Bipartisan Infrastructure Law
Technology Commercialization Fund

U.S. DEPARTMENT OF ENERGY

OFFICE OF Technology Transitions

DE-LC-000L100
Carbon Dioxide Removal Measurement, Reporting, and Verification Best Practices and Capabilities Lab Call

Informational Webinar

December 20, 2022

Housekeeping

- All applicants are strongly encouraged to carefully read the entire lab call and adhere to the stated submission requirements.
- This presentation summarizes the contents of lab call. If there are any inconsistencies between the lab call and this presentation or statements from DOE personnel, the lab call is the controlling document and applicants should rely on the lab call language and seek clarification from OTT at TCF.BIL@hq.doe.gov.
- Everyone has been placed on mute.
- Please provide your questions through the Q&A feature. We will endeavor to answer questions at the end of webinar. All questions will go into the formal Q&A log and will be answered and publicly posted to Exchange.
- The Informational Webinar will be recorded and posted to Exchange (https://ott-exchange.energy.gov/)

Agenda

- Key Dates
- General Information
  - Budget per Project
  - Estimated Funding for this Solicitation
- Background
- Eligibility
- Cost Share
- Topics
- Partnering
- Community Benefits
- Concept Paper Stage
- Full Application Stage
- Selections and Notification
- Questions

Key Dates

KEY DATES	
Solicitation Issue Date	December 13, 2022
Informational Webinar	December 20, 2022, 2 p.m. (ET)

PROPOSAL DEADLINE AND DECISION DATES	
Submission Deadline for Concept Papers (See Section II.A.ii.)	January 20, 2023, 3 p.m. (ET)
Concept Paper Status Notifications	February 3, 2023
Submission Deadline for Full Applications (See Section II.A.iii.)	March 3, 2023, 3 p.m. (ET)
Expected Date for Selection Notifications	Q3 Fiscal Year (FY) 23

General Information

Means of Submission for Applications:	Exchange https://ott-exchange.energy.gov/ (DE-LC-000L100) DOE will not review or consider proposals submitted through other means.
Total Amount to be Provided:	DOE expects to make available approximately $15 million in Bipartisan Infrastructure Law funding to fund all projects solicited in this lab call, pending program direction and go/no-go decision points. DOE may issue one, multiple, or no awards.
Estimated Number of Projects: **Estimated Project Duration:** **Estimated Budget per Project:**	3–5 2–3 years $3 to $5 million of DOE funding, in addition to cost share from industry partners
Eligible Entities:	All U.S. Department of Energy National Laboratories, Plants, and Sites
Submission of Multiple Proposals:	There is no limit on the number of concept papers that a lab can submit. If labs receive an encourage determination from DOE at the concept paper stage, they are invited to further expand their concept into a full application.
Questions:	TCF lab call solicitation: TCF.BIL@hq.doe.gov Using the online application portal: eere-exchangesupport@hq.doe.gov

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Background

Technology Commercialization Fund Overview

- The Department of Energy (DOE) Technology Commercialization Fund (TCF) was established by Congress through the Energy Policy Act of 2005[1] and reauthorized by the recent Energy Act of 2020[2] to "promote promising energy technologies for commercial purposes."
- Within DOE, the Office of Technology Transitions (OTT) is charged with leading policy and programs related to technology commercialization.
- The Base Annual Appropriated TCF uses 0.9 percent of the funding for the Department's applied energy research, development, demonstration (RD&D) and commercial application[3] budget for each fiscal year.
- In November 2021, Congress passed the Infrastructure Investment and Jobs Act (IIJA), more commonly known as the Bipartisan Infrastructure Law (BIL),which provided $62 billion in new funding to support a broad array of clean energy activities and programs.
  - As with the Base Annual Appropriated TCF, 0.9% of the RD&D and commercial application funding provided by BIL is allocated to the TCF.

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1. Energy Policy Act of 2005, Public Law 109–58, 109th Cong. (August 8, 2005), *Improved technology transfer of energy technologies*, 42 U.S. Code § 16391 (a).
2. Consolidated Appropriations Act, 2021, Public Law 116–260, 116th Cong. (December 27, 2020), 134 Stat. 2597, Sec. 9003. https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf.
3. TCF does not apply to DOE's budget for deployment activities.

FY23 Base Annual Appropriations TCF

The Base Annual Appropriations TCF is a nearly $30 million program that leverages funding in the applied energy programs to mature promising energy technologies with the potential for high impact across DOE's Research, Development, Demonstration, and Deployment (RDD&D) continuum. DOE's approach for FY 2023 offers applied energy programs the following options for deciding how to obligate their funding:

- **Technology-Specific, Customized Commercialization Programs:**

  DOE programs have been given the opportunity to develop their own proposed use of TCF funding that meets the statutory requirements of TCF.

- **Joint Lab Call for Core Laboratory Infrastructure for Commercialization and Technology-Specific Partnership Projects:**

  DOE programs have been given the opportunity to work with OTT on a multiple program office joint lab call that combines available appropriated TCF funding to address systemic challenges, core barriers, and known gaps impeding National Laboratory commercialization of promising energy technologies. Read more about the Joint Lab Call announced December 14, 2022.

FY23 Bipartisan Infrastructure Law TCF

Under BIL TCF, OTT pursues activities that broadly support the commercialization of promising energy technologies while simultaneously enhancing and improving American infrastructure, competitiveness, opportunity, and equity and addressing the climate crisis. OTT will achieve this by working collaboratively across relevant DOE program offices, including:

- Office of Clean Energy Demonstrations (OCED)
- Office of Fossil Energy and Carbon Management (FECM)
- Office of Energy Efficiency and Renewable Energy (EERE)
- Office of Manufacturing and Energy Supply Chains (MESC)
- Office of Cybersecurity, Energy Security, and Emergency Response (CESER)

OTT seeks to cultivate a broader innovation network around the BIL provision activities to enable faster replication and scaling of demonstration projects for broader private sector uptake.

What will be discussed today

BIPARTISAN INFRASTRUCTURE LAW TECHNOLOGY COMMERCIALIZATION FUND: CARBON DIOXIDE REMOVAL MEASUREMENT, REPORTING, AND VERIFICATION BEST PRACTICES AND CAPABILITIES LAB CALL

- The Department of Energy's (DOE's) Office of Technology Transitions (OTT), in partnership with the Office of Fossil Energy and Carbon Management, announced a lab call to accelerate commercialization of carbon dioxide removal (CDR) technologies, including direct air capture, by advancing measurement, reporting, and verification best practices and capabilities.
- The lab call is funded by the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL), as part of the DOE Technology Commercialization Fund (TCF).
- OTT expects to make $15 million in BIL TCF federal funding available for projects led by DOE National Laboratories, plants, and sites and supported by diverse industry partnerships spanning the emerging CDR sector.

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Eligibility

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Eligibility

- Only DOE National Laboratories, Plants, and Sites are eligible prime applicants to this lab call.
- Labs are highly encouraged partner on proposals.
- Labs are eligible for multiple awards.

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Cost Share

Cost Share

- DOE has approved a cost-share waiver for the first budget period for both subtopic 1.a and 1.b projects. During the first budget period, OTT would like the labs to collaborate with each other and external stakeholders to execute their intended objectives. As such, OTT finds that requiring cost share may give some parts of industry an advantage over others and lead to an outcome that is, or appears to be, biased in some way.
- DOE has also further waived cost share for subtopic 1.b of this lab call. Projects applying under subtopic 1.b are not required to cost share nonfederal funds of at least 50% of second budget period project costs to apply. This was done to ensure all project ideas can apply and the most impactful mix of projects can be selected
- Each proposal that applies to subtopic 1.a commits to meet the 50% cost-share requirement for second budget period costs.
- DOE will evaluate the level of external industry engagement and collaboration as evidence by cost share to ensure maximum impact of the selected projects. The selection official may determine that a subtopic (b) proposal would be selected except that the proposal does not provide adequate cost share given the commercial nature of the project activities. In such cases, the applicant would be provided the opportunity to increase their cost share to the default level, and project selection would be contingent on the lab(s) committing to 50% cost share for the second budget period. If the lab(s) decline, DOE will not fund the project.
- The final cost-share requirements for each proposed project will be set at the time of selection and will not be changed during the life of the award. Cost-share requirements will be established on a budget-period-by-budget-period basis.
- Note that the review criteria reflect that cost share is a consideration for selection.

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Topics

Topic 1: Carbon Dioxide Removal Measurement, Reporting, and Verification Best Practices and Capabilities

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The lack of robust MRV practices to quantify and compare CDR solutions, including direct air capture, in an apples-to-apples manner is a market formation bottleneck impeding the ability to commercialize promising new CDR technologies.

National lab expertise can accelerate commercialization of the emerging CDR industry by solving the following problems:

Measuring carbon:	Quantifying net carbon removed:	Increasing transparency:	Developing best practices for protocols and processes:
• Identifying, developing, and testing affordable, precise tools (e.g., sensors and models) to measure carbon fluxes within the CDR system to intended secure reservoirs	• Cradle-to-grave life cycle analysis, which includes establishing appropriate system boundaries, using correct baselines, and analyzing permanence, additionality, and leakage of specific approaches at reasonable geospatial and temporal scales	• Improving access to and understanding of data-driven models and processes underlying CDR MRV to improve bankability, build trust in communities, and enable widespread adoption	• Validating methodologies and cost-effective measurement approaches used for verifying carbon removal claims.

Program Scope

- Proposed projects must align with TCF's goals to promote the commercialization of promising energy technologies and the goals of the relevant BIL provisions.*
- CDR MRV is a diverse, interdisciplinary field. Applicants should be specific and clearly describe and justify the CDR technology(ies) and MRV aspects that the project will focus on.
- Proposals should describe which activities need to be undertaken to achieve the commercialization goals of the project. Key milestones for proposals under this topic should be commercialization-focused, not technology-focused.
- Note that proposals that fall outside the parameters specified in the topic description section will be deemed nonresponsive and will not be reviewed or considered.

* 41005(a) Precommercial Direct Air Capture Technology Prize Competitions, 41005(b) Commercial Direct Air Capture Technology Prize Competitions, 40308 Program to Develop Four Regional Clean Direct Air Capture Hubs, 40305 Carbon Storage Validation and Testing

Alignment with Program Objectives

In their application materials, applicants should describe how their projects align with the program objectives listed below. Applicants do not need to address all objectives in each project. Applications must describe the objective(s) addressed in their technical narrative; cross-cutting projects are preferred.

Advance technical capabilities	• Assess existing CO2 quantification tools, models, and sensors; increase the relevance and usability of technical solutions for MRV; and validate the accuracy and durability of measurement approaches with both laboratory and field testing.
Develop best practices	• Engage stakeholders and formulate CDR MRV best practice methodologies and protocols. • Define permanence and additionality to determine net-carbon removed, understand leakage or reversal risk, and address removal uncertainty on temporal and geospatial scales.
Create and/or contribute to supporting infrastructure	• Convene industry and facilitate information exchange via stakeholder activities such as topic-specific workshops and annual CDR MRV conference(s); disseminate findings, datasets (e.g., dynamic baselines), and other relevant communications in appropriate distribution channels; and, to the extent possible, create data-sharing interface(s) such that private sector organizations have a consistent starting point for evaluating and assigning economic and commercial value to novel CDR claims.
Provide MRV capabilities to CDR projects	• Engage with the external community to offer technical assistance to different teams of CDR technology and project developers and other third parties to help advance the science, tools, and processes for specific CDR approaches. • Provide field testing and support initial phase of commercial MRV deployment to early CDR projects.

Project Structure

- OTT envisions awarding multiple projects led by national labs from this topic.
- Proposals must be broken into at least two budget periods of 12–18 months each, with a logical go/no-go decision point between the budget periods.
- Applicants should be clear in their application materials which tasks and associated budgets fall into the first and second budget periods of the project.
- DOE anticipates that one of the awardees will serve as program lead or coordinator. Applicants should be clear in their application materials whether they would like to be considered for this role.
- Applicants should consider the teaming elements that are needed to successfully achieve the proposed project objectives.

Budget Period 1

- Formulate best practices
- Build up capabilities
- Collaborate/develop harmonized MRV framework

Budget Period 2

- Implementation with industry partners and other third parties as they leverage best practices and capabilities

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Partnering

Partnering

- DOE highly encourages labs to partner with external organizations and private companies, as such partners may have deep knowledge and experience performing many of the activities described in the topics, some may have already built needed components under many of the topic areas below, and some may help advance DOE's Community Benefits goals.
- All partnerships between the labs and outside partners must comply with individual lab requirements under their management and operating (M&O) contracts.
- Partners must agree to engage in activities that focus on commercializing or deploying technologies in the marketplace and are highly encouraged to provide cost share
- Partners can be any nonfederal entity, including private companies, state or local governments (or entities created by a state or local government), colleges, universities, tribal entities, or nonprofit organizations.

Teaming Partner List

- To expedite external partnerships in support of this lab call, DOE is compiling a “Teaming Partner List” to facilitate the formation of new project teams. The Teaming Partner List allows organizations who may wish to participate on an application to express their interest to other applicants and to explore potential partnerships. Updates to the Teaming Partner List will be available in the Exchange website. The Teaming Partner List will be regularly updated to reflect new teaming partners who provide their organization’s information.
- **Submittal Instructions:** Any organization that would like to be included on this list should find the Teaming Partner List for this solicitation (TPL-0000005) on Exchange and submit the following information: Organization Name, Organization Type, Website, Contact Name, Contact Address, Contact Email, Contact Phone, Area of Expertise, Brief Description of Capabilities, and Applicable Topic and Subtopic.

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Community Benefits

Community Benefits: Job Quality and Equity

To support the goal of building a clean and equitable energy economy, the BIL-funded projects are expected to:

1. support meaningful community and labor engagement;
2. invest in America's workforce;
3. advance diversity, equity, inclusion, and accessibility (DEIA); and
4. contribute to the President's goal that 40% of the overall project benefits flow to disadvantaged communities (the Justice40 Initiative).

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Community Benefits Plans

- Applications must include a Community Benefits Plan that describes how the proposed project would incorporate the four objectives stated previously and include specific details on how to ensure the delivery of measurable community benefits.
- Applicants are highly encouraged to include individuals from groups historically underrepresented, in science, technology, engineering, and math (STEM) on their project teams
- The proposed project should include at least one Specific, Measurable, Assignable, Realistic and Time-Related (SMART) milestone per budget period supported by DEIA-relevant metrics to measure the success of the proposed actions. This implementation strategy for the proposed project will be evaluated as part of the application review process.
- Minority-serving institutions, minority business enterprises, minority-owned businesses, woman-owned businesses, veteran-owned businesses, or entities located in an underserved community that meet the eligibility requirements are encouraged to participate on an application as a proposed partner to the prime applicant

Community Benefits Plan Guidance

Community & Labor Engagement	Describe plans to engage with community stakeholders (e.g., labor unions, local governments, tribal governments, and community-based organizations) that support or work with underserved & disadvantaged communities.
Investing in the American Workforce	Describe the applicant's approach to investing in workforce education and training of both new and incumbent workers and ensuring jobs are of sufficient quality to attract and retain skilled workers in the industry.
Diversity, Equity, Inclusion, & Accessibility (DEIA)	Describe how DEIA objectives will be incorporated into the project and how applicant will partner with underrepresented businesses, educational institutions, training organizations that serve workers who face barriers to accessing quality jobs, and/or other project partners to help address DEIA.
Justice40 Initiative	Describe the applicable disadvantaged communities to which the anticipated project benefits will flow, including how and when anticipated benefits are expected to flow. Benefits should be quantifiable, measurable, and trackable, including, at a minimum, a discussion of the relevance of each of the eight DOE Justice40 Initiative benefits. Include the anticipated negative and cumulative environmental impacts on disadvantaged communities.

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Concept Paper Stage

Concept Paper

Submission of concept papers is required. To be eligible to submit a full application, applicants must submit a concept paper. Labs are required to submit the concept paper in Exchange no later than **January 20, 2023, 3 p.m. (ET)**

- The intent is to help the labs focus their efforts on the concepts with the highest potential under this lab call.
- DOE will review the concept paper, and applicants will receive an official determination. DOE will encourage or discourage concepts at this stage.
- Only labs that receive an encourage determination on the concept paper will be allowed to submit a full application
- Applicants are strongly encouraged to submit their concept papers and full applications at least 48 hours in advance of the submission deadline.

Concept Paper (Continued)

The concept paper must conform to the content requirements found in the solicitation.

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, points of contact, name of the lab and any partners, and optional summary.
Project Description	3 pages maximum	Applicants are required to describe the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives
Addendum	2 pages maximum	Applicants are required to describe succinctly the qualifications, experience, and capabilities of the proposed project team

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Full Application Stage

Full Applications

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- If labs receive an encourage determination from DOE at the concept paper stage, they are invited to further expand their concept into a full application.
- Full applications are required to be eligible for award(s) under this solicitation. Application materials must be submitted through Exchange.
- Full applications are due **March 3, 2023, 3 p.m. (ET)**. DOE will not accept full applications after this deadline
- DOE will not review or consider ineligible full applications. Each full application shall be limited to a single concept. Unrelated concepts shall not be consolidated in a single full application

Please read the lab call in its entirely for all full application requirements, starting on page 19.

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Full Application Scoring Criteria

- **Criterion 1: Innovation and Impact (30%) :** How innovative and impactful is the project, assuming the stated outcomes can be achieved as written?

Innovative	Impactful	Accelerates Speed of Commercialization
Long-Term Viability	Scalable	Commercialization Outcomes
Differentiated		

- **Criterion 2: Quality and Likelihood of Completion of Stated Goals (30%):** Are the stated goals of the project SMART, and are they likely to be accomplished within the scope of this project? Is there a likelihood of success for the proposed project?

Measurable	Risks mitigated	Reasonable assumptions
Validated	Reasonable budget	

Full Application Scoring Cont.

- Criterion 3: Collaboration and Capability of the Applicant and Holistic Project Team (20%):

Collaboration	Capable	Participation
Commitment	Past Performance	Access

- Criterion 4: Community Benefits Plan: Job Quality and Equity (Community Benefits Plan) (20%)

Community and Labor Engagement	Job Quality	Diversity, Equity, Inclusion & Accessibility (DEIA)
Justice40 Initiative		

Proprietary Information

- In general, DOE will use data and other information contained in proposals for evaluation purposes only, unless such information is generally available to the public or is already the property of the government.
- Applicants should not include in their proposals trade secrets or commercial or financial information that is privileged or confidential, unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in this solicitation.
- Proposals that contain trade secrets or commercial or financial information that is privileged or confidential and that the applicant does not want disclosed to the public or used by the government for any purpose other than proposal evaluation must be marked as described in the solicitation.

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Selection and Notification

Selection and Notification

- **Merit Review and Selection Process:** Selection of winning proposals will be determined based on available funding and input from DOE and external reviewers.
  - DOE carefully considers all information obtained through the selection process. DOE may select or not select a proposal for negotiations. DOE may also postpone a final selection determination on one or more proposals until a later date, subject to availability of funds and other factors. OTT will notify applicants if they are, or are not, selected for award negotiation.
  - DOE will only select proposed projects that support the statutory requirement of the TCF to "promote promising energy technologies for commercial purposes" and advance the goals of BIL provision(s).
- DOE anticipates completing the selection and negotiation process by Q3 FY23 (subject to change). DOE will notify lab leads electronically of selection results. All of DOE's decisions are final when communicated to applicants.
- Projects selected for award are managed by the DOE facilities in accordance with their requisite policies and procedures. OTT will provide all required project oversight and engagement with TCF project recipients; DOE program offices participating in this lab call are encouraged to engage as well.

Questions?

Specific questions about this lab call should be submitted via e-mail to TCF.BIL@hq.doe.gov.

To ensure fairness across all labs, individual DOE staff cannot answer questions while the lab call remains open.

OTT will post all questions and answers on Exchange.

Questions about Exchange: https://eere-exchange.energy.gov/FAQ.aspx