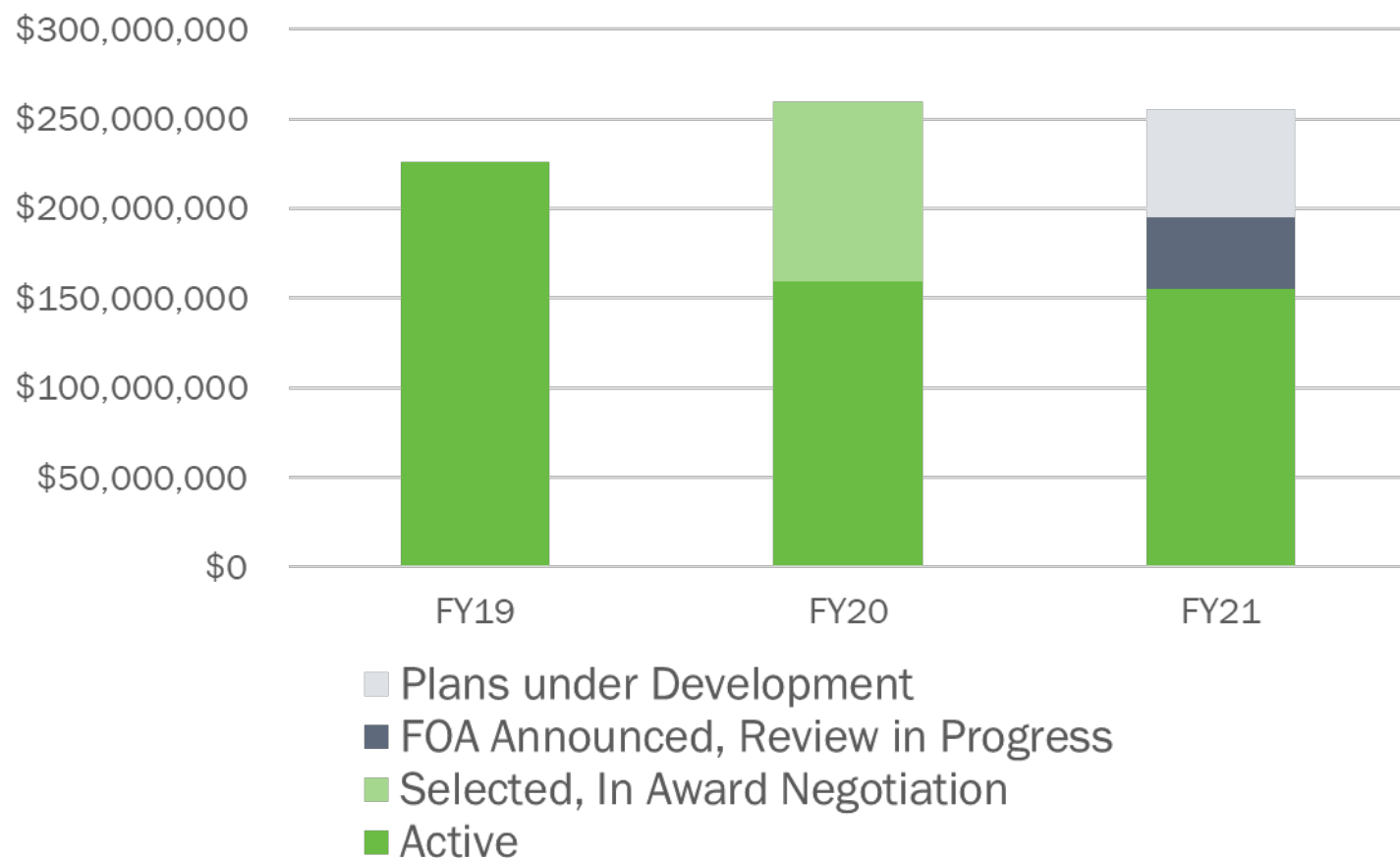
By Project Amount
(\$662M in Federal Share)



- Advanced Algal Systems
- Conversion
- Systems Development & Integration
- Data, Modeling & Analysis
- Feedstock Technologies

Review as compared to Appropriations

- Review intended to cover projects that were active from October, 2018 – September 2021, which spans 3 federal fiscal years: FY19, 20, and 21.
- Status of appropriations:



- FY21 appropriations are not fully obligated or planned
- FY20 appropriations are fully obligated but most selected awards from \$100M FOA are still in negotiation and not active yet
- FY19 projects are fully active
- Active projects in this review may have been funded prior to FY19

FY20 BETO Funding Opportunity Recipients

- 45 awards selections announced totaling over \$100M in federal funding
- Awards are in negotiation, most project to start March-June, 2021. These projects are not at this Review.
- Abstracts for these projects available here:

https://www.energy.gov/eere/bioenergy/bioenergy-technologies-office-closed-funding-opportunities#2020_5

Topic Area
Scale Up of Bench Applications (SCUBA)
Waste to Energy Strategies for the Bioeconomy 2a: Municipal Solid Waste (MSW) 2b: Optimizing Community Scale Wet Organic Wastes 2c: Synergistic Wastewater Integration with Microalgae (SWIM)
Algae Bioproducts and CO ₂ Direct-Air-Capture Efficiency (ABCDE)
Bio-Restore: Biomass to Restore Natural Resources
Efficient Wood Heaters
Biopower and Products from Urban and Suburban Wastes: North American Multi-University Partnership for Research and Education 6a: Biopower from Organic Wastes 6b: Waste Plastics to Products
Scalable CO ₂ Electrocatalysis
Bio-Optimized Technologies to keep Thermoplastics out of Landfills and the Environment*

*Jointly run and funded with DOE's Advanced Manufacturing Office

Technology Commercialization Fund (TCF) Portfolio Overview

DOE Office of Technology Transitions (OTT) Program

- Leverages DOE R&D funding to mature promising energy technologies with potential for high impact.
- Annual solicitation; Requires 50% cost share with National Laboratory partner; federal share goes to National Laboratory.
- Two Topic Areas:
 - Topic 1: \$100 - \$250k, 6 – 18 months
 - Topic 2: \$250 –\$1,500k, 12 – 36 months
- Currently about \$6M in active BETO projects
- Examples: “Catalyst Leaching Resistance for the Oxidative Production of Biobased Chemicals”; “Fully Renewable Polyurethane Resins Produced from Algae and other Feedstocks”
- BETO’s Program Point of Contact: Mark Shmorhun

Small Business Innovation Research (SBIR) Overview

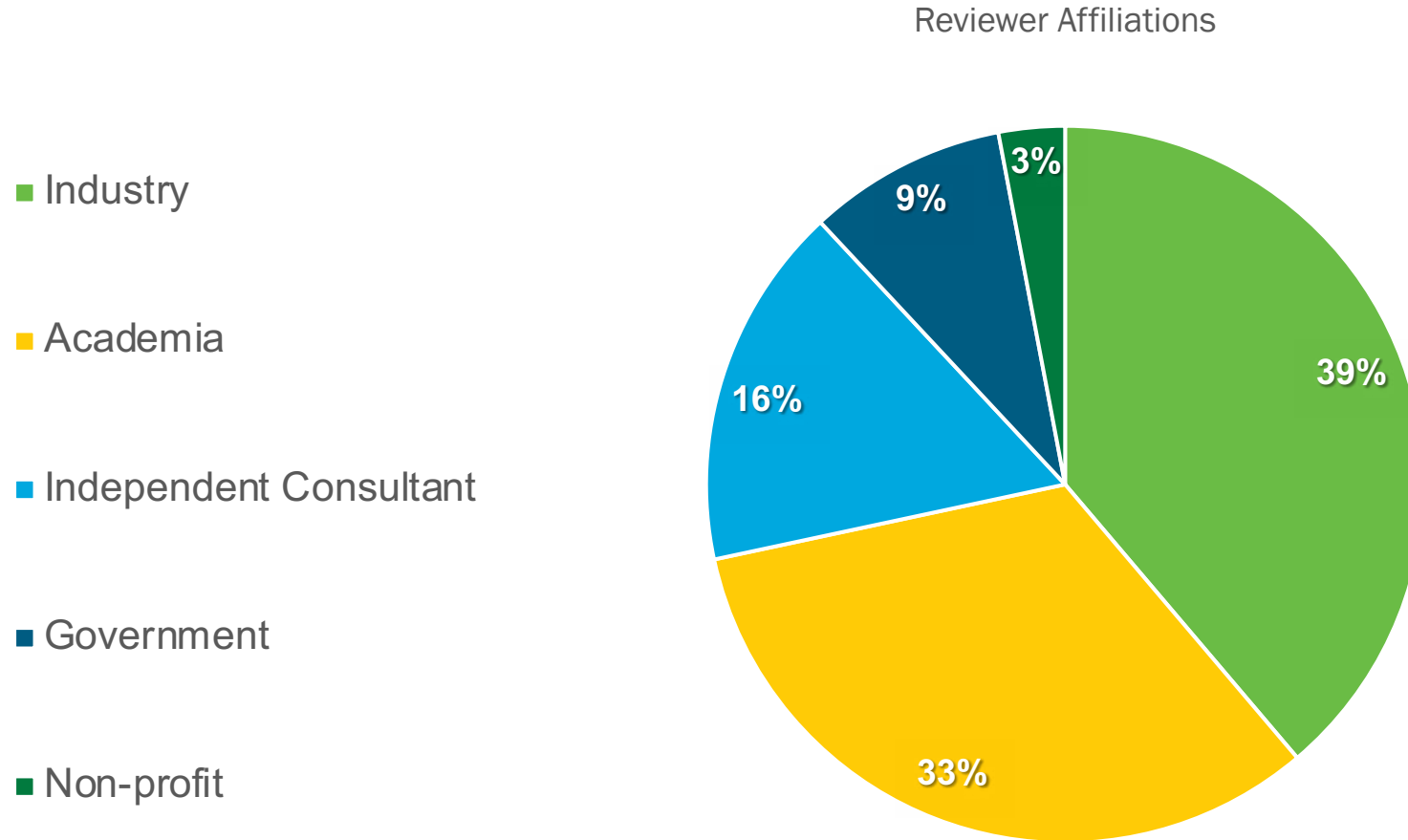
SBIR/STTR Program

- Annual solicitation to encourage qualifying domestic small businesses to engage in Federal R&D
- BETO funds ~\$8 million per year in SBIR/STTR Phase I & II awards
 - Phase I: Concept Development, 6 months – 1 year, ~ \$50k -250k
 - Phase II: Prototype Development, 24 months, ~ \$500k – 1.5M (must first complete Phase I to be eligible)
- BETO selected 12 Phase I awards across 3 topics in FY20
- Currently about \$14M in active projects

Fiscal Year Phase 1 Released	Topic Title
FY21 (Phase 1 selections TBD)	Small Business Bioenergy Technologies Increasing Community Partnerships
	Cultivating a More Competitive Bioeconomy through Strengthening Small Business Workforces
	Improving Plastics Compatibilization for More Efficient Recycling
FY20 (12 Phase 1s, Phase 2 selections TBD)	Novel Approaches for Monitoring and Valorizing Bioenergy-Derived Ecosystem Services
	Bioenergy Feedstock Engineering Incubator
	Novel Utilization Strategies for Ocean Plastic Waste
FY19	Cell-Free Biochemical Platforms to Optimize Biomass Carbon Conversion Efficiency
	Reshaping Plastic Design and Degradation for the Bioeconomy
	Algae Engineering Incubator
FY18	Biofuels and Bioproducts from Wet Organic Waste Streams at Relevant Scales
	Rewiring Biomass Conversion: Novel Strategies to Substantially Enhance Biomass Carbon Conversion Efficiency
	Algae Breeding
	Solid-Liquid Separations for Algal Systems

Thank you to our Reviewers!

BETO recruited 67 leading experts in their fields to serve as reviewers



Thank you to our Reviewers!

ADVANCED ALGAL SYSTEMS REVIEW PANEL

Jaime Moreno*	The GWP Group
Jose Olivares	Algal Research
Brendan Scott	Pebble Labs
Ify Iwuchukwu	Homology Medicines, Inc.
Lora Cameron-Landis	Lonza Biologics
Linda Rauch	Next Rung Technology
Tyler Johannes	University of Tulsa
Jennifer Stewart	CMC Connect

CO OPTIMA REVIEW PANEL

Cory Phillips*	Phillips 66
Karl Albrecht	Archer-Daniels-Midland Company
Aron Butler	U.S. EPA Office of Transportation and Air Quality
Bhupendra Khandelwal	University of Alabama
Nikita Pavlenko	The International Council on Clean Transportation
Reuben Sarkar	American Center for Mobility
Luca Zullo	Synergy BurCell Technologies and VerdeNero, LLC

ORGANIC WASTE REVIEW PANEL

Jeanette Brown*	Manhattan College
Phillip Marrone	Leidos
Aaron Fisher	Ernest Maier
Alice Havill	Colorado Impact Fund
Paige Novak	University of Minnesota

BIOCHEMICAL CONVERSION & LIGNIN UTILIZATION REVIEW PANEL

Christopher Rao*	University of Illinois at Urbana-Champaign
Christopher Gerkin	ICM, Inc.
Charles Abbas	iBioCat, Inc.
Joseph Bozell	University of Tennessee, Knoxville
Daniel Noguera	University of Wisconsin-Madison

AGILE BIOFOUNDRY CONSORTIUM REVIEW PANEL

Pamela Peralta-Yahya*	Georgia Institute of Technology
Lily Fitzgerald	Ginkgo Bioworks
Fuzhong Zhang	Washington University in Saint Louis
Ben Gordon	MIT Broad Syn Bio Foundry
Patrick Rose	Office of Naval Research Global, London
Kirsten Benjamin	Amyris
Gale Wichman	Amyris

FEEDSTOCK TECHNOLOGIES REVIEW PANEL

Glenn Farris*	Lee Enterprises Consulting, Inc.
Dana Mitchell	U.S. Department of Agriculture
Sally Krigstin	University of Toronto
Jason Martin	POET-DSM Liberty
Jingxin Wang	West Virginia University
John Cundiff	Virginia Polytechnic Institute and State University

DATA, MODELING, AND ANALYSIS REVIEW PANEL

Kevin Fingerman*	Humboldt State University
Kristin Lewis	U.S. Department of Transportation – Volpe Center
Nikita Pavlenko	The International Council on Clean Transportation
Katie Goodall	Independent Consultant
Max Broad	Independent Consultant
Amy Landis	Colorado School of Mines

CATALYTIC UPGRADING REVIEW PANEL

Jesse Bond*	Syracuse University
Cory Phillips	Phillips 66
Qing Shao	University of Kentucky
Terry Mazanec	T-MAZ LLC
Jeffrey Scheibel	J. J. Scheibel Consulting LLC

PERFORMANCE ADVANTAGED BIOPRODUCTS REVIEW PANEL

Matt Tobin*	Independent Consultant
Peter Keeling	Purdue University
Karen Draths	Michigan State University
Ray Miller	Independent Consultant
Bill Orts	U.S. Department of Agriculture
Sharon Haynie	Independent Consultant
Paul Bryan	Independent Consultant

SYSTEMS DEVELOPMENT AND INTEGRATION REVIEW PANEL

Daniel Lane*	Saille Consulting
Mark Penshorn	Penshorn Analysis
Ignasi Palou-Rivera	American Institute of Chemical Engineers
Paul Bryan	Independent Consultant
Vicky Putsche	VLP Consulting Co.

CO2 UTILIZATION REVIEW PANEL

Phil de Luna*	Canada National Resource Council
Charles McCrory	University of Michigan
Alissa Park	Columbia University
Matthew Kanan	Stanford University
Shawn Jones	Arkion Life Sciences

FEEDSTOCK CONVERSION INTERFACE CONSORTIUM REVIEW PANEL

Mark	
Penshorn*	Penshorn Analysis
Mike Tupy	Cargill
Kim Nelson	GranBio
Phil Weathers	Weathers Associates Consulting
Paul Paxson	E3 Consulting

BETO's Leadership Team



Valerie Reed
Acting Director



Jay Fitzgerald
Chief Scientist &
Program Manager



John Cabaniss
Operations Supervisor



Kevin Craig
Program Manager



Nichole Fitzgerald
Program Manager



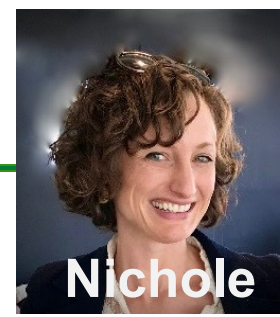
Jim Spaeth
Program Manager

BETO's COVID Crew!

These folks started with BETO or took on new roles within BETO since March 2020



Valerie Reed



Nichole
Fitzgerald



Jay Fitzgerald



Joel
Sarapas



Chenlin Li



Trevor Smith



Gayle Bentley



Neil Matthew



Liz
Burrows



Andrea
Bailey



Phil Lee



Sonia
Hammache



Marykate
O'Brien



Steph Byham



Ty

Robinson



Ben Simon



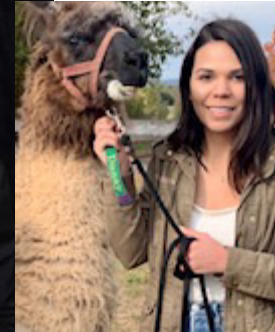
Jesse Glover



KC Agwu



Alexander
Jansen



Courtney
Arnett



Richard
Coaxum



Art Wiselogel

Useful Information

- **Technology Area sessions each have a separate Panel of reviewers**
- **Presentations are mostly short and follow a template based on the Review Criteria.**
- **Q/A between the Presenter and the Review Panel is a priority.**
- **There will be Overview Presentations explaining the strategy and goals of the given Technology Area prior to the Project talks**
- **All presentations will be available for download on BETO's website shortly after the Review.**
- **The Review Report will be published 6 – 12 months after the Review.**

Virtual Housekeeping and Logistics

- Each Panel requires a unique Zoom.gov link. Check your email for instructions – you must receive a unique link from Zoom to attend each.
- If calling in on a phone, follow the instructions to enter your participant ID.
- We are prioritizing Reviewer/Presenter interactions. Presenters and Reviewers should use their webcam when speaking.
- **All other participants should remain on mute and leave their cameras off.**
- You may use the Chat to ask questions; depending on time these may or may not get answered.
- Presenters must follow time limits. Meeting hosts will remind you and ultimately cut you off.
- **MEETING SUPPORT:** Email Stacey Young if you are having trouble!
stacey.young@thebuildingpeople.com

Agenda at-a-glance

- **Today: Plenary Session + Algae and Biochem kickoffs**
- **Tuesday – Friday: Parallel Project Review Sessions**
 - Algae; Feedstocks; Biochem and Lignin; Catalytic Upgrading; Data, Modeling, and Analysis; Bioproducts, Separations, and Plastics; Agile Biofoundry; Organic Waste
- **Next Monday – Tuesday (March 15 – 16): Additional Parallel Review Sessions**
 - Feedstock Conversion Interface Consortium
 - Co-Optima Consortium
- **2 weeks (March 22-26): Several additional parallel sessions**
 - Algae; Systems Development and Integration

Thank You!

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U.S. Department of Energy
Golden, CO

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