U.S. Department of Energy
Office of Technology Transitions

Bipartisan Infrastructure Law
Technology Commercialization Fund

National Laboratory Call for Proposals

Carbon Dioxide Removal Measurement, Reporting, and Verification Best Practices and Capabilities

DE-LC-000L100

Fiscal Year 2023

This lab call is being issued as part of the Bipartisan Infrastructure Law (BIL) Technology Commercialization Fund (TCF) by the U.S. Department of Energy's (DOE's) Office of Technology Transitions (OTT) in partnership with the Office of Fossil Energy and Carbon Management (FECM). This call solicits proposals from across the DOE national laboratory complex to accelerate commercialization of carbon dioxide removal technologies by advancing measurement, reporting, and verification best practices and capabilities.

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Lab Call Modification History

Modification 1 – Extension of Submission Deadline for Full Applications (page 7)

I. Lab Call Description

A. Background and Context

The U.S. Department of Energy (DOE) Technology Commercialization Fund (TCF) was established by Congress through the Energy Policy Act of 2005 (EPAct05)[1] and reauthorized by the Energy Act of 2020 (EA 2020) to "promote promising energy technologies for commercial purposes."[2] In line with its mission to expand the public impact of the department's research, development, demonstration, and commercial application (RDD&CA) portfolio to advance the economic, energy, and national security interests of the nation, the DOE Office of Technology Transitions (OTT) is charged with leading policy and programs related to technology commercialization.

The DOE TCF is a primary component of DOE's ongoing effort to commercialize cutting-edge energy technologies. These technologies comprise a portfolio of energy and supporting, enabling technologies that have the potential to improve the lives of Americans and solve many of our country's most pressing energy and environmental challenges.[3]

While DOE has always incorporated commercialization and technology transfer into its mission, in EPAct05, Congress explicitly authorized the TCF as a 0.9% set-aside of applied RDD&CA funding specifically dedicated to pursuing the commercialization of DOE technologies.[4] This intent was further refined when the TCF was recently reauthorized as part of EA 2020, described below:

> *"The Secretary, acting through the Chief Commercialization Officer established in section 1001(a) of the Energy Policy Act of 2005 (42 U.S.C. 16391(a)), shall establish a Technology Commercialization Fund (hereafter referred to as the 'Fund'), using nine-tenths of one percent of the amount of appropriations made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year, to be used to provide, in accordance with the cost-*

[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] DOE Office of Technology Transitions, "Mission." https://www.energy.gov/technologytransitions/mission-0.
[4] 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.

sharing requirements under Section *988, funds to private partners, including national laboratories, to promote promising energy technologies for commercial purposes."*[5]

Further, the Energy Act of 2020 Sec 9001(g)[6] directed OTT to develop additional technology transfer programs to: support regional clean energy innovation systems; support clean energy incubators; provide small business vouchers; provide financial and technical assistance for entrepreneurial fellowships at national laboratories; encourage students, energy researchers, and national laboratory employees to develop entrepreneurial skill sets and engage in entrepreneurial opportunities; support private companies and individuals in partnering with national laboratories; and further support the mission and goals of the office. Sec 9001(a)(2) of the Energy Act of 2020 states that the OTT mission "shall be (1) to expand the commercial impact of the research and investments of DOE; and (2) to focus on commercializing technologies that support DOE missions, including reducing greenhouse gas emissions and other pollutants."[7] The EA 2020 changes have enabled DOE to broaden its strategy to improve critical commercialization programming.

In November 2021, Congress passed into law the Infrastructure Investment and Jobs Act,[8] more commonly known as the Bipartisan Infrastructure Law (BIL). The BIL is a once-in-a-generation investment in infrastructure, designed to modernize and upgrade American infrastructure to enhance United States competitiveness, drive the creation of good-paying union jobs, tackle the climate crisis, and ensure stronger access to economic and environmental benefits for disadvantaged communities.[9] The BIL appropriates more than $62 billion to DOE[10] to invest in American manufacturing and workers; expand access to energy efficiency and clean energy; deliver reliable, clean, and affordable power to more Americans; and demonstrate and deploy the technologies of tomorrow through clean energy demonstrations. As part of and in addition to upgrading and modernizing infrastructure, DOE's BIL investments will support efforts to build a clean and equitable energy economy that achieves a zero-carbon electricity system by 2035, and to put the

[5] 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.
[6] Id.
[7] Id.
[8] Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021).
[9] Pursuant to E.O. 14008 and the Office of Management and Budget's Interim Justice40 Implementation Guidance M-21-28, DOE has developed a definition and tools to locate and identify disadvantaged communities. These resources can be located at: https://energyjustice.egs.anl.gov/. DOE will also recognize disadvantaged communities as defined and identified by the White House Council of Environmental Quality's Climate and Economic Justice Screening Tool (CEJST), which can be located at https://screeningtool.geoplatform.gov/.
[10] U.S. Department of Energy. 2021. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver For American Workers, Families and Usher in the Clean Energy Future." https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0.

United States on a path to achieve net-zero emissions economy-wide by no later than 2050[11] to benefit all Americans.

As with base appropriations, 0.9% of the RDD&CA funding appropriated through BIL is allocated to the TCF. Under TCF BIL, 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. Working collaboratively across relevant program offices,[12] OTT seeks to cultivate a broader innovation network around the BIL provision activities to enable faster replication and scaling of demonstration projects. In line with these principles and the goals of the Carbon Negative Shot, OTT in partnership with the Office of Fossil Energy and Carbon Management is issuing this lab call to be funded in Fiscal Year 2023 (FY23).

The Carbon Negative Shot[13] is a DOE-wide initiative that has recently been launched to achieve a CO_2 removal cost of $100/ton net CO_2-eq (including the costs for CO_2 transport, storage and measurement, reporting, and verification [MRV]) for diverse and highly scalable carbon dioxide removal (CDR) applications within the next decade. Accomplishing the Carbon Negative Shot goal will help spur innovation and position U.S. enterprises as leaders in research, manufacturing, and deployment in a CDR industry that must have rapid, global ramp-up by mid-century. It will also position America to lead the way to net-zero on a global scale, eventually remove legacy greenhouse gas emissions from the atmosphere, create good-paying job opportunities that build on the skillsets of the fossil fuel workforce, and ensure that climate and environmental justice for local communities remain a priority.

This lab call aims to support the development of MRV tools and protocols that are necessary to enable CDR commercialization at scale. The lack of robust and standardized MRV practices to quantify and compare CDR solutions, including direct air capture, for net greenhouse gas removals in an apples-to-apples manner is a market formation bottleneck impeding the ability to commercialize promising new CDR technologies. Awards will allow CDR companies, academics, and industry experts to leverage national lab expertise to enable carbon removal claims to be compared in a rigorous, transparent, and bankable manner and ultimately achieve market-recognized standards across the broad portfolio of approaches.

[11] Executive Order (EO) 14008, "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.
[12] Office of Clean Energy Demonstrations, Office of Fossil Energy and Carbon Management, Office of Energy Efficiency and Renewable Energy (EERE), Office of Manufacturing and Energy Supply Chains, and Office of Cybersecurity, Energy Security, and Emergency Response.
[13] Office of Fossil Energy and Carbon Management. "Carbon Negative Shot." https://www.energy.gov/fecm/carbon-negative-shot.

Researchers across the national lab complex have developed a wealth of expertise on various carbon removal approaches and can offer an independent perspective on MRV across a diverse set of carbon removal solutions. In parallel, emerging CDR companies are acutely aware of the need to develop high-quality MRV for their businesses to gain commercial traction. These companies understand that tools and processes (and associated technologies) are needed to establish robust MRV frameworks, and they are turning to external experts to help improve carbon removal quantification and reporting practices. It is anticipated that the awardees will collaborate with and support commercial advancement of the forthcoming BIL-funded CDR demonstration activities.[14]

While DOE highly recommends reading the entire lab call, the specific topics addressed under this lab call can be found in Section I.D.

B. Timeline and Process Logistics

Timeline

KEY DATES	
Lab Call Release Date	December 7, 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 17, 2023, 3 p.m. (ET)
Expected Date for Selection Notifications	Q3 FY23

Process Logistics

All communication to OTT regarding this lab call must use TCF.BIL@hq.doe.gov.

[14] Relevant BIL Provisions: 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, and 40305 Carbon Storage Validation and Testing.

QUESTIONS DURING OPEN LAB CALL PERIOD: Specific questions about this lab call should be submitted by emailing TCF.BIL@hq.doe.gov. Answers to frequently asked questions for this lab call can be found at https://ott-exchange.energy.gov/. Answers to frequently asked questions for the Exchange system can be found at https://eere-exchange.energy.gov/FAQ.aspx. To view announcement-specific questions, applicants must first select the specific lab call number. OTT will attempt to respond to a question within three business days unless a similar question and the answer have already been posted on the website. It is the expectation of DOE that applicants to this lab call will review the frequently asked questions before submitting a question. Questions related to the registration process and use of the website should be submitted to EERE-ExchangeSupport@hq.doe.gov. Please include the lab call title and number in the subject line. To ensure fairness for all lab participants, any questions directed to individual DOE staff will be forwarded to TCF.BIL@hq.doe.gov for processing.

C. Key Considerations and Requirements

- **AVAILABLE FUNDING:** Approximately $15 million in BIL funding is expected to be available to fund all projects solicited in this lab call, pending program direction and go/no-go decision points.
    - Estimated DOE Funding Available: $15 million
    - Estimated Number of Projects: 3–5
    - Estimated Project Duration: 2–3 years. 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.
    - Budget per Project: $3 to $5 million of DOE funding, in addition to cost share from industry partners (see next page)
    - DOE expects that any lab included or referenced on a proposed project will actively contribute toward the proposed project outcomes. Engagement on the project should be reflected in specific projects' tasks and budgets. The full application should also describe multilab collaboration and how it will work across each objective. Single-lab solutions are of interest; however, to be selected for larger funding amounts, DOE suggests that labs should collaborate, and the proposed solutions must be applicable across the collaboration.
- **SIZE, SCOPE, AND NUMBER OF SELECTIONS:** The budget size, tasks, and scope of proposed projects can be adjusted by DOE during selections and negotiations.

The number of selections will depend on the number of meritorious proposals and the available funding.

- **COST SHARE:** This lab call is subject to Section 988(b)(3) of EPAct05 regarding cost share. DOE prefers all funded projects to meet 50% of the total project cost-share fund requirement; however, DOE acknowledges that some potentially high-impact proposed projects may not be able to meet this requirement. In this case, labs may apply with less than 50% cost share so that DOE can see the full universe of high-quality proposals. The review criteria reflect that cost share is a consideration for selection.
    - 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.

- **COMMUNITY BENEFITS PLAN: 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). To ensure these goals are met, applications must include a Community Benefits Plan that describes how the proposed project would incorporate the four objectives stated previously.

  Applicants are encouraged to submit letters of support from established labor and community-based organizations that demonstrate the applicant's ability to achieve the above goals as outlined in the Community Benefits Plan. Within the Community Benefits Plan, the applicant is encouraged to provide specific details on how to ensure the delivery of measurable community and jobs benefits (e.g., through the use of tools such as good neighbor agreements, community workforce agreements, project labor agreements, other collective bargaining agreements, or similar agreements [collectively referred to as "Workforce and Community Agreements"]). See Section II.A.iii. for the Community Benefits Plan content requirements.

  Applicants are highly encouraged to include individuals from groups historically underrepresented[15,16] in science, technology, engineering, and math (STEM) on

[15] According to the National Science Foundation's 2019 report titled *Women, Minorities and Persons with Disabilities in Science and Engineering*, women, persons with disabilities, and underrepresented minority groups—African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are vastly underrepresented in STEM fields that drive the energy sector. That is, their representation in STEM education and STEM employment is smaller than their representation in the U.S. population (https://ncses.nsf.gov/pubs/nsf19304/digest/about-this-report). For example, in the United States, Hispanics, African Americans, and American Indians or Alaska Natives make up 24% of the overall workforce, yet only account for 9% of the country's science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions (https://www.energy.gov/articles/introducing-minorities-energy-initiative).

[16] Note that Congress recognized in Section 305 of the American Innovation and Competitiveness Act of 2017, Public Law 114-329:

> (1) [I]t is critical to our Nation's economic leadership and global competitiveness that the United States educate, train, and retain more scientists, engineers, and computer scientists; (2) there is currently a disconnect between the availability of and growing demand for STEM-skilled workers; (3) historically, underrepresented populations are the largest untapped STEM talent pools in the United States; and (4) given the shifting demographic landscape, the United States should encourage full participation of individuals from underrepresented populations in STEM fields.

their project teams. Specifically, applicants are required to describe how DEIA objectives will be incorporated in the project. Applicants are required to describe the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project; and the extent the project activities will be located in or benefit underserved communities. 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. Please refer to Section II.A. for the full set of Application Requirements. Because a diverse set of voices at the table in research design and execution has an illustrated positive impact on innovation, this implementation strategy for the proposed project will be evaluated as part of the application review process.

Further, minority-serving institutions,[17] 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. The selection official may consider the inclusion of these types of entities as part of the selection decision. Please refer to Section II.B.i., Merit Review & Selection Process, for review criteria.

- **NATIONAL LABORATORY COLLABORATION:** DOE strongly encourages projects that bring together multiple labs to leverage diverse lab capabilities and avoid duplication of effort.

- **TEAMING PARTNER LIST:** To the extent possible and appropriate, DOE also seeks multilab projects that involve industry engagement or industry partners as well, to enhance the "market pull" aspects of the commercialization programming.

  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.

[17] Minority-serving institutions, including historically black colleges and universities/other minority institutions, as educational entities recognized by the Office of Civil Rights, U.S. Department of Education, and identified on the Office of Civil Rights' Department of Education U.S- accredited postsecondary minority institutions list. See https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html.

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. Please refer to the Manuals section on Exchange for more detailed instructions on using the Teaming Partner List.

Disclaimer: By submitting a request to be included on the Teaming Partner List, the requesting organization consents to the publication of the submitted information. By enabling and publishing the Teaming Partner List, DOE is not endorsing, sponsoring, or otherwise evaluating the qualifications of the individuals and organizations that are identifying themselves for placement on this Teaming Partner List. DOE will not pay for the provision of any information, nor will it compensate any applicants or requesting organizations for the development of such information.

D. Topic Area Description

All proposals must include how the team will track and show their respective commercialization impact and outcomes from the proposed project. Please refer to Section II.A.iii., Impact Tracking, to ensure these metrics and tracking requirements are built into any proposals.

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 DEIA goals.

As outlined in Section I.C., each topic has two subtopics under which labs may apply. Each proposal that applies to subtopic (a) commits to meet the 50% cost-share requirement for second budget period costs. Each proposal that applies to subtopic (b) proposes to meet less than 50% cost-share funds requirement.

Topic 1: <u>Carbon Dioxide Removal Measurement, Reporting, and Verification Best Practices and Capabilities</u>

National lab expertise can help enable the emerging CDR industry and provide a pathway to commercialization for new technologies by solving the following problems. Tackling the key challenges, listed below, in parallel will enable net-carbon removal comparisons of leading carbon removal pathways in an apples-to-apples manner, allowing a broader range of carbon removal solutions to gain commercial traction.

- Measuring carbon: Identifying, developing, and testing affordable, precise tools (e.g., sensors and models) to measure carbon fluxes within the CDR system to intended secure reservoirs
- Quantifying net-carbon removed: 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
- Increasing transparency: 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
- Developing best practices for protocols and processes: validating methodologies and cost-effective measurement approaches used for verifying carbon removal claims.

To enable the durable CDR at the necessary scale, MRV technologies will need to quantify CO_2 fluxes over a wide range of geospatial and temporal scales. When developing quantification approaches for CDR, it will be imperative to enhance volumetric capabilities (e.g., transition from "point" to "swath" measurement platforms or automate/optimize sampling procedures), measurement accuracy, and sensor endurance, while minimizing resource and energy requirements. Additionally, there is a need to create, refine, and validate MRV best practices for CDR technologies[18] that can provide confidence in their long-term fielded performance. Ideally, this would involve an iterative feedback loop between lab-scale testing and analytical activities; development of best practices and methodologies; and field validation. Several iterations of this feedback loop would enable the scaling of high-quality CDR by minimizing discrepancies between modeled and observed carbon flux estimates.

[18] Technological CDR solutions, including direct air capture and storage, CO_2 mineralization approaches, and biomass carbon removal.

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.

1. Advance technical capabilities: Assess existing CO_2 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. Note that the focus should be on leveraging existing, platform technologies, or piloting near commercial tools that require minimal technical upgrades. Proposals should include the "voice of the customer" to ensure the capabilities are ultimately used by MRV adopters, keeping in mind the labor and costs associated with deployment.

2. Develop best practices: Engage stakeholders and formulate CDR MRV best practice methodologies and protocols. Define permanence and additionality to determine net-carbon removed, including transparent life cycle analysis guidance for establishing system boundaries and baselines (especially from existing data sources) as well as model integrations necessary to determine permanence (e.g., residence time distribution) and additionality (e.g., electricity requirements or feedstock sourcing) within systems, understand leakage or reversal risk, and address removal uncertainty on temporal and geospatial scales. All best practices must include direct air capture as the initial pathway for reference. Protocols must contain details regarding technical capabilities requirements, minimum standards for field testing, and a road map to facilitate their adoption.

3. 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. This infrastructure should also facilitate broader awareness and understanding from nontechnical audiences (e.g., communities that may host CDR systems).

4. 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.

Application Considerations

OTT envisions awarding multiple projects led by national labs from this topic. As stated previously, 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. In the first budget period, awardees will build up capabilities, formulate best practices, and collaborate with each other to develop a harmonized MRV framework. The second budget period will focus on using these capabilities and practices, including deeper engagements with industry partners. Applicants should be clear in their application materials which tasks and associated budgets fall into the first and second budget periods of the project.

The selected awardees will work to identify and address key scientific, engineering, and standards gaps and challenges preventing current and novel CDR solutions from achieving the robust MRV required for effective deployment at the gigaton scale. 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.

Successful proposals in this area will clearly explain their goals, plans, and resources in the following areas (non-exhaustive):

- 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.
- 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.
- A clear explanation of the current state of the practice/capability must be presented, as well as the anticipated state of the practice/capability at the end of the project. To the degree they can be anticipated, the applicant should explain the technical challenges and unanswered technical questions that must be addressed to reach the desired outcomes. There should be an explanation of any complementary activities necessary for the proposed activities to function and to have relevance in the market.

- Applicants with currently active projects seeking additional funding to complete their original scope of work are excluded from applying under this topic unless a new scope of work is proposed that meets the intent of this lab call. What that could mean (e.g., a Phase II effort, a different market, etc.) is at DOE's discretion, but the intent is that applicants cannot use this lab call to ask for additional funding for an existing project.
- Proposals must include an analysis of the market viability of the proposed solution and identify market barriers/risks associated with its usage and any potential mitigation strategies.
- Proposals should present a clear plan to collaborate with the CDR community to assess shortcomings of existing approaches, define gaps in technical understanding, and establish MRV best practices. Awardees must be able to support a broad range of CDR technologies and community members.

Subtopic 1.a: Proposals commit to meet the 50% cost-share requirement for second budget period costs.

Subtopic 1.b: Proposals meet less than 50% cost-share requirement for second budget period costs.

Proposals that fall outside the parameters specified in this section will be deemed nonresponsive and will not be reviewed or considered.

II. Application Submission and Review Information

A. Process and Submission Details

i. Process

All communication to OTT regarding this lab call must use TCF.BIL@hq.doe.gov.

- **ELIGIBILITY:** Only DOE national laboratories and facilities are eligible for funding from this lab call. Proposals that involve more than one laboratory are highly encouraged.

  To be eligible to apply to this call, a full application must be submitted per guidelines below.

  - Laboratories are expected to coordinate on concept paper and application submission internally and with multilab collaborators.

- Only applicants who have submitted an eligible concept paper will be eligible to submit a full application.
- Applications that fall outside the parameters specified in Section I.D will be deemed nonresponsive and will not be reviewed or considered.

- **PARTNERS:** 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. 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.

- **SUBMISSION:** To apply to this lab call, the team lead must register and sign in with their lab email address and submit application materials through Exchange, the online tool being used by OTT and the other program offices. Application materials must be submitted through Exchange.

  Applicants are strongly encouraged to submit their concept papers and full applications at least 48 hours in advance of the submission deadline.

  Exchange is designed to enforce the deadlines specified in this lab call. The "Apply" and "Submit" buttons will automatically disable at the defined submission deadlines. In the event that an applicant experiences technical difficulties with a submission, the applicant should contact the Exchange help desk for assistance (EERE-ExchangeSupport@hq.doe.gov). The Exchange help desk and/or the Exchange system administrators will assist applicants in resolving issues.

  Note that all partnerships between the labs and outside partners must comply with individual lab requirements under their management and operating contracts.

ii. Concept Paper Requirements

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 the date and time listed in the Section I.B. Timeline.

DOE will review the concept paper, and applicants will receive an official determination. DOE will encourage or discourage concepts at this stage. The intent is to help the labs focus their efforts on the concepts with the highest potential under this lab call. Labs will receive a DOE determination as to whether they are encouraged to move to the

next step or discouraged from moving forward. Only labs that receive an encourage determination on the concept paper will be allowed to submit a full application.

The concept paper should be formatted for 8.5 x 11 paper, single-spaced, and have 1-inch margins on each side. Typeface size should be 11-point font, except tables and figures, which may be in 10-point font. The concept paper must conform to the following content requirements:

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 • Describe relevant background information that helps demonstrate the need for this project, including the problem statement or major challenges and barriers being overcome through the project and the approach to solving the problem • Show the impact that DOE funding and the proposed project would have on the relevant field and application • Describe how the proposed project, if successfully accomplished, would clearly meet the objectives stated in the lab call.
Addendum	2 pages maximum	Applicants are required to describe succinctly the qualifications, experience, and capabilities of the proposed project team, including: • Whether the project team has the skill and expertise needed to successfully execute the project plan • Whether the applicant has prior experience that demonstrates an ability to perform tasks of similar risk and complexity • Whether the applicant has worked together with their teaming partners on prior projects or programs

		• Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how they intend to obtain access to the necessary equipment and facilities • Applicants may provide graphs, charts, or other data to supplement the Project Description.

iii. Full Application Requirements

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.

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. Full applications must conform to the requirements below.

FULL APPLICATIONS ARE DUE BY THE DATE AND TIME LISTED IN THE SECTION I.B. TIMELINE. DOE WILL NOT ACCEPT FULL APPLICATIONS AFTER THE DEADLINE.

Applications should be formatted for 8.5 x 11 paper, single-spaced, and have 1-inch margins on each side. Typeface size should be 11-point font, except tables and figures, which may be in 10-point font. All full application documents must be marked with the control number issued to the applicant. Applicants will receive a control number upon clicking the "Create Concept Paper" button in Exchange, and should include that control number in the file name of their full application submission (i.e., Control number_Lab Acronym_PI Last Name_Full Application)

If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages.

Proposals should be no more than 15 single-spaced pages total, should be in a single PDF file format, and must include the following components under headings corresponding to the bullets below:

- **Title Page:** The title page is not counted in the page limit and should include the proposal title, subtopic being applied for, PI(s) and business points of contact, names of all team member organizations, any statements regarding

confidentiality, a nonproprietary project summary, and a 200-or-fewer-word summary of the project suitable for public release if the project is funded.

  - Include name, address, phone number, and email address of the lead applicant (organization) for contract and project issues.

- **1.0 Summary:** The summary provided should be one page in length and should provide a truncated explanation of the proposed project; a clearly defined, easily communicated, end-of-project goal; and a high-level overview of estimated project budget, listing an estimated breakdown for each proposed year, separated by teaming partners. The applicant should discuss the impact DOE funding would have on the proposed project. Applicants should specifically explain how DOE funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives.

- **2.0 Project Description:** Describe the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives. Describe relevant background information that helps demonstrate the need for this project, including the problem statement or major challenges and barriers being overcome through the project, how the proposed project supports one or more of the lab call objectives, the approach to solving the problem, and why this funding is needed to enable this work. For multilab projects, a description of each performer's role and responsibility, as well as how individual efforts will be coordinated to achieve the overall project goal, should also be included. The applicant should clearly specify the expected outcome(s) of the project. The applicant should describe the specific innovation of the proposed project, the advantages over current and emerging programs and/or processes, and the overall impact on advancing the baseline if the project is successful.

  - Additionally, indicate whether the project is related to other current or recently completed DOE-funded or lab-funded projects. Identify any next-stage commercialization, intellectual property, or resource factors, if appropriate.

- **3.0 Community Benefits Plan: Job Quality and Equity** The Community Benefits Plan: Job Quality and Equity (Community Benefits Plan or Plan) must set forth the applicant's approach to ensuring that federal investments advance the following four goals: (1) community and labor engagement; (2) investing in the American workforce; (3) advancing DEIA; and (4) contributing to the Justice40 Initiative. The following sections set forth the Plan requirements for each of the foregoing goals. At this stage of the application process, the Community Benefits

Plan should indicate the applicant's intention to engage meaningfully with community stakeholders on these goals, including the potential of entering into a formal Workforce and Community Agreement.

- The applicant's Community Benefits Plan must include at least one SMART milestone per budget period to measure progress on the proposed actions. The Community Benefits Plan will be evaluated as part of the technical review process. If the project is selected, DOE will incorporate the Community Benefits Plan into the award, and the recipient will be required to meet the Community Benefits Plan they proposed. During the life of the DOE award, DOE will evaluate the recipient's progress, including as part of the go/no-go review process.

3.1 Community and Labor Engagement: The Community Benefits Plan must describe the applicant's actions to date and future plans to engage with community stakeholders—such as labor unions, local governments, tribal governments, and community-based organizations that support or work with underserved communities, including disadvantaged communities, as defined for the purposes of the Justice40 Initiative. By facilitating community input, social buy-in, and accountability, such engagement can substantially reduce or eliminate stalls or slowdowns, litigation, and other risks associated with project implementation. Community and labor engagement should lay the groundwork for the eventual negotiation of a Workforce and Community Agreement, which could take the form of one or more kinds of negotiated agreements with affected communities, such as community benefits agreements, project labor agreements, or others.

Applicants may also provide letters of support from representative organizations reflecting substantive engagement and feedback on the applicant's approach to community benefits including the American workforce; DEIA; and the Justice40 Initiative, detailed below.

If selected for funding, applicants will be expected to reach workforce and community agreements that identify how community and labor concerns will be addressed.

3.2 Investing in the American Workforce: A well-qualified workforce is necessary to ensure project stability, continuity, and success, and to meet program goals. Job quality is critical to attracting and retaining the qualified workforce required.

The Plan must 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.

Specific components of the Plan must include:

A) A summary of the applicant's plan to attract, train, and retain a skilled and well-qualified workforce for both construction and ongoing operations/production activities. A collective bargaining agreement, project labor agreement, labor-management partnership, or other similar agreement would provide evidence of such a plan. Alternatively, applicants may describe:

   i) Wages, benefits, and other worker supports to be provided

   ii) Commitments to support workforce education and training, including measures to reduce employee turnover costs for employers; increase productivity from a committed and engaged workforce; and promote a nimble, resilient, and stable workforce for the project

   iii) Efforts to engage employees in the design and execution of workplace safety and health plans.

B) Describe whether workers can form and join unions of their choosing, exercising collective voice. Employees' ability to organize, bargain collectively, and participate, through labor organizations of their choosing, in decisions that affect them contributes to the effective conduct of business and facilitates amicable settlements of any potential disputes between employees and employers, providing assurances of project efficiency, continuity, and multiple public benefits.

3.3 DEIA: The Community Benefits Plan must include a section describing how DEIA objectives will be incorporated into the project. The section should detail how the applicant will partner with underrepresented businesses, educational institutions, and training organizations that serve workers who face barriers to accessing quality jobs, and/or other project partners to help address DEIA.

The following is a nonexhaustive list of potential DEIA actions that could be included in a Plan. This list is offered to provide guidance to applicants and is not intended to be comprehensive or mandatory.

A) Commitment to partner with minority business enterprises, minority-owned businesses, woman-owned businesses, and veteran-owned businesses for contractor support needs

B) To fill open positions for the DOE-funded project, partner with workforce training organizations serving underrepresented communities and those facing systemic barriers to quality employment such as those with disabilities, returning citizens, opportunity youth, and veterans.

3.4 Justice40 Initiative: Applicants must provide an overview of benefits to disadvantaged communities that the project can deliver, supported by measurable milestones.

Specifically, the Justice40 Initiative section must include:

A) Identification of applicable disadvantaged communities to which the anticipated project benefits will flow

B) Identification of applicable benefits that are quantifiable, measurable, and trackable, including, at a minimum, a discussion of the relevance of each of the eight DOE Justice40 Initiative benefits outlined below.

Benefits include (but are not limited to) measurable direct or indirect investments or positive project outcomes that achieve or contribute to the following in disadvantaged communities: (1) a decrease in energy burden; (2) a decrease in environmental exposure and burdens; (3) an increase in access to low-cost capital; (4) an increase in job creation, the clean energy job pipeline, and job training for individuals; (5) increases in clean energy enterprise creation and contracting (e.g., minority-owned or disadvantaged business enterprises); (6) increases in energy democracy, including community ownership; (7) increased parity in clean energy technology access and adoption; and (8) an increase in energy resilience. In addition, applicants should also discuss how the project will maximize all benefits listed in #4.

C) A description of how and when anticipated benefits are expected to flow to disadvantaged communities. For example, will the benefits be provided directly within the disadvantaged communities identified in the Justice40 Initiative section, or are the benefits expected to flow in another way? Further, will the benefits flow during project development or after project completion, and how will applicant track benefits delivered?

D) A discussion of anticipated negative and cumulative environmental impacts on disadvantaged communities. Are any anticipated negative or positive environmental impacts associated with the project, and how will the applicant mitigate any negative impacts? Within the context of cumulative impacts created by the project, applicants should use Environmental Protection Agency EJSCREEN tool to quantitatively discuss existing environmental impacts in the project area.

For projects funded under this lab call, DOE will provide specific reporting guidance for the benefits described previously.

- **4.0 Alignment with TCF and BIL:** Describe alignment of proposed project with TCF's goals to promote the commercialization of promising energy technologies and the goals of the relevant BIL provision(s). Describe a reasonable path for the proposed project to enable commercialization successes, including the anticipated timeline for market entry or increased market adoption for related technologies involved in the proposed program(s).

- **5.0 Work Plan:** This section is to list the key tasks and provide brief descriptions for each task, including roles and responsibilities of any partners. Define the key milestones to be addressed by the project, including SMART milestones, and quarterly progress measures, with dates and specific descriptions of what should be accomplished to meet the milestones. This section should address key risks to achieving stated goals and the steps to be taken to minimize those risks.

  The work plan should include a high-level project scope, work breakdown structure, milestones, go/no-go decision points, and project schedule. A detailed work breakdown structure is requested separately.

- **6.0 Impact Tracking**: DOE has an obligation to report on TCF implementation and impact. As such, all projects must incorporate clear impact tracking strategies.

  Proposals must describe how, if funded, the proposed project would measure success during and after the funded period. Awardees must report every year over a 5-year time period, which includes the up-to-3-year award period and any relevant time period afterward to reach the entire 5-year time period.

  Proposals must describe how the team will implement and track impact metrics. Proposals must include outcome-focused metrics that are most applicable for the proposed project and describe how and when the team will track and report against those metrics. Metrics should focus on outcomes that show traction and

not steps or deliverables the team has complete control over. If the project is selected, OTT will provide a metric input form for impact metrics reporting.

Specific targets for identified metrics should be provided, as appropriate. Applicants should consider short-, medium-, and long-term goals when identifying metrics. Sample metrics are shown below and should be tailored to the nature of the submitted proposal. For example, for a metric of "partnerships," the nature of the engagement or partnership must be specified.

- Acceptable metrics include but are not limited to: (1) number of cooperative research and development agreements or other partnering arrangements that arise as a result of project activities; (2) increase in number of licensed lab technologies; (3) number of tangible improvements to lab-related activities based on customer discovery; (4) qualitative data before and after activity measuring understanding or perspective shift; (5) utilization of lab capabilities or implementation of outputs in commercial setting; (6) private funds invested in solutions; (7) number and value of established industry partnerships; (8) number of inquiries for new partnerships; (9) innovation/IP generation; and (10) others.
- Unacceptable metrics include but are not limited to: (1) general reports describing activities; (2) exploratory experiments that lack a goal; (3) unverifiable data; (4) time spent on project; and (5) other subjective, vague, and/or ambiguous metrics.

- **7.0 Team and Required Resources:** Describe the expected DOE and national laboratory member resources, including proposed work areas, staff time, and any facility/equipment needs. Include specific locations and laboratories to be used.
- **8.0 Cost Sharing**: Provide a detailed table describing any proposed cost sharing, clearly articulating cash versus in-kind.
  - If applicable, submit letters of commitment from all subrecipient and third-party cost-share providers. If applicable, also include any letters of commitment from partners/end users (1-page maximum per letter; these are not counted in the 15-page limit).
  - See Appendix A for additional cost-share information and requirements.

- **9.0 Proposed Base Budget and Options:** Provide an Excel spreadsheet with the minimum budget of all project expenses by each national lab and project partner. DOE will not allow pre-award costs. The minimum budget should include a high-level summary of the main project components that could be included at that cost. Please also provide a recommended budget broken out by tasks, where the total budget is the sum of the tasks. This is to itemize the cost estimate (total) for each task, with total costs for the project. Additionally, the recommended budget should be broken down by cost category (for example, personnel, travel, equipment, supplies, contractual, indirect, etc.). Other sources of funding, including cost-share information, shall be provided here, if applicable.

  Additionally, the recommended budget should provide enough information to create a menu of task/budget options to increase the recommended budget and project scope as well as decrease the budget and project scope. Additional budget recommendations must reference and link to related activity scope of what would be either additional and beyond what is proposed in the minimum budget or what would be removed from the minimum budget. The intent for these options in the recommended budget is to allow DOE the most flexibility in funding the project as well as optional elements that could improve the proposed project's success.

  During the evaluation process, DOE reserves the right to determine an award with a changed project scope and budget. Having these details and applicant-provided options to reduce or increase project scope and/or budget allows DOE to make more informed and collaborative decisions.

  These details are not counted toward the full application page limit (15 pages) and should be included as a separate submission.

- **10.0 References and Letters of Support:** Single-page references and letters of support are not counted toward the 15-page limit and should be included in the application as an appendix.

- **11.0 Team Resumes:** Include single-page resumes of key project participants. These are not counted toward the 15-page limit and should be included in the application as an appendix.

- **12.0 Project Summary Slide for Public Release:** The project summary slide must be suitable for dissemination to the public, and it must not exceed one PowerPoint slide. The slide does not count toward the full application page limit (15 pages) and should be included as a separate submission. This slide must not

include any proprietary or business-sensitive information, because DOE may make it available to the public if the project is selected for award. The document must conform to this naming convention: Control number_Lab Acronym_PI Last Name_Summary Slide. The summary slide requires the following information:

- A project summary
- A description of the project's impact
- Proposed project goals
- Any key graphics (illustrations, charts, and/or tables)
- The project's key idea/takeaway
- Project title, prime recipient, PI, and key participant information
- Requested TCF funds and proposed applicant cost share, if applicable.

iv. Proprietary Information

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 below. A cover sheet, which does not count toward the page limits, must be marked as follows and must identify the specific pages that contain trade secrets or commercial or financial information that is privileged or confidential:

"Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets or commercial or financial information that is confidential and is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the government. The government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. [End of Notice]"

The header and footer of every page that contains trade secrets or privileged commercial or financial information must be marked as follows:

"May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure."

In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged or confidential must be enclosed in brackets.

The previously referenced markings enable DOE to follow the provisions of 10 CFR 1004.11(d) in the event a Freedom of Information Act (FOIA) request is received for information submitted with a proposal. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under a FOIA request or otherwise. The U.S. government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

Subject to the specific FOIA exemptions identified in 5 U.S.C. 552(b), all information submitted to OTT by an applicant is subject to public release under the Freedom of Information Act, 5 U.S.C. §552, as amended by the OPEN Government Act of 2007, Pub. L. No. 110-175. It is the proposer's responsibility to review FOIA and its exemptions to understand:

1. What information may be subject to public disclosure
2. What information applicants submit to the government that is protected by law.

In some cases, DOE may be unable to make an independent determination regarding which information submitted is releasable and which is protected by an exemption. In such cases, DOE will consult with the applicant in accordance with 10 C.F.R. §1004.11 to solicit the proposer's views on how the information should be treated.

B. Application Review and Selection

i. Concept Paper Merit Review

Concept papers are evaluated based on consideration the following factors. All sub-criteria are of equal weight.

Concept Paper Criterion: Overall Lab Call Responsiveness and Viability of the Project (Weight: 100%)

This criterion involves consideration of the following factors:

- The applicant clearly describes the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives
- The applicant clearly describes relevant background information that helps demonstrate the need for this project, including the problem statement or

major challenges and barriers being overcome through the project and the approach to solving the problem

- The applicant has shown the impact that TCF BIL funding and the proposed project would have on the relevant field and application
- The applicant clearly identifies the topic(s) they are applying for and how they meet the required elements of the topic(s)
- The applicant has the qualifications, experience, capabilities, and other resources necessary to complete the proposed project
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the lab call.

ii. Full Application Merit Review and Selection Process

Selection of winning proposals will be determined based on available funding and input from reviewers. 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.

Please note the weighting of the criteria below, as DOE is highly encouraging bold, innovative, and impactful proposals.

The categories and relative ranking criteria used to evaluate submissions will be as follows:

Criterion 1: Innovation and Impact (30%)

This criterion involves consideration of the following factors:

- How innovative and impactful is the project, assuming the stated outcomes can be achieved as written?
    - Innovative—Extent to which the proposed project or solution is innovative. Degree to which the proposed project integrates market pull into its thinking and program design, forming a conduit of market insight and awareness.
    - Impactful—Extent to which the proposed project or solution, if successful, impacts the core goals outlined in the lab call as well as the root causes (inside and outside of the labs) of the existing commercialization challenges and barriers. Also includes the impact of forging collaborations on the challenges being addressed (e.g., multilab

and industry-leveraged effort), as well as the impact of collaboration on other interested and impacted stakeholders (e.g., through collaboration with stakeholders outside of the national labs). Multilab collaboration will be scored as inherently more impactful than single-lab projects.

- Accelerates Speed of Commercialization—Degree to which the proposal has the potential to accelerate the speed of commercialization, to move quickly, and to embrace agility with the proposed project. Degree to which the proposal supports achieving the statutory requirement of the TCF to "promote promising energy technologies for commercial purposes."
- Long-Term Viability—Degree to which the proposal has the potential to continue to be impactful without long-term, continued, direct funding from DOE. Extent to which multiyear strategic partnerships are proposed or will be developed to continue the program beyond initial funding. Level of proposed cost share for the project will be taken into consideration.
- Differentiated—Extent of differentiation with respect to existing commercialization programs or efforts. Potential to enhance commercialization activities at the national laboratories.
- Scalable—Likelihood that the proposed solution, if successful, could be scaled to have a broader impact. Likelihood that the project could be scaled beyond the proposed multilab collaboration and to all labs, even those not directly participating in the proposed project.
- Commercialization Outcomes—Likelihood of the proposed solution achieving the proposed commercialization outcome metrics. Likelihood of the proposed team tracking and reporting on the commercialization outcome metrics.

Criterion 2: Quality and Likelihood of Completion of Stated Goals (30%)

This criterion involves consideration of the following factors:

- 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—Degree to which the proposal is structured to produce a measurable result/impact, including the required DEIA milestones. Extent

to which the applicant shows a clear understanding of the importance of SMART, verifiable milestones and proposes milestones that demonstrate clear progress, are aggressive but achievable, and are quantitative.

- Risks Mitigated—Extent to which the applicant understands and discusses the risks, core barriers, and challenges the proposed work will face, and the soundness of the strategies and methods that will be used to mitigate risks. Degree to which the proposal adequately describes how the team will manage and mitigate risks.
- Validated—Degree to which the proposed project fits within and builds on the laboratory ecosystem. Level of validation (letters of support/interest, partners, customer trials, data from prior work, report references, etc.).
- Reasonable Assumptions—Reasonableness of the assumptions used to form the execution strategy (e.g., lab staff participation, costs, throughput at full scale, speed of proposed scale-up or adoption, and mode of long-term funding).
- Reasonable Budget—The reasonableness of the overall funding requested to achieve the proposed project and objectives. The reasonableness and clarity of the budget and scope options. Level of proposed cost share for the project will be taken into consideration.

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

This criterion involves consideration of the following factors:

- Is the team well-qualified and positioned to successfully complete this project?
  - Collaboration—Extent to which there are multiple labs engaged on the proposed project. Degree to which the proposed project branches out, connects, and builds on the innovation ecosystem across the country. Extent to which connections and alliances are forged to harness the power of regional economies, state/local organizations, and other federal, state, or local agencies.
  - Capable—Extent to which the training, capabilities, and experience of the assembled team will result in the successful completion of the proposed project. Extent to which this team (including proposed subrecipients) will be able to achieve the final results on time and to specification.

- Participation—The level of participation by project participants, as evidenced by letter(s) of commitment and how well they are integrated into the work plan. Degree to which multilab, internal lab, and external collaboration is proposed. Extent to which teams include representation from diverse entities, such as, but not limited to: minority-serving institutions, including historically black colleges and universities/other minority institutions, or through linkages with opportunity zones.
- Commitment—Extent to which the final team required to complete this project is fully assembled and committed to the project (e.g., are there any key members that are "to be hired" in the future?). Level of proposed cost share for the project will be taken into consideration.
- Past Performance—Extent to which the assembled team has shown success in the past. (Note: new performers will not be penalized.) DOE encourages new entrants and new ideas, but past successes and/or failures will be noted.
- Access—Extent to which the team has access to facilities, equipment, people, expertise, data, knowledge, and any other resources required to complete the proposed project.

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

This criterion involves consideration of the following factors:

Overall Approach:

- The extent to which applicant's Community Benefits Plan illustrates project viability and social risk mitigation through community and labor engagement; investment in the American workforce; DEIA, and Justice40 Initiative benefits to disadvantaged communities.
- The extent the actions outlined in the Community Benefits Plan are supported by existing workforce and community agreements (e.g., good neighbor agreements, workforce agreements, project labor agreements, collective bargaining agreements, and similar agreements).

Community and Labor Engagement:

- Extent to which the applicant demonstrates community and labor engagement to date and/or a clear and appropriately robust plan to engage local stakeholders, including labor unions and community-based organizations that support or work with disadvantaged communities.

Job Quality:

- Extent to which Community Benefits Plan demonstrates that the jobs supported by the proposed project will be quality jobs and provides robust and credible plan to attract, train, and retain skilled workers. The bullets include examples of how this could be demonstrated.
- Collective bargaining agreement, project labor agreement, labor management partnership, labor peace or labor neutrality agreement, or similar agreement or commitment to workers' free and fair choice to join a union or labor organization of their choosing; and
- Commitments to fair wages, benefits, or other worker support, including education and training and worker engagement in workplace safety and health plans.

DEIA:

- Extent to which the Community Benefits Plan includes specific and high-quality actions to meet DEIA goals, which may include DEIA recruitment procedures; partnerships with workforce training or support organizations serving workers facing systematic barriers to employment; and other DEIA commitments.

Justice40 Initiative:

- Extent to which the Community Benefits Plan identifies: specific, measurable benefits for disadvantaged communities, how the benefits will flow to disadvantaged communities, and how negative environmental impacts affecting disadvantaged communities would be mitigated.
- Extent to which the project would contribute to meeting the objective that 40% of the benefits of climate and clean energy investments will flow to disadvantaged communities.

<u>Other Selection Factors</u>:

In addition to the previous criteria, the selection official may consider the following program policy factors in determining which full applications to select for award negotiations:

- The total number of BIL provisions addressed by the proposed project
- The degree to which the proposed project (or portions thereof) is replicable within other industries, technologies, or facilities

- The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject lab call
- The degree to which the proposed project, including proposed cost share, optimizes the use of available DOE funding to achieve programmatic objectives
- The level of industry involvement and demonstrated ability to accelerate demonstration and commercialization and overcome key market barriers
- The degree to which the proposed project is likely to lead to increased high-quality employment and manufacturing in the United States
- The degree to which the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications)
- The degree to which the proposed project incorporates applicant or team members from minority-serving institutions (e.g., historically black colleges and universities/other minority-serving institutions); and partnerships with minority business enterprises, minority-owned businesses, woman-owned businesses, veteran-owned businesses, or tribal nations
- The degree to which the proposed project, when compared to the existing DOE project portfolio and other projects to be selected from the subject lab call, contributes to the total portfolio meeting the goals reflected in the Community Benefits Plan criteria
- The degree to which the proposed project avoids duplication/overlap with other publicly or privately funded work
- The degree to which the project's solution or strategy will maximize deployment or replication
- The degree to which the project promotes increased coordination with nongovernmental entities for demonstration of technologies and research applications to facilitate technology transfer.

iii. Selection for Award Negotiation

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).

Type of Award Instrument: TCF BIL awards will be documented and funded through OTT's work authorization and funds management processes within the Program Information Collection System. DOE facilities will be required to track federal funds in accordance with normal departmental processes and all applicable requirements (see "Project Administration and Reporting"). DOE facilities will also be required to track nonfederal funds in accordance with established DOE facility accounting processes.

DOE will direct transfer funding to the relevant labs; lab-to-lab transfers should not be needed.

All partnerships between the labs and outside partners must comply with individual lab requirements under their management and operating contracts.

iv. Selection Notification

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.

C. Project Administration and Reporting

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.

TCF project recipients will be required to meet quarterly with OTT and supporting DOE program offices to discuss project progress in addition to providing quarterly progress reporting, annual metrics reporting for the entire 5-year period, and a final report at the end of the project.

Additional reporting requirements apply to projects funded by BIL. As part of tracking progress toward key departmental goals—ensuring justice and equity, investing in the American workforce, boosting domestic manufacturing, reducing greenhouse gas emissions, and advancing a pathway to private sector deployment—DOE may require specific data collection. These include:

- New manufacturing production or recycling capacity

- Number and types of training provided, certificates and training credentials received by employees, ratio of apprentice-to-journey-level workers employed
- Justice and equity data, including:
    - Minority business enterprises, minority-owned businesses, woman-owned businesses, and veteran-owned businesses acting as vendors and subcontractors for bids on supplies, services, and equipment
    - Value, number, and type of partnerships with minority-serving institutions
    - Stakeholder engagement events, consent-based siting activities
    - Other DEIA-relevant indicators.
- Number and type of energy-efficient and clean energy equipment installed
- Funding leveraged, follow-on-funding, intellectual property generation and intellectual property utilization
- Reporting, tracking, and segregation of incurred costs
- Reporting on job creation and preservation
- Publication of information on the internet
- Access to records by Inspectors General and the Government Accountability Office
- Requiring all the iron, steel, manufactured goods, and construction materials used in the infrastructure activities of applicable projects to be produced in the United States
- Ensuring laborers and mechanics employed by contractors or subcontractors on BIL-funded projects are paid wages equivalent to prevailing wages on similar projects in the area
- Protecting whistleblowers and requiring prompt referral of evidence of a false claim to an appropriate inspector general
- Certification and registration.

Recipients of funding appropriated by the BIL must comply with requirements of all applicable federal, state, and local laws, regulations, DOE policy and guidance, and

instructions in this solicitation. Recipients must flow down the requirements to subrecipients to ensure the recipient's compliance with the requirements.

D. Questions

Specific questions about this lab call should be submitted via email to TCF.BIL@hq.doe.gov. To ensure fairness across all labs, individual DOE staff cannot answer questions while the lab call remains open. To keep all labs informed, OTT will post all questions and answers on Exchange.

Appendix A: Additional TCF Cost-Share and Nonfederal Cost-Share Information

Cost-share funds are subject to audit by the department or other authorized government entities (e.g., Governmental Accountability Office). A written agreement may be advisable—either between the DOE facility and the third party or between the cooperative research and development agreement partner and the third party—that requires the third party to provide the cost-share funds. Consult your DOE facility legal staff for advice about how to obligate the third party to provide the cost-share funds, and to ensure the cost-share funds meet the requirements for in-kind contributions, if applicable. The lead DOE facility is responsible for any funding gap should a TCF project fail to obtain from partners or other collaborators the required cost share from nonfederal sources.

All relevant laws, DOE directives, and contractual obligations apply. Consult your DOE facility's legal staff for advice about foreign partners and agreements with the DOE facility.

Applicants must make sure their prospective partnership arrangements comply with all DOE directives and conditions.

WHAT QUALIFIES FOR NONFEDERAL COST SHARE

Please consult the Federal Acquisition Regulations for the applicable cost-sharing requirements.

In addition to the regulations referenced previously, other factors may also come into play, such as timing of in-kind contributions and length of the project period. For example, the value of 10 years of donated maintenance on a project that has a project period of 5 years would not be fully allowable. Only the value for the 5 years of donated maintenance that corresponds to the project period is allowable and may be counted.

As stated previously, the rules about what is allowable are generally the same within like types of organizations. The following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

A. Acceptable contributions. All contributions, including cash contributions and third-party in-kind contributions, must be accepted as part of the prime recipient's nonfederal match if such contributions meet all of the following criteria:

    1. They are verifiable from the recipient's records.

    2. They are not included as contributions for any other federally assisted project or program.

3. They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.

4. They are allowable under the cost principles applicable to the type of entity incurring the cost.

5. They are not paid by the federal government under another award unless authorized by federal statute.

6. They are provided for in the approved budget.

B. Valuing and documenting contributions.

1. Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which means that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as nonfederal cost-share funds, that full value must be the lesser of the following:

a) The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or

b) The current fair market value. If there is sufficient justification, the contracting officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The contracting officer may accept the use of any reasonable basis for determining the fair market value of the property.

2. Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.

3. Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as nonfederal cost share if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient

organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.

4. Valuing in-kind contributions by third parties.

   a) Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the nonfederal match share must be reasonable and must not exceed the fair market value of the property at the time of the donation.

   b) Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the contracting officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:

      i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately owned building in the same locality.

      ii. The value of loaned equipment must not exceed its fair rental value.

5. Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:

   a) Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.

   b) The basis for determining the valuation for personal services and property must be documented.