Notice of Intent No. DE-FOA-0002909

Notice of Intent to Issue
Funding Opportunity Announcement No. DE-FOA-0002910
AND
Funding Opportunity Announcement No. DE-FOA-0002946

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Bioenergy Technologies Office (BETO), two Funding Opportunity Announcements (FOAs):

1. DE-FOA-0002910, entitled "Reducing Agricultural Carbon Intensity and Protecting Algal Crops (RACIPAC)" and

2. DE-FOA-0002946, entitled "2023 Conversion R&D FOA."

These FOAs support the Bioenergy Technologies Office's research and development (R&D) priorities in the areas of (a) Renewable Carbon Resources (RCR) and (b) Conversion. Specifically, the RACIPAC FOA will support high-impact R&D focusing on reducing the carbon intensity of agricultural feedstocks, improving soil carbon levels, and protecting cultivated algal crops from pests. The Conversion R&D FOA will support development of technologies that convert domestic lignocellulosic biomass and waste resources including industrial syngas into affordable biofuels and bioproducts that significantly reduce carbon emissions on a life-cycle basis (minimum of 70% decrease in greenhouse gas (GHG) emissions), compared to equivalent petroleum-based products.

The R&D activities to be funded under both FOAs support the government-wide approach to the climate crisis by driving innovations that lead to the deployment of clean energy technologies. These FOAs will advance President Biden's Administration's goals to "deliver an equitable, clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050."[1] R&D activities funded from these FOAs provide routes to transform renewable carbon resources such as agricultural residues and algae into high-quality, environmentally sustainable, conversion-ready feedstocks and to develop and deploy the conversion technologies for the production of chemicals and fuels with >70% reduction in GHG emissions. Additionally, these FOAs will support the President's goal to

1 - Executive Order 14008, Executive Order on Tackling the Climate Crisis at Home and Abroad | The White House; January 27, 2021.

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produce 3 billion gallons of sustainable aviation fuels (SAF) per year and reduce aviation emissions by 20% by 2030, both of which will unlock the potential for a fully zero-carbon aviation sector by 2050.

It is anticipated the FOAs may include the following Areas of Interest:

1. **Reducing Agricultural Carbon Intensity and Protecting Algal Crops FOA:**

   BETO's Renewable Carbon Resources R&D program develops science-based strategies and technologies to cost-effectively transform renewable carbon resources into high-quality, environmentally sustainable, conversion-ready feedstocks for biofuels and bioproducts. These strategies and technologies are designed to improve the efficiency, sustainability, and reliability of feedstock production, harvesting, collection, storage, preprocessing, and transportation, and identify the key feedstock quality and operational variables for conversion performance.

   Area of Interest (AOI) 1: Climate-Smart Agricultural Practices for Low Carbon Intensity (CI) Feedstocks

   The goal of AOI 1 is to assess the efficacy of climate-smart agricultural practices and technologies to reduce the carbon intensity of agricultural residues harvested for biofuels production. Implementation of climate-smart agricultural practices is essential to produce low CI feedstocks, particularly from agricultural residues, and to enable sustainable aviation fuel production with lower greenhouse gas emissions. Strategies for deploying biochar to improve soil carbon are of interest.

   Area of Interest 2: Algae Crop Protection

   This AOI focuses on developing crop protection methods and strategies for algae cultivation systems. A major barrier to the scaling and intensification of algae cultivation is the partial or complete loss of productivity due to pests. Pests can be defined as any organism that infects, consumes, competes with, or has other deleterious effects on the algal strain (or strains) being cultivated. Cultivation of algae requires active pest management approaches to maintain robust productivity. Anticipated outcomes include newly developed and tested crop protection strategies that prevent productivity losses and result in more robust cultivation systems. Increasing productivity while extending the cultivation period will lead to fewer pond crashes and downtime and result in lower overall production costs.

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2. 2023 Conversion R&D FOA:

The 2023 Conversion R&D FOA supports a main theme core to the BETO Conversion Program's R&D mission: developing technologies to enable the conversion of waste and renewable resources to fuels and products with substantial greenhouse gas emissions reductions compared to the petroleum incumbent. The FOA addresses two specific technology pathways intended to develop improved technologies for waste gas conversion and upgrading as well as pathways for renewable chemical production. Each Area of Interest seeks to reduce economic and technical risk, enabling BETO to help pave the way for industry to commercialize technologies that may reduce greenhouse gas emissions from hard to decarbonize sectors, such as aviation.

Area of Interest 1: Overcoming Barriers to Syngas Conversion

The goal of this AOI is to eliminate technical barriers limiting the cost-effective production of SAF from syngas generated from renewable carbon and waste feedstocks. While upgrading syngas has been widely investigated, additional challenges remain due to additional process complexity and feedstock limitations. Technologies selected from this Area of Interest will convert acceptable feedstocks into SAF with a 70% reduction in lifecycle GHG emissions.

Area of Interest 2: Strategic Opportunities for Decarbonization of the Chemicals Industry Through Biocatalysts

The goal of this AOI is to support the development of chemicals from renewable carbon and waste feedstocks through biochemical conversion strategies. This area will target efforts which convert acceptable feedstocks into chemicals that displace their current fossil-derived counterparts and achieve a minimum 70% reduction in lifecycle GHG emissions. Projects seeking to utilize biomass will be encouraged to focus on lignin as a feedstock.

EERE envisions awarding multiple financial assistance awards in the form of cooperative agreements. It is anticipated that the period of performance for each award issued from the RACIPAC FOA will range from 36-84 months (depending on the Area of Interest); the estimated period of performance for awards issued from the Conversion FOA will be approximately 18-36 months.

This Notice is issued so that interested parties are aware of the EERE's intention to issue these FOAs in the near term. All of the information contained in this Notice is subject to change. EERE

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will not respond to questions concerning this Notice. Once the FOAs have been released, EERE will provide an avenue for potential Applicants to submit questions.

EERE plans to issue the FOAs in or around January 2023 via the EERE eXCHANGE website https://eere-eXCHANGE.energy.gov/. If Applicants wish to receive official notifications and information from EERE regarding these FOAs, they should register in EERE eXCHANGE. When the FOAs are released, applications will be accepted only through EERE eXCHANGE.

In anticipation of the FOAs being released, Applicants are advised to complete the following steps, which are **required** for application submission:

- Register and create an account in EERE eXCHANGE at https://eere-eXCHANGE.energy.gov. This account will allow the user to apply to any open EERE FOAs that are currently in EERE eXCHANGE.

  Beginning on July 29, 2022*, eXCHANGE was updated to integrate with Login.gov. As of September 29, 2022*, potential applicants are required to have a Login.gov account to access EERE eXCHANGE. As part of the eXCHANGE registration process, new users will be directed to create an account in Login.gov. Please note that the email address associated with Login.gov must match the email address associated with the eXCHANGE account. For more information, refer to the Exchange Multi-Factor Authentication (MFA) Quick Guide in the Manuals section of eXCHANGE.

  It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission. Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-eXCHANGESupport@hq.doe.gov
- Register with the System for Award Management (SAM) at https://www.sam.gov. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually. Upon registration, SAM will automatically assign a Unique Entity ID (UEI).
- Register in FedConnect at https://www.fedconnect.net/. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf
- Register in Grants.gov to receive automatic updates when Amendments to a FOA are

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posted. However, please note that applications will not be accepted through Grants.gov. http://www.grants.gov/. All applications must be submitted through EERE eXCHANGE.

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