U.S. Department of Energy
Office of Fossil Energy and Carbon Management

Request for Information (RFI)
DE-FOA-0003471 -Modification 000001

Carbon Storage Assurance Facility Enterprise (CarbonSAFE): A Mid-Course Evaluation

Program Area: Office of Fossil Energy and Carbon Management (FECM)

Original Issue Date: October 21, 2024

Modification Issue Date: December 19, 2024 (Due date for responses has been updated as highlighted below)

Responses Due: January 6, 2025 by 5:00 PM ET

Background:

The Strategic Vision of the U.S. Department of Energy's Office of Fossil Energy and Carbon Management (FECM) includes a vision for its Carbon Transport and Storage (CTS) Program to:

"*Establish the foundation for a successful carbon storage and transport industry by making key investments in RD&D, large-scale transport and storage facilities and regional hubs to support rapid deployment of carbon storage necessary to enable the decarbonization of the U.S. economy.*" Specific targets of the CTS Program include:

- Provide access to geologic storage capacity of 2 billion metric tons, with 5.5 billion metric tons identified contingent storage resources nationwide by 2030.
- Enable the injection of at least 65 million metric tons per year by 2030.
- Enable the injection of at least 100 million metric tons per year by 2035.

In support of this vision and these targets, the Carbon Storage Assurance Facility Enterprise (CarbonSAFE) initiative was launched in 2016 to facilitate the deployment of commercial large-scale geologic storage across the U.S. by reducing the technical risk, uncertainty, and cost of commercial large-scale geologic storage projects.

The CarbonSAFE initiative is designed to achieve the following Objectives:

- Address the R&D knowledge gaps and develop the technologies needed to nationally deploy commercial large-scale (50+ million metric ton) CO_2 storage.
- Understand the development of a carbon capture and storage (CCS) storage complex from the feasibility study through the point of injection, including CO_2 transport issues.

- Improve understanding of commercial large-scale project screening, site selection, geologic characterization, modeling, and monitoring.
- Address both the technical and non-technical challenges associated with characterization, permitting, and monitoring of a geologic storage complex.

The CarbonSAFE initiative includes the following phases: Phase I – Integrated CCS Pre-Feasibility, Phase II – Storage Complex Feasibility, Phase III – Site Characterization and Permitting, Phase III.5 – NEPA, FEED Studies, and Storage Field Development Plan, Phase IV – Construction. Figure 1 provides a graphical depiction of these four Phases and describes the activities performed in each Phase.

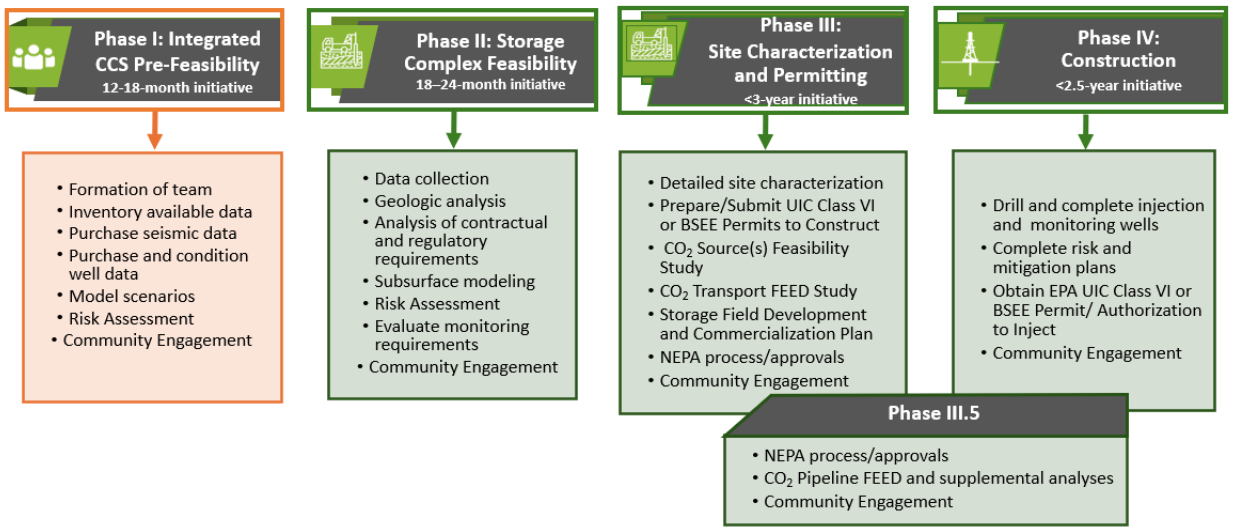

Figure 1 CarbonSAFE Activities in Each Phase

A major factor in the design of the CarbonSAFE initiative stems from the recognition that if carbon storage is to achieve a meaningful level of decarbonization of the U.S. economy, it will be necessary to develop multiple **large-scale** geologic storage facilities in diverse geographic locations. Therefore, each CarbonSAFE storage facility should: (**a) be capable of securely storing at least 50 million metric tons of CO_2; and (b) possess sufficient injectivity to allow these quantities to be stored over a 30-year period.** These two basic requirements have governed the solicitation and selection of CarbonSAFE projects since its inception. Key information on all completed and ongoing projects can be found on the CarbonSAFE website.

History:

In 2016 DOE launched CarbonSAFE Phase I, via Funding Opportunity Announcement (FOA) DE-FOA-0001584, and Phase II, via DE-FOA-0001450, resulting in the award of 13

Phase I projects and 6 Phase II projects. These 19 projects were completed by March 2022. CarbonSAFE Phase III was initiated in 2019 via DE-FOA-0001999, and resulted in the award of 5 projects, all of which are nearing completion. In January 2023, DOE selected 11 additional Phase II projects under DE-FOA-0002610; 10 of these 11 projects are currently in progress.

In September 2022, bolstered by the Bipartisan Infrastructure Law's (BIL) $2.5 billion allocation for Carbon Storage Validation and Testing (BIL Section 40305), the CarbonSAFE initiative greatly expanded its effort by releasing DE-FOA-0002711, which solicited projects to conduct the activities in Phases III, III.5, and IV. Projects to perform the activities in CarbonSAFE Phase II (as well as Phases III, III.5, and IV) were solicited in two subsequent releases of DE-FOA-0002711 in May 2023 and December 2023. Forty-eight projects were selected under the three releases of DE-FOA-0002711 as follows (see Figure 2):

- 1st release – 9 Phase III projects;
- 2nd release – 9 Phase II projects; 7 Phase III projects;
- 3rd release – 12 Phase II projects; 9 Phase III projects, 1 Phase III.5 project and 1 Phase IV project

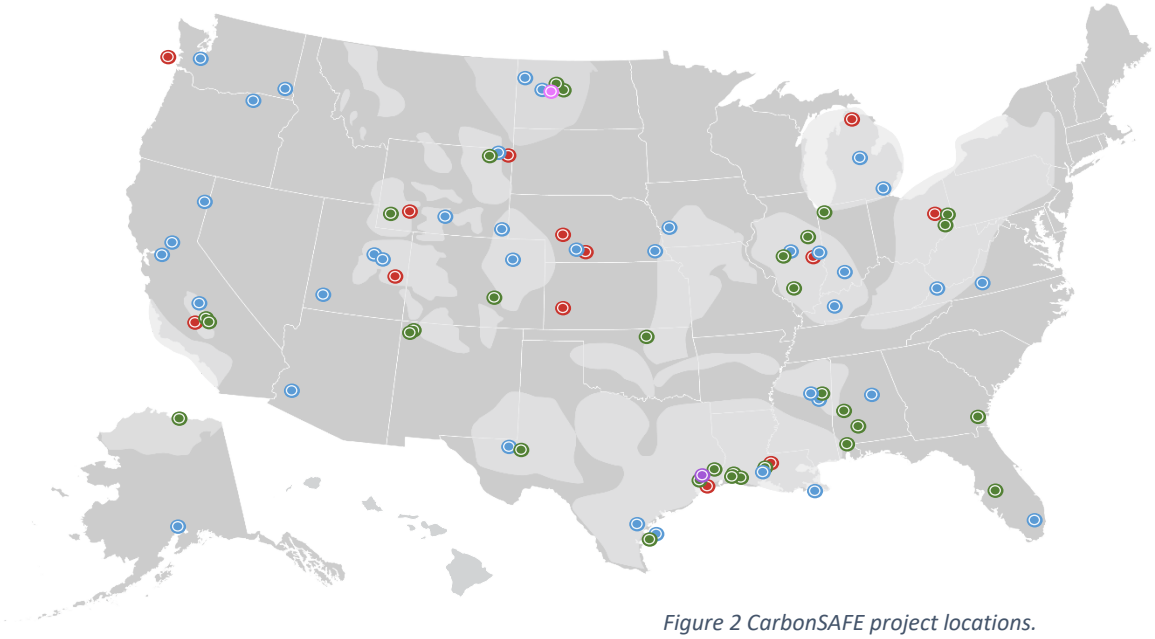

Figure 2 CarbonSAFE project locations.

As of October 1, 2024, 23 of the 25 projects selected under Releases 1 and 2 of DE-FOA-0002711 were underway; the remaining two are being negotiated. All 23 projects selected under the 3rd release are currently being negotiated.

The CarbonSAFE program is currently funded through the $2.5 billion allocation for Carbon Storage Validation and Testing (BIL Section 40305); FECM intends to continue soliciting CarbonSAFE projects under DE-FOA-0002711 until then.

Requested Information:

Through this RFI, FECM seeks input from stakeholders, rightsholders, and communities including carbon storage project developers, storage site operators, federal/state land managers, Indian Tribes, researchers, regulators, investors, insurers, community advocacy leaders, environmental justice organizations, labor groups and others. DOE is committed to incorporating justice principles throughout the process and outcomes of its work to ensure meaningful participation of disadvantaged communities, just distribution of benefits and mitigation of impacts and remediation of legacy harms. The goal of this RFI is to obtain perspectives regarding:

- Aspects of the CarbonSAFE initiative, its objectives, and the design of DE-FOA-0002711 that have been the most successful in achieving the CTS Program's stated vision of "*support(ing) rapid deployment of carbon storage necessary to enable the decarbonization of the U.S. economy.*""; and
- How the CarbonSAFE initiative, its objectives, and the design of DE-FOA-0002711 can be modified or improved to better achieve this vision.

The following questions are provided to guide responses. You may answer one or as many of the questions below as you would like. Please use the numbers as headings in your response to the greatest extent possible and refer to the questions in the body of your response. This helps save time for both the responder and the reviewers. Please be as specific as possible in all responses:

1. To what extent has the CarbonSAFE initiative accelerated the deployment of carbon storage in the U.S. thus far? What factors in the program design have resulted in the selection and performance of projects that can achieve this objective?
2. Do you think the CarbonSAFE initiative has been a successful component of DOE's mission to establish 65 millionmetric tons of CO_2 per year of commercial injectivity by 2030 and 100 million metric tons of CO_2 per year of commercial injectivity by 2035? What factors of the CarbonSAFE program have been beneficial in achieving these goals, and what changes would better position the program for success?
3. Has the CarbonSAFE initiative addressed all the geographic locations and geologic settings it needs to address in order to accelerate CCUS deployment? If not, what additional geographic locations or geologic settings would be required to meet the goals stated above and how would they further accelerate the deployment of carbon storage in the US?
4. Do you believe the CarbonSAFE initiative requirement that a storage complex be capable of storing a minimum of 50 million metric tons of CO_2 over 30 years is overly

restrictive? If so, what size (in metric tons and injection duration) would constitute a "commercial large-scale" CO_2 storage complex?

5. Are the allocation of funding amounts and cost-sharing requirements on the various Phases of CarbonSAFE initiative specified in DE-FOA-0002711 appropriate?
6. Are there any other requirements or restrictions of the CarbonSAFE initiative that may have discouraged potential applicants from submitting an application to DE-FOA-0002711? If so, how can these requirements/restrictions be modified to increase the applicant pool?
7. How has the CarbonSAFE initiative led to a better understanding of the risks (i.e., public health and safety) and benefits (i.e., environmental and emissions reductions) of CCUS for host communities, including through tools such as two-way community engagement, community benefits agreements, workforce agreements, and incorporation of community input into siting and planning decisions? How has the CarbonSAFE initiative led to a better understanding of community concerns with CCUS, a better understanding on how to engage communities that may be impacted by CCUS projects, and a better understanding of actions or project design that may address common concerns with CCUS projects? To what extent have these efforts succeeded in achieving CCUS projects that better work for local communities and long-term support for CCUS? Is there more the CarbonSAFE initiative can do to accelerate the safely deployment of CCUS and address public concerns by prioritizing economic, environmental, and other societal benefits?
8. How can the data acquired during the CarbonSAFE initiative be used to promote the long-term viability of CCUS infrastructure? Are there any R&D needs that would complement the goals of the CarbonSAFE initative?
9. Please provide any other information that would be relevant and necessary to allow the CarbonSAFE initiative to achieve its stated Objective.

Additional Information

Please provide any other information that would be relevant and necessary to assess the need and requirements for continuation or modification of the CarbonSAFE initiative.

DISCLAIMER AND IMPORTANT NOTES:

This RFI is not a Funding Opportunity Announcement(FOA); therefore, DOE is not accepting applications at this time. DOE may or may not elect to issue a FO in the future based on or related to the content and responses to this RFI. There is no guarantee that a FO will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if DOE chooses to issue a FO regarding the subject matter.

Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development; this RFI does not

constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. DOE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request. DOE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that DOE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind DOE to any further actions related to these topics.

PROPRIETARY INFORMATION:

Because information received in response to this RFI may be used to structure future programs and FOAs and/or otherwise be made available to the public, **respondents are strongly advised NOT to include any information in their responses that might be considered business sensitive, proprietary, or otherwise confidential**. If, however, a respondent chooses to submit business sensitive, proprietary, or otherwise confidential information, it must be clearly and conspicuously marked as such in the response.

FREEDOM OF INFORMATION ACT:
Responses received under this RFI are subject to public disclosure under the Freedom of Information Act. Because information received in response to this RFI may be used to structure future programs and funding opportunity announcements and/or otherwise be made available to the public, **respondents are strongly advised to NOT include any information in their responses that might be considered business sensitive (e.g., commercial or financial information that is privileged or confidential), trade secrets, proprietary, or otherwise confidential**.

Consistent with 10 CFR 1004.11, DOE requires that any person submitting information believed to be confidential and exempt by law from public disclosure should submit **two well-marked copies**: one copy of the document marked "confidential" which must clearly and conspicuously identify the business sensitive, trade secrets, proprietary, or otherwise confidential information, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. **Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise.** The Government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

If you choose to provide business sensitive, trade secrets, proprietary, or otherwise confidential information, you must include a cover sheet marked as follows identifying the specific pages containing business sensitive, trade secrets, proprietary, or otherwise confidential information:

Notice of Restriction on Disclosure and Use of Data:

Pages [list *applicable pages*] of this response may contain confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for the purposes described in this RFI #DE-FOA-0003262. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.

In addition, (1) the header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: "Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure" and (2) every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with [[double brackets]] or highlighting.

EVALUATION AND ADMINISTRATION BY FEDERAL AND NON-FEDERAL PERSONNEL:

Federal employees are subject to the non-disclosure requirements of a criminal statute, the Trade Secrets Act, 18 USC 1905. The Government may seek the advice of qualified non-Federal personnel. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The respondents, by submitting their response, consent to the Office providing their response to non-Federal parties. Non-Federal parties given access to responses must be subject to an appropriate obligation of confidentiality prior to being given the access. Submissions may be reviewed by support contractors and private consultants.

REQUEST FOR INFORMATION RESPONSE GUIDELINES:

Responses to this RFI must be submitted electronically to (CarbonSAFE_RFI@netl.doe.gov) with the subject line "CarbonSAFE-RFI" no later than 5:00 p.m. (ET) on January 6, 2025. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25 MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (*.docx) or Adobe Acrobat (*.pdf) attachment to the email, and no more than 15 pages in length, 12-point font, 1-inch margins. Only electronic responses will be accepted.

DOE will not respond to individual submissions or publicly publish a compendium of responses. However, information included in any submission may still become public via a requirement to disclose under the Freedom of Information Act or other federal law or regulation. A response to this RFI will not be viewed as a binding commitment to develop or pursue the project or ideas discussed.

DOE requests respondents provide the following information at the start of their response to this RFI:

- Company/institution name
- Company/institution contact
- Contact's address, phone number, and e-mail address.

If a FOA related to this RFI is released, it will be posted at Grants.gov (http://www.grants.gov) and at FedConnect (http://www.fedconnect.net). Entities who may be interested in applying for awards under a possible FOA are strongly encouraged to register at these sites to receive notification of announcements regarding the FOA. If DOE decides to issue a 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 with 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.

- **UEI** - Applicants must obtain an UEI from the SAM to uniquely identify the entity. The UEI is available in the SAM entity registration record.
- **SAM** - Each applicant must (1) be registered in SAM.gov at https://www.sam.gov/ before submitting a Full Application in response to a FOA, (2) provide a valid unique entity identifier in its application, and (3) continue to maintain an active registration in SAM.gov with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal agency.. Failure to register in the SAM will prevent an organization from applying through Grants.gov.
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- **Grants.gov** - Applicants must register with Grants.gov at https://www.grants.gov/register 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: https://www.grants.gov/register

  2) An email is sent to the E-Business (E-Biz) POC listed in SAM.

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