# Notice of Intent No.: DE-FOA-0003368
# Issue Date: 05/15/2024

**DISCLAIMER: This "Notice of Intent to Issue" is for informational purposes only; the Department of Energy is not seeking comments on the information in this notice and applications are not being accepted at this time. Any information contained in this notice is subject to change.**

## This is a Notice of Intent to Issue
## Funding Opportunity Announcement No. DE-FOA-0003365
## Title: Carbon Capture, Removal, and Conversion Test Centers

The Department of Energy (DOE) National Energy Technology Laboratory (NETL) intends to issue Funding Opportunity Announcement (FOA) No. DE-FOA-0003365 on behalf of the Office of Fossil Energy and Carbon Management (FECM) in the 2024 calendar year.

**TECHNICAL OBJECTIVES**

In support of Executive Order 14008 (dated January 27, 2021), "Tackling the Climate Crisis at Home and Abroad," and to further past decades of DOE-supported carbon management research, development and demonstration (RD&D) done in cooperation with industry and academia, DOE-FECM anticipates issuing a FOA, seeking applications for financial assistance awards that support research and development (R&D) for facilities to test a variety of carbon management technologies. If released, this FOA is expected to focus on several areas of interest (AOI) responsive to the Office of Carbon Management's programmatic priorities. The test centers will support performance validation and scale-up of a suite of carbon management technologies. These technologies must be developed and deployed in a just and equitable manner to help the nation achieve its climate ambitions and promote its overall energy, environmental, and economic progress.

This Notice of Intent (NOI) seeks to inform stakeholders regarding a potential funding opportunity for the development and implementation of a facility or facilities for the testing of new carbon capture, removal and conversion technologies that can be applied to reduce carbon dioxide ($CO_2$) emissions from point sources such as electric generating units and industrial manufacturing facilities, remove $CO_2$ from the atmosphere, and/or convert captured $CO_2$ into valuable products. The selected Carbon Capture, Removal, and Conversion Testing Center(s) would test individual or integrated carbon capture, removal, and conversion technologies to prove their technical merit, reduce technical risks, and accelerate the demonstration and eventual commercial deployment of a suite of carbon management technologies and processes.

The DOE encourages team-oriented approaches in response to this announcement. Involvement of various stakeholders (for-profit and non-profit entities, academia, industry, and government) is seen as an important facet to providing fully integrated solutions to advance carbon management technologies. It is considered critical that support services and analyses to be provided related to environmental performance, safety, and technical assistance be performed by individuals or organizations with professional capabilities in these areas.

Since 2009, U.S. DOE has invested in testing of carbon capture approaches that accelerate the development of carbon management technologies. These tests have used a wide array of flue gas compositions and flow rates, and testing has been conducted under a variety of ambient conditions. Carbon management technologies have been tested using flue gases produced from a variety of coal and biomass types, natural gas, and refinery gas. Slip stream sizes have ranged from less than 1 MW to 10 MW equivalent, and testing has been conducted at various locations throughout the United States as well as international locations.

If released, this FOA is anticipated to focus on three AOIs.

## ANTICIPATED AREAS OF INTEREST

### AOI-1. Carbon Capture, Removal, and Conversion Test Center at an Electric Generating Unit

Efforts sought under AOI-1 are focused on providing capabilities for laboratory/bench scale through engineering scale testing on actual flue gas streams representative of domestic coal and/or natural gas-based electricity generation systems and from the atmosphere. Applicants to this AOI should be capable of providing actual flue gas from an existing, domestic facility generated by the combustion of natural gas and/or coal. Adequate quantities of flue gas should be provided for multiple, simultaneous slipstream tests of advanced carbon capture, removal, and conversion systems and components. Applicants to this AOI should have existing facilities that allow for the testing of technologies without significant additional infrastructure. For example, the proposed test center may have an existing solvent test system that a developer can utilize with their solvent without having to construct a new capture system on site. The Carbon Capture, Removal and Conversion Testing Center will provide the technical and operational support services necessary to evaluate the design readiness of technologies for field testing, mobilization, start-up, operation, and decommissioning of individual or integrated carbon capture (e.g., point source or atmospheric) and conversion technologies. The goal of the testing will be to reduce technical and performance risks of technologies to accelerate their readiness for demonstration and deployment. The test center's capabilities must include continuous, 24 hour a day operation for extended, multiple month-long test campaigns to allow technical and performance validation of the technologies' durability under steady-state, variable, and upset conditions. Baseline flue gas $CO_2$ composition should be indicative of natural gas combined cycle (NGCC) or pulverized coal (PC) power plants. A minimum of 30% cost share will be required for this AOI. Applicants are encouraged to provide higher cost share, as needed, to support the greatest operational and technical support for a flexible, robust, and highly utilized test center.

**AOI-2. Enabling Capital Improvements at an Existing Carbon Capture Test Center**

Efforts sought under AOI-2 are focused on providing enhanced capabilities and infrastructure improvements at existing carbon capture test centers for laboratory/bench through engineering-scale testing on flue gas streams representative of domestic fossil-fuel-based power generation systems. Applicants to this AOI should be capable of providing actual flue gas from the combustion of natural gas and/or coal for multiple, simultaneous slipstream tests from an existing facility. In addition to providing flue gas for testing of new post-combustion $CO_2$ capture technologies, there should also be a consideration given for providing capabilities for the testing of new carbon dioxide removal and $CO_2$ conversion technologies. Potential enhancements include environmental control technologies to monitor and reduce contaminant levels in flue gas streams provided by the test facility, balance of plant capabilities (e.g., steam production, electric supply, cooling water, sensors, etc.), and improvements to increase the operational flexibility of the center. Activities under this AOI will be limited to the design and construction of the capital improvements to the test facility along with the reporting of any carbon capture, removal and/or conversion project test results to the DOE/NETL. All test capabilities must be run on a continuous, 24 hour a day basis. Baseline flue gas $CO_2$ composition should be indicative of NGCC or PC power plants. A minimum of 30% cost share will be required for this AOI. Applicants are encouraged to provide higher cost share, as needed, to support the greatest operational and technical support for a flexible, robust, and highly utilized test center with the capital improvements proposed.

**AOI-3. Carbon Capture, Removal, and Conversion Test Center at a Cement Manufacturing Facility**

Efforts sought under AOI-3 are focused on providing carbon capture and conversion testing capabilities for laboratory/bench through engineering-scale testing on gas streams representative of domestic cement plant systems. Applicants to this AOI should be capable of providing actual flue gas from cement plant process stream(s) or integrated cement plant power and process streams for multiple, simultaneous slip stream tests from an existing facility. The R&D testing center will advance the scientific understanding of the tested carbon capture and conversion technologies so that existing or future industrial partners can utilize them at the next scale.

Because testing capabilities of carbon capture and conversion at cement manufacturing facilities are currently not readily available, this AOI will be conducted using a phased approach. Successful applications to AOI-3 will be initially selected for a 6-month, Phase 1 technical period of performance to explore the feasibility of a potential testing center location, ownership structure, business model and technology partners. A down-select will be performed for a Phase 2 award, which will include the design, construction and operation of the Carbon Capture, Removal and Conversion Test Center at a cement manufacturing facility. Only entities that receive a Phase 1 award will be permitted to submit a Phase 2 renewal application for consideration under the competitive down-selection process. All test capabilities must be run on a continuous, 24 hour a day basis. The phase 2 project will be required to provide minimum of 30% cost share. Applicants

are encouraged to provide higher cost share, as needed, to support the greatest operational and technical support for a flexible, robust, and highly utilized test center.

## SUBMISSION AND REGISTRATION REQUIREMENTS

If a FOA is released, it will be posted at Grants.gov (http://www.grants.gov) and at FedConnect (http://www.fedconnect.net). Entities interested in applying are strongly encouraged to register at these sites to receive notification of announcements regarding the FOA. Applications can only be submitted through Grants.gov.

There are several one-time actions an applicant must complete to submit a Full Application in Grants.gov (e.g., register with the System for Award Management (SAM), obtain a Unique Entity Identifier (UEI), register with Grants.gov, and register in FedConnect.net to submit questions). Applicants who are not registered with SAM and Grants.gov, should allow at least 44 days to complete these requirements. It is suggested that the process be started as soon as possible.

**SAM** - Applicants must register with SAM at http://www.sam.gov/ prior to submitting a Full Application in response to a FOA. NOTE: Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Failure to register with SAM will prevent an organization from applying through Grants.gov. The applicant must maintain an active SAM registration with current information at all times during which it has an active Federal award or an application under consideration. More information about SAM registration for applicants is found at: https://sam.gov/content/entity-registration.

**NOTE**: If clicking the SAM links do not work, please copy and paste the link into your browser.

**Due to the high demand of SAM registrations and UEI requests, entity legal business name and address validations are taking longer than expected to process. Entities should start the SAM and UEI registration process as soon as possible. If entities have technical difficulties with the SAM registration or UEI validation process, they should utilize the HELP feature on SAM.gov. SAM.gov will work entity service tickets in the order in which they are received and asks that entities not create multiple service tickets for the same request or technical issue. Additional entity validation resources can be found here: GSAFSD Tier 0 Knowledge Base - Validating your Entity.**

- **UEI** – Applicants must obtain an UEI from the SAM to uniquely identify the entity. The DUNS number has been replaced with the UEI. The UEI is already available in the SAM entity registration record.

  NOTE: Subawardees/subrecipients at all tiers must also obtain an UEI and provide the UEI to the Prime Recipient before the subaward can be issued.

- **Grants.gov** - Applicants must register with Grants.gov and set up a WorkSpace. An applicant cannot submit a Full Application through Grants.gov unless it is registered. Please read the registration requirements carefully and start the process immediately.

  1. The Authorized Organizational Representative (AOR) must register at: grants.gov/register.
  2. An email is sent to the E-Business (E-Biz) POC listed in SAM. The E-Biz POC must approve the AOR registration using their MPIN from their SAM registration.

  **More information about the registration steps for Grants.gov is provided at:**
  grants.gov/applicants/applicant-registration.
  Questions relating to the **registration process, system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

- **FedConnect.net -** Applicants must register with FedConnect to submit questions to a FOA. FedConnect website: www.fedconnect.net.

**DISCLAIMER**

This is a Notice of Intent (NOI) only. DOE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or may not issue a FOA at all.

This NOI is issued so that interested parties are aware that DOE may issue a FOA as described herein. Any information contained in this NOI is subject to change without notice.

No Concept Papers or Full Applications are being accepted at this time.

DOE will **not** entertain questions at this time. Details on how to submit questions will be provided in the FOA (if issued).