U.S. Department of Energy

Office of Technology Transitions
and
Office of Clean Energy Demonstrations

Bipartisan Infrastructure Law
Technology Commercialization Fund

National Laboratory Call for Proposals

Collaborative Alignment for Critical Technology Industries

DE-LC-000L002

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 Clean Energy Demonstrations (OCED). This call solicits proposals from across the DOE national laboratory complex to bring together stakeholders across industries to address challenges that result when people work on similar issues in isolation and develop actionable recommendations, strategies, and best practices to facilitate scale-up and replication. This lab call is focused on industry alignment for clean hydrogen and long duration energy storage technologies.

Executive Summary

This national laboratory call for proposals is issued by the Office of Technology Transitions (OTT)[1] and the Office of Clean Energy Demonstrations (OCED)[2], in collaboration with the relevant DOE applied technology offices[3], as part of the Bipartisan Infrastructure Law (BIL) Technology Commercialization Fund (TCF)[4].

Through DOE's Pathways to Commercial Liftoff reports[5], DOE has identified opportunities and challenges for commercializing clean energy technologies. This lab call intends to address commercialization challenges that arise when many entities working in similar areas work in isolation, then attempt to scale up or replicate. Examples of such issues include integrating components and subsystems from different entities or challenges arising from using varied terminologies. DOE intends to establish two multi-lab collaborative efforts (one in clean hydrogen, and one in long duration energy storage). DOE expects multiple national laboratories with proven and extensive expertise and capabilities in the given technology area to collaborate. Each collaborative lab effort will establish a working group consisting of stakeholders across the industry's respective value chain (for example, for-profit entities, non-profit entities, local jurisdictions, and communities). The labs will work together to lead this industry working group and ensure its sustained operations over time, bring different stakeholders together, publish independent technical reports and analysis (e.g., on competing approaches), and support industry efforts toward developing assessment tools, product form factors, and standardized processes in coordination with codes and standards development organizations.

Outputs at the end of each project should include:

- Summaries of recommendations of the working group and implementation strategies for proposed solutions.
- An industry community of practice, which can endure beyond the duration of the project, and will serve as the industry recognized entity to ensure execution of what has been agreed upon.

This lab call is structured into two topic areas:

[1] https://www.energy.gov/technologytransitions
[2] https://www.energy.gov/oced
[3] In particular, the Hydrogen and Fuel Cell Technologies Office (https://www.energy.gov/eere/fuelcells/hydrogen-and-fuel-cell-technologies-office) and the Office of Electricity (https://www.energy.gov/oe/office-electricity)
[4] https://www.energy.gov/technologytransitions/bipartisan-infrastructure-law-technology-commercialization-fund
[5] U.S. Department of Energy, 2023. "Pathways to Commercial Liftoff." https://liftoff.energy.gov/.

- **Topic 1: Collaborative Alignment for Clean Hydrogen**. A lack of standard processes and systems across hydrogen production, storage, delivery, and utilization pathways is a barrier to commercializing clean hydrogen technologies. Cross-industry standard operating procedures and component interoperability will be critical to accelerating project development and reducing costs while helping enable industry-wide safety and environmental protocols and ensuring they are followed. DOE has identified potential areas of interest for a working group of hydrogen stakeholders to consider, including but not limited to equipment and manufacturing; production; distribution; market barriers; and safety.

- **Topic 2: Collaborative Alignment for Long Duration Energy Storage (LDES)**[6]. Finding ways to generate economies of scale, manufacturing improvements for performance and cost curves and finding ways to enable the value of LDES systems to be better realized within markets and jurisdictions can help improve commercialization outcomes for LDES. DOE has identified potential areas of interest for a working group of LDES stakeholders to consider, including but not limited to common technology; regulatory hurdles; soft costs; balance of system costs; security; and safety.

DOE recognizes that commercialization of a new technology requires overcoming both technical and non-technical adoption barriers. As technology readiness progresses and the technical challenges are de-risked by the DOE basic and applied offices, a specific focus is expected to be placed on adoption risks preventing commercialization and deployment of new technologies[7]. These challenges can result in overall increased costs, often for nonrecurring engineering and design efforts, and can prevent productization (the ability to make a single form factor that can be replicated thousands of times to bring costs down, enabling fast replication and deployment). Identifying the best solutions to these issues requires collaboration across the industry to assess the benefits, drawbacks, and tradeoffs associated with any given approach.

DOE expects to make up to $15 million in BIL funding available for this lab call (between the two topic areas). DOE expects that labs will contribute the cost-share statutorily required by TCF[8]; however, applicants may request a waiver to reduce cost-share along with a reasonable

[6] Long duration energy storage systems are defined here as systems that can store energy for a duration of at least 10 hours. (U.S. Department of Energy, 2023. "Long Duration Storage Shot." https://www.energy.gov/eere/long-duration-storage-shot).

[7] https://www.energy.gov/technologytransitions/adoption-readiness-levels-arl-complement-trl

[8] Energy Policy Act, 2005, Public Law 109-58, 109th Cong. (August 8, 2005), 119 Stat. 910, Section 988(b)(3). https://www1.eere.energy.gov/femp/pdfs/epact_2005.pdf.

justification for doing so. Proposals should clearly indicate the degree of cost-share the project is expected to provide.

Timeline

KEY DATES	
Lab call release date	March 23, 2023
Informational webinar, including opportunity to facilitate inter-lab teaming	April 4, 2023, 2:00 p.m. ET
PROPOSAL DEADLINE AND DECISION DATES	
Submission deadline for concept papers (See Section II.A.ii.)	April 28, 2023, 3:00 p.m. ET
Concept paper status notifications (estimated)	May 19, 2023
Submission deadline for full applications (See Section II.A.iii.)	June 27, 3:00 p.m. ET
Expected date for selection notifications	Q4 FY23

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Lab Call Modification History

Modifications will appear here.

I. Lab Call Description

A. Background and Context

DOE's Technology Commercialization Fund

The U.S. Department of Energy (DOE) Technology Commercialization Fund (TCF) was established by Congress through the Energy Policy Act of 2005 (EPAct05)[9] and reauthorized by the Energy Act of 2020 (EA 2020) to "promote promising energy technologies for commercial purposes."[10] In line with its mission to expand the public impact of the department's research, development, demonstration (RD&D), and commercial application 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.[11]

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 RD&D and commercial application funding specifically dedicated to pursuing the commercialization of DOE technologies.[12] 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-*

[9] 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).
[10] 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.
[11] DOE Office of Technology Transitions, "Mission." https://www.energy.gov/technologytransitions/mission-0.
[12] 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."*[13]

Further, the Energy Act of 2020 Sec 9001(g)[13] 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."[13] 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,[14] 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.[15] The BIL appropriates more than $62 billion to DOE[16] 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

[13] 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.
[14] Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021). https://www.congress.gov/bill/117th-congress/house-bill/3684/text
[15] 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/.
[16] 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[17] to benefit all Americans.

As with base appropriations, 0.9% of the RD&D and commercial application 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,[18] 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, OTT, in partnership with the Office of Clean Energy Demonstrations (OCED), is issuing this lab call to be funded in Fiscal Year 2023 (FY23).

The Office of Clean Energy Demonstrations

The Office of Clean Energy Demonstrations (OCED)[19] was established in December 2021 as part of the Bipartisan Infrastructure Law (BIL) to accelerate clean energy technologies from the lab to market and fill a critical innovation gap on the path to achieving our nation's climate goals of net zero emissions by 2050. OCED's mission is to deliver clean energy demonstration projects at scale in partnership with the private sector to accelerate deployment, market adoption, and the equitable transition to a decarbonized energy system. OCED is a multi-technology office with demonstrations that include clean hydrogen, carbon management, advanced nuclear reactors, long-duration energy storage, industrial decarbonization, demonstrations in rural areas and on current and former mine land, and more. With a clear role in commercializing critical clean energy technologies, OCED fills the gap between the research, development, and early-stage demonstration projects including those within DOE technology offices and initial deployments supported by the private sector and/or other DOE programs, such as the Loan Programs Office.[20]

DOE recognizes that commercialization of a new technology requires overcoming both technical and adoption barriers. As technology readiness progresses and the technical challenges have been de-risked by the DOE basic and applied offices, a specific focus is expected to be placed on adoption risks preventing commercialization and deployment of new technologies. Examples of relevant adoption risks include delivered cost, functional

[17] Executive Order (EO) 14008, "Tackling the Climate Crisis at Home and Abroad," January 27, 2021. https://www.energy.gov/nepa/articles/eo-14008-tackling-climate-crisis-home-and-abroad-2021
[18] 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.
[19] US Department of Energy, 2023. "Office of Clean Energy Demonstrations." https://www.energy.gov/oced.
[20] US Department of Energy, 2023. "Loan Programs Office." https://www.energy.gov/lpo.

performance, ease of use, market size and market openness, downstream value chain, workforce, ability to be integrated in a large infrastructure project, material sourcing, environmental and safety elements, regulatory environment, policy environment, permitting and siting, and community perception. [21]

Collaborative Alignment for Critical Technology Industries

Nascent technologies often include a wide range of different entities working to develop solutions in isolation. This yields a range of approaches that can be vastly different and cause issues as these technologies converge into emerging industries. This lab call aims to address commercialization challenges arising when attempting to aggregate fragmented industries or disparate projects for scale up or replication. Examples of such issues include integrating components and subsystems from different entities working in isolation into large-scale projects, or challenges arising from using varied terminologies. Further examples for specific technologies can be found in DOE's Pathways to Commercial Liftoff reports.[22] These challenges can result in overall increased costs, often for nonrecurring engineering and design efforts, and can prevent productization (the ability to make a single form factor that can be replicated thousands of times to bring costs down, enabling fast replication and deployment). Identifying the best solutions to these issues requires collaboration across the industry to assess the benefits, drawbacks, and tradeoffs associated with any given approach.

As part of its mission to address America's energy and environmental challenges, DOE supports RD&D and commercial application activities to promote promising energy technologies for commercial purposes. As both sources of RD&D funding and technical expertise, DOE and its national laboratories have significant knowledge of and engagement with many of the emerging industries surrounding promising energy technologies. Drawing on previous analyses and engagement, activities resulting from this lab call will use the convening power of the DOE national laboratories to bring together relevant stakeholders across industries to facilitate discussion around divergent practices, identify challenges best addressed within the context of this work, and work collaboratively over the period of performance to develop and begin to implement recommendations and best practices for resolving these challenges.

Applicants are expected to have a strong sense of the landscape of the industry for the topic area for which they are applying (see Section I.B.), including the significant stakeholders (such the relevant for-profit and non-profit entities, local jurisdictions, and local

[21] https://www.energy.gov/technologytransitions/adoption-readiness-levels-arl-complement-trl
[22] U.S. Department of Energy, 2023. "Pathways to Commercial Liftoff." https://liftoff.energy.gov/.

communities), and familiarity with cross-sectoral challenges and commercialization, demonstration, and deployment barriers. Funding will allow national labs to convene stakeholders across the industry over a period of time to identify the challenges and barriers to address, work collaboratively to develop recommendations, and propose best practices and other consensus-driven solutions or paths forward for the selected challenges and barriers. The proposed solutions and other results will be made public to promote integration across and growth of the industry ecosystem, and labs will work with partners to promote implementation of results.

B. Topic Area Description

i. Application Considerations (All Topics)

OTT envisions selecting one project per topic, each led by a team consisting of multiple national labs. It is anticipated that:

- Selected projects will establish a cohort of industry stakeholders (including members already engaged in similar DOE-funded activities to avoid duplication) and host regular convenings of the cohort over a set period of time (to be determined during project negotiations).
- Between convenings, smaller tiger teams will collaborate to discuss their specific challenges, strategies, and recommendations.
- Tiger teams will share progress and findings at regular convenings, with labs providing testing and technical expertise as needed.
- Working groups will develop a series of action-oriented recommendations (practice, design, path forward) for the industry, with acknowledgement and, ideally, consensus of the entire cohort. Recommendations could take the form of reports, technical papers, or any other format that can ensure easy dissemination among the industry. However, creating elaborate final reports should not be a major focus of the projects; efforts should focus on dissemination and supporting implementation of recommendations.
- Labs will widely distribute recommendations and work with working groups on implementation in the final phase of the project.

Outputs at the end of the period of performance should include:

- Summaries of recommendations of the working group and implementation strategies for proposed solutions.

- An industry community of practice, which can endure beyond the duration of the project.

Proposals must be broken into at least one budget period per fiscal year, with a logical go/no-go decision point between the budget periods. DOE expects projects to include efforts related to: finalization of the cohort of topic stakeholders; working with the cohort to determine a specific set of challenges and barriers to collaboratively address; establishing a mechanism for regular convenings of cohort; establishing work plans for each of the specified challenge areas; carrying out work plans to address specified challenges; regularly convening the cohort; documenting and sharing any potential resolutions, recommendations, or paths forward; and working with stakeholders to incentivize and promote implementation of recommendations.

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

- Proposals should clearly articulate their position within the entire ecosystem of the topic for which they are applying, including technical expertise, degree of thought leadership, history of partnerships, and relevant outreach and engagement in this area. Applicants should be familiar with commercialization barriers and the recent Pathways to Commercial Liftoff reports[23].
- Proposals should describe specific industry-wide or broad barriers and challenges they recommend proposing that their cohort consider addressing, including how this supports the commercialization goals of the project. This should consider, but is not limited to, the area of interest outlined in each topic.
- Full applications should clearly articulate their progress toward assembling the cohort with which they will complete this project. All partners need not be finalized but should be identified and engaged.
- Proposals should describe proposed cost-share. Proposals may request a reduction in cost-share requirement, along with a reasonable justification.[24]
- Proposals should describe an effective mechanism and engagement plan for working with and maintaining their cohort throughout the project period.
- Proposals should consider cost- and effort-effective means for documenting the project, its outcomes, and any determinations made by its cohort, as well as how

[23] U.S. Department of Energy, 2023. "Pathways to Commercial Liftoff." https://liftoff.energy.gov/.
[24] Please see section I.D. for more information about cost-share. The cost-share contribution requirement cannot be eliminated for demonstration and commercial application activities.

to make publicly available and publicize findings, lessons learned, and recommendations.

- Proposals should consider how to ensure that the proposed solutions generated by the working group are actionable by the industry and how to support their implementation, as well as the long-term sustainability of implementation plans.
- Applicants should consider ways that the cohort may continue to convene and provide value to the industry, in the absence of continued funding or DOE oversight.
- Applicants with currently active projects seeking additional funding to complete their original scope of work are excluded from applying 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 that fall outside the parameters specified in this section will be deemed nonresponsive and will not be reviewed or considered.

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.

ii. Topic 1: Collaborative Alignment for Clean Hydrogen

Hydrogen is one part of a comprehensive portfolio of energy technologies that can support the nation's transition to net-zero emissions economy-wide, while leveraging regional resources and creating equitable and sustainable growth. High carbon intensity sectors, such as chemicals manufacturing, heavy-duty transportation, and production of liquid fuels are expected to become priority markets for clean hydrogen. Hydrogen is also seen as an enabling technology: supporting increased integration of renewable energy into the electric power grid and other applications through long duration energy storage and providing a peaking power resource. Today's hydrogen market in the U.S. is approximately 10 million metric tons per year (MMTpa) and has the potential to significantly increase by 2030.[25] Production tax credits of nearly $13.2 billion made

[25] U.S. Department of Energy, 2022. "DOE National Clean Hydrogen Strategy and Roadmap." https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-strategy-roadmap.pdf.

available by the Inflation Reduction Act of 2022[26] are expected to further drive growth in the hydrogen industry. Clean hydrogen will also be critical to reduce overall U.S. CO_2 emissions by 10-15% from 2020 levels by 2050, contributing to the Biden-Harris Administration goals of a 100% clean electrical grid by 2035 and net-zero carbon emissions by 2050.[27]

DOE has and continues to conduct several research, development, and demonstration efforts in hydrogen production, delivery, infrastructure, storage, fuel cells, and multiple end uses across transportation, industrial, and stationary power applications.[28] DOE initiated the Hydrogen Shot,[29] which seeks to reduce the cost of clean hydrogen to $1 per kilogram by 2031, and has published several vision and roadmap documents,[30] including the DOE Hydrogen Program Plan and the DOE National Clean Hydrogen Strategy and Roadmap.[31] More recently, the Bipartisan Infrastructure Law (BIL) included a once-in-a-generation investment meant to accelerate the hydrogen economy's growth and the deployment of hydrogen-related technologies through several distinct but related provisions:

- Clean Hydrogen Manufacturing Recycling Research, Development, and Demonstration Program, which creates manufacturing and recycling initiatives to promote RD&D for clean hydrogen manufacturing equipment and to increase reuse and recycling.[32]
- Clean Hydrogen Electrolysis Program, which supports commercializing hydrogen production using electrolyzers.[33]
- Regional Clean Hydrogen Hubs, which includes a recent $7 billion funding opportunity to establish 6 to 10 regional clean hydrogen hubs nationwide to

[26] Congressional Research Service, 2022. "Tax Provisions in the Inflation Reduction Act of 2022 (H.R. 5376)." https://crsreports.congress.gov/product/pdf/R/R47202.
[27] DOE Office of Energy Efficiency & Renewable Energy, 2022. "Hydrogen Shot." https://www.energy.gov/eere/fuelcells/hydrogen-shot.
[28] US Department of Energy, 2023. "Hydrogen Program." https://www.hydrogen.energy.gov/.
[29] DOE Office of Energy Efficiency & Renewable Energy, 2022. "Hydrogen Shot." https://www.energy.gov/eere/fuelcells/hydrogen-shot.
[30] US Department of Energy, 2023. "Program Plans, Roadmaps, and Vision Documents." https://www.hydrogen.energy.gov/roadmaps_vision.html.
[31] US Department of Energy, 2022. "DOE National Clean Hydrogen Strategy and Roadmap (Draft)." https://www.hydrogen.energy.gov/clean-hydrogen-strategy-roadmap.html.
[32] DOE Office of Energy Efficiency & Renewable Energy, 2023. "Clean Hydrogen Manufacturing Recycling." https://www.energy.gov/eere/clean-hydrogen-manufacturing-recycling.
[33] DOE Office of Energy Efficiency & Renewable Energy, 2023. "Clean Hydrogen Electrolysis Program." https://www.energy.gov/bil/clean-hydrogen-electrolysis-program

create networks of hydrogen producers, consumers, and local connective infrastructure to accelerate the use of hydrogen.[34]

Despite the vast potential and current opportunity space for hydrogen, several adoption challenges must be overcome for clean hydrogen to reach its full commercial potential. The Pathways to Commercial Liftoff: Clean Hydrogen report[35] lists several barriers to adoption and commercialization that must be overcome if commercial lift-off is to be achieved. One barrier is related to aligning processes and systems across hydrogen production, storage, delivery, and utilization pathways. Cross-industry standard operating procedures (SOPs) and component interoperability (e.g., hydrogen transfer protocols during drop-off) will be critical to accelerating project development and reducing costs. SOPs can help enable and establish industry-wide safety and environmental protocols and ensure they are followed.

Along the hydrogen value chain, many companies have developed custom equipment, points of connection, or other tooling and standards which often create lock-in to a particular vendor or technology solution. This reduces interoperability, customer choice, and labor market liquidity, and can increase the time and costs associated with project development. Hydrogen is a complicated molecule to produce, distribute, store, and use; as such, the industry needs thorough, consistently applied practices to ensure safe handling and operation. Established systems and processes around materials, system design, ventilation in operational areas, and leak detection can help mitigate potential risks. The Federal government can play an important role by convening stakeholders across the hydrogen industry and coordinating with Codes and Standards Development Organizations (CDOs and SDOs), which are responsible for developing consensus-driven practices, procedures, and harmonized standards for equipment and processes. Accepted protocols and components across geographies (e.g., at energy transfer ports) would also help avoid delays in cross-border trade in hydrogen and its derivative products. Coordinating with international groups to ensure interoperability for global as well as domestic trade would provide additional benefits.

As part of the Collaborative Alignment for Critical Technology Industries lab call, DOE expects multiple national laboratories with proven and extensive expertise and capabilities in the hydrogen sector to partner to establish a working group consisting of stakeholders across the hydrogen value chain. The national labs will lead this industry working group and ensure its sustained operations over time, leveraging the convening power of the Federal government to bring different stakeholders together, publish

[34] DOE Office of Clean Energy Demonstrations, 2023. "Regional Clean Hydrogen Hubs." https://www.energy.gov/oced/regional-clean-hydrogen-hubs.

[35] U.S. Department of Energy, 2023. "Pathways to Commercial Liftoff." https://liftoff.energy.gov/.

independent technical reports and analysis (e.g., on competing approaches), and supporting industry efforts toward developing assessment tools, product form factors, and common processes in coordination with CDOs and SDOs.

DOE expects this cohort to define and detail aspects and components with different emerging pre-competitive approaches and to identify areas of convergence, divergence, and potential alignment, as well as provide the technical evaluation needed to determine consistent specifications and/or form factors for components, develop draft SOPs, etc. Based on existing capabilities and understanding of the R&D and industrial complex, DOE expects the national lab(s) to submit a detailed plan on how different barriers related to standardization could be tackled and the relevant stakeholders that should be involved as part of this cohort (e.g., industry players, safety and environmental agencies, financiers, independent engineers, certification bodies, certification development organizations, standard development organizations, etc.). DOE expects this cohort to leverage and coordinate with existing efforts already established by DOE[36] [37] [38] and other organizations.[39] For example, for hydrogen safety related activities, DOE anticipates that this cohort will coordinate with labs engaged in the Center for Hydrogen Safety.[40] The intent of this lab call is not to create yet another working group, but to coordinate and amplify existing efforts with a specific focus on accelerating market adoption, private sector lift-off, rapid deployment, and mobilization toward proposed solutions.

Based on existing studies and reports, as well as the input of external stakeholders, DOE has identified potential areas of interest for a working group of hydrogen stakeholders to consider. This list is not meant to be prescriptive nor exhaustive. DOE expects applicants to refine the priority areas and work streams based on their knowledge and expertise of the industry. DOE does not expect RD&D or technology development work to be part of this effort as it is focused on accelerating commercialization of the technology and its deployment. Areas of interest include:

- **Hydrogen equipment and manufacturing:**

[36] DOE Office of Energy Efficiency & Renewable Energy, 2023. "Hydrogen and Fuel Cell Technologies Office Consortia." https://www.energy.gov/eere/fuelcells/hydrogen-and-fuel-cell-technologies-office-consortia.
[37] DOE Office of Energy Efficiency & Renewable Energy, 2023. "H2NEW - Hydrogen from Next-generation Electrolyzers of Water." https://h2new.energy.gov/.
[38] US Department of Energy, 2023. "Million Mile Fuel Cell Truck." https://millionmilefuelcelltruck.org/.
[39] Ex 1: Center for Hydrogen Safety, 2023. "The Center for Hydrogen Safety." https://www.aiche.org/chs. Ex 2: Clean Hydrogen Partnership, 2023. "Clean Hydrogen Partnership." https://www.clean-hydrogen.europa.eu/index_en.
[40] Center for Hydrogen Safety, 2023. "The Center for Hydrogen Safety." https://www.aiche.org/chs.

- Develop/support the development of standard, widely applicable production design packages capable of handling a variety of hardware options across the value chain.
- Identify a set of scale factors or form factors needed to enable large scale manufacturing of necessary components (such as compressors, nozzles, etc.).
- Develop best practices for testing equipment reliability to lower validation and verification costs.
- Formulate collaborative strategies to address supply chain and minerals supply and demand issues.
- Establish common specifications and schematics for hydrogen compressors that meet technical needs and perform reliably through multiple fueling cycles.

- **Hydrogen production:** harmonize equipment and process design.
  - Establish common specifications for electrolyzer balance of system hardware that enable interoperation across many methods and companies, while eliminating or reducing the need for custom electronics or sub-systems.
- **Hydrogen distribution:** growing the hydrogen economy will require expanded and optimized transmission and distribution infrastructure that can cost-effectively connect production to consumers and end-users.
  - Establish consistent control systems and interfaces for distributors to offtake from production sites to improve safety and lower maintenance costs without locking into single vendors.
  - Build coalitions of stakeholders to optimize transmission routes for national or regional distribution networks.
  - Identify opportunities to reduce transmission costs through advanced manufacturing or materials.
  - Identify ways for hydrogen distribution to fit within regulatory requirements, such as within the interstate pipeline infrastructure framework. In this example, using an established regulatory framework would provide confidence to the investor community investing in pipeline infrastructure.

- **Hydrogen market:**
    - Improve end user confidence through consistent off-take equipment specifications that increase safety, reduce costs, and prevent vendor lock-in.
    - Identify and develop recommendations to address major implementation and safety concerns, safety codes, and standards in coordination with CDOs and SDOs. Examples of barriers include safety ratios on vehicle fuel tanks, laws against driving vehicles on bridges and in tunnels, legacy set-back ratios, and legacy fuel temperature maximums.
    - Develop recommendations on standard training and education requirements for the growing hydrogen workforce.
    - Address investor concerns by reviewing and publishing case studies and industry data from operational projects as well as by collecting and disseminating examples (as they become available) of implemented IRA provisions.
    - Develop life cycle assessment best practice recommendations to include measurement systems for carbon accounting and clean hydrogen standards, accounting for regional and process variations. This work should leverage existing resources already developed by DOE and other entities (for example, IPHE[41] and GREET[42]).
- **Hydrogen safety:**
    - Evaluate leakage detection methods (including at low concentrations – ppm or ppb), instruments, monitoring, and controls, as well as leakage propagation, impact models, and deployment practices. This work should not be duplicative of other work supported by DOE and other agencies

[41] International Partnership for Hydrogen and Fuel Cells in the Economy, 2022. "Release of the IPHE Working Paper Ver2 Nov 2022 Methodology for Determining the Greenhouse Gas Emissions Associated with the Production of Hydrogen." https://www.iphe.net/iphe-wp-methodology-doc-nov-2022.

[42] https://www.hydrogen.energy.gov/life_cycle_emissions_analysis.htmlDOE Office of Energy Efficiency & Renewable Energy, 2019. "GREET: The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model." https://www.energy.gov/eere/bioenergy/articles/greet-greenhouse-gases-regulated-emissions-and-energy-use-transportation.

(for example, awards selected as part of Topic 2 of the funding opportunity announcement DE-FOA-0002792[43]).

- Consider additives to improve safety and environmental impact.
- Assessment of form factors that allow for the development of standardized safety equipment.
- Develop consensus best practices to improve safe production, transport, deployment and maintenance and update safety panel best practices.

Application materials should specify which areas of interest applicants can support and effectively serve as a convener and demonstrate sufficient knowledge, technical expertise, resources, and relationships in the hydrogen industry. Full applications should detail the planned cohort membership and describe engagement to date, with the understanding that the cohort may change and grow over time. Applicants should also review the draft National Clean Hydrogen Strategy and Roadmap, required by the BIL, and indicate to which of the outlined actions they will contribute.[44] These actions were developed with input from industry, labs, academia, states, DOE's internal Joint Strategy Team, and other agencies, and indicate high priority areas that must be addressed to meet our national goals.

Following selection, selected labs will finalize a cohort of relevant stakeholders within the selected areas of interest and develop a strategy for engagement, discussion, and feedback. The cohort will identify the top areas of interest to address and establish tiger teams within these areas (for example, within distribution, one tiger team may collaborate to determine optimal transit routes for a national hydrogen network; another may work to understand the specifications of standardized offtake equipment, including associated tradeoffs). In many of the above examples, since similar work is ongoing within DOE[45] , labs should clearly indicate in their applications how they will coordinate with existing efforts, with emphasis on accelerating commercialization.

[43] DOE Office of Energy Efficiency & Renewable Energy - EERE Funding Opportunity Exchange, 2022. "DE-FOA-0002792: Funding Opportunity in support of the Hydrogen Shot and a University Research Consortium on Grid Resilience." https://eere-exchange.energy.gov/Default.aspx#FoaId47252393-c846-4779-9760-86414eddda9f.
[44] U.S. Department of Energy, 2022. "DOE National Clean Hydrogen Strategy and Roadmap." https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-strategy-roadmap.pdf.
[45]Office of Energy Efficiency & Renewable Energy, 2023. "Hydrogen and Fuel Cell Technologies Offices." https://www.energy.gov/eere/fuelcells/hydrogen-and-fuel-cell-technologies-office.

iii. Topic 2: Collaborative Alignment for Long Duration Energy Storage

Long duration energy storage (LDES) systems—defined as systems that can store energy for a duration of at least 10 hours[46]—are part of a comprehensive portfolio of energy technologies that can support the nation's transition to net-zero emissions economy-wide, while leveraging regional resources and creating equitable and sustainable growth. Due to the increasing adoption of renewable energy technologies that can be variable in their energy production, implementing LDES systems is critical to the stability of the national energy system. LDES can play a significant role in decarbonizing the US power grid – up to 470 GW ($330B in cumulative capital) of LDES capacity may be deployed between now and 2050 to meet the needs of a net-zero grid.[47]

Despite how critical LDES deployment is to power grid decarbonization, these technologies must overcome several barriers to play this role. DOE has supported and continues to support several efforts to promote LDES development and accelerate its commercialization. These include:

- The Long Duration Storage Energy Earthshot, which targets a 90% reduction in the cost of grid-scale energy storage systems that deliver 10+ hours of duration within the decade.[48]
- Storage Innovations (SI) 2030, which will help identify RD&D needs to meet the goals of the LDES Earthshot.[49] Within SI 2030, the Flight Paths Initiative brings together the communities of the identified storage technology areas to identify key RD&D barriers.

More recently, the BIL included a once-in-a-generation investment meant to accelerate full-scale deployment of a range of different LDES technologies and enhance customers' and communities' abilities to integrate grid storage more effectively through several provisions, including:

- Long-Duration Energy Storage Demonstrations, beginning with the Long-Duration Energy Storage Demonstrations Funding Opportunity Announcement, which will validate new technologies, enhance the capabilities of customers and

[46] DOE Office of Energy Efficiency & Renewable Energy, 2023. "Long Duration Storage Shot." https://www.energy.gov/eere/long-duration-storage-shot.
[47] DOE Office of Clean Energy Demonstrations - EERE Funding Opportunity Exchange, 2022. "DE-LC-000L001: Long-Duration Energy Storage Demonstrations Lab Call." https://oced-exchange.energy.gov/Default.aspx#FoaIdffa05d6b-7d3f-4b8d-99ff-8e60dcc39552.
[48] U.S. Department of Energy, (July 2021), "Long Duration Storage Shot: An Introduction". https://www.energy.gov/sites/default/files/2021-07/Storage%20shot%20fact%20sheet_071321_%20final.pdf
[49] DOE Office of Electricity, 2023. "Storage innovations 2030." https://www.energy.gov/oe/storage-innovations-2030.

communities to integrate LDES more effectively, and sustain American global leadership in energy storage.[50]

- The DOE and Department of Defense (DoD) Long-Duration Energy Storage Joint program, through which DOE and DoD will collaborate on LDES demonstrations on government facilities.[51]
- Long-Duration Energy Storage Pilot Grant Program, which aims to bring a range of storage-related benefits to states, tribal nations, and utilities.[52]

While identifying and addressing RD&D barriers is critical, ensuring LDES can meet its potential share of the net-zero energy system will require concentrated and coordinated efforts across the LDES ecosystem—companies, regulators, investors, public utility commissions, and organizations. Previous analysis and engagement, including the upcoming Pathways to Commercial Liftoff: Long-Duration Energy Storage report[53], list several barriers to adoption and commercialization these stakeholders must work to overcome if commercial lift-off is to be achieved. These include finding ways to generate economies of scale and manufacturing improvements that can improve performance and cost curves and finding ways to enable the value of LDES systems to be better realized within markets and jurisdictions. Collaborating and sharing knowledge and practices across LDES sectors can identify crosscutting challenges outside of the technical barriers addressed through RD&D. Identifying common challenges and market barriers and sharing lessons learned can help resolve these barriers to commercialization; sharing lessons learned from one sector can provide paths forward and best practices for other sectors.

The Federal government can play an important role by convening stakeholders across the LDES ecosystem (for example, for-profit entities, non-profit entities, local jurisdictions, local communities). Leveraging the DOE national labs' expertise and relationships in LDES industries, this announcement aims at convening LDES stakeholders to address barriers, determine potential synergies, and collaboratively develop and implement recommendations and best practices for common challenges. Based on previous work, studies, and reports, as well as the input of external stakeholders, DOE has identified potential areas of interest for an LDES industry working

[50] DOE Office of Clean Energy Demonstrations, 2022. "DE-FOA-0002867: Bipartisan Infrastructure Law: Long-Duration Energy Storage Demonstrations Funding Opportunity Announcement." https://oced-exchange.energy.gov/Default.aspx#FoaId2cde5bff-2781-4219-b65d-8f04a63f47cf.
[51] U.S. Department of Energy, 2023. "Long-Duration Energy Storage Demonstrations." https://www.energy.gov/oced/long-duration-energy-storage-demonstrations.
[52] See above.
[53] U.S. Department of Energy, 2023. "Pathways to Commercial Liftoff." https://liftoff.energy.gov/.

group to consider. This list is not meant to be prescriptive nor exhaustive; DOE expects applicants to refine the priority areas and work streams based on their knowledge and the expertise and input of industry partners. DOE does not expect RD&D or technology development work as part of this effort, which is focused on accelerating commercialization of the technology and its deployment. Areas of interest include:

- **Common terminology:** Organizations across the LDES ecosystem have used varied language to define key metrics and technical specifications. Unifying these terms and definitions can facilitate information exchange between stakeholders and support end-user comprehension, helping to accelerate LDES development and adoption.
- **Regulatory hurdles:** DOE recognizes that many authorities having jurisdiction have struggled to incorporate LDES into their energy systems within existing regulations. Bringing diverse stakeholders together can promote a better understanding of common regulatory barriers and determine potential ways to alleviate these barriers. However, this program's funds cannot be used to develop or influence regulations. The focus of this program is to bring together stakeholders that have the authority and autonomy to implement action-oriented best practices to alleviate common barriers.
- **Soft costs:** LDES has many unique considerations regarding financing, labor, procurement, and customer acquisition. Bringing together stakeholders will allow for the dissemination of knowledge between entities and identify potential areas of improvement/concern for the industry.
- **Balance of System (BOS) costs:** Despite a wide variety of LDES system designs, there are certain universal components (power equipment, controls equipment, safety equipment, etc.) that are critical to operation. Bringing together stakeholders can identify these components and opportunities to reduce their cost, making LDES technologies more affordable.
- **Security:** As LDES matures and is more widely utilized it will play a larger role in the stability of the electrical grid; identifying and addressing potential physical and cyber threats to these systems before they are deployed at scale is important to mitigate future security risks.
- **Safety:** Actual and perceived safety is critical to widespread adoption of any technology. Bringing together industry and external stakeholders to discuss potential safety gaps and potential improvements can help mitigate future safety concerns.

DOE expects this cohort to define and detail LDES technologies' areas of convergence, divergence, and potential alignment, as well as the technical evaluation needed to establish safety risks, SOPs, deployment procedures, etc.

Application materials should specify which areas of interest applicants can support and for which areas applicants can effectively serve as a convener and demonstrate sufficient knowledge, technical expertise, resources, and relationships in LDES industries. Full applications should detail the planned cohort membership and describe engagement to date, with the understanding that the cohort may change and grow over time. It is expected that this cohort will leverage and coordinate with existing efforts already established by DOE, such as the forthcoming Long Duration Energy Storage Memorandum of Understanding between DOE and industry partners[54] and with existing industry consortia. The intent of this lab call is not to create another working group, but to coordinate and amplify existing efforts with a specific focus on accelerating market adoption, safe integration, rapid deployment, and mobilization toward proposed solutions.

Selected labs will finalize a cohort of all relevant stakeholders and develop a strategy for engagement, discussion, and feedback. The cohort will identify the top areas of interest to address and establish tiger teams within these areas. Labs should clearly indicate in their applications how they will coordinate with existing efforts, funded by DOE or external organizations, with an emphasis on accelerating commercialization.

C. Timeline and Process Logistics

Timeline

See the Executive Summary for timeline and key dates.

Process Logistics

All communication to OTT regarding this lab call must use TCF.BIL@hq.doe.gov and identify lab call DE-LC-000L002 in the subject line of the email.

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

[54] U.S. Department of Energy, 2023. "Department of Energy Announces Partnership to Accelerate Commercialization of Long-Duration Energy Storage." https://www.energy.gov/technologytransitions/articles/department-energy-announces-partnership-accelerate-commercialization.

questions for this lab call can be found at https://oced-exchange.energy.gov/. Answers to frequently asked questions for the Exchange system can be found at https://oced-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 OCED-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.

D. Key Considerations and Requirements

- **SIZE, SCOPE, AND NUMBER OF SELECTIONS:**
    - Estimated DOE funding available: approximately $15 million in BIL funding ($3 million to $10 million of DOE funding per project)
    - Estimated number of projects: 2 (1 per topic area)
    - Estimated project duration: 24-36 months
    - 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 multi-lab collaboration and how it will work across each objective. Single-lab solutions will be accepted; however, DOE expects that meeting program objectives will require input from multiple labs and thus, that the strongest proposals will involve multiple labs.
    - 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[55] regarding cost-share, which requires 50% cost-share for demonstration and commercialization activities.[56]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, clearly indicating in the application the amount of cost-share they intend to contribute and providing a justification for the cost-share reduction.[57] The review criteria reflect that cost-share is a consideration for selection. DOE is also sensitive to the importance of maintaining the independence of these working groups and the risk of having one specific industry stakeholders providing a disproportionate amount of cost-share, therefore appearing to have a particular influence on the findings and recommendations. DOE encourages labs to avoid teaming arrangements that could appear as undermining the impartiality of the working groups.

- **INTELLECTUAL PROPERTY:** This project is not anticipated to create any inventions or intellectual property. Partner organizations are expected to share pre-competitive, non-proprietary information to address common challenges. Performing labs are expected to create an environment in which partners are comfortable sharing different pre-competitive information. Performing labs should put in place plans to address IP, should any IP be created in during the life of the project.

- **COMMUNITY BENEFITS PLAN:** To support the goal of building a clean and equitable energy economy, the BIL-funded projects are expected to (1) support meaningful community engagement; and (2) advance diversity, equity, inclusion, and accessibility (DEIA). It is a priority of this lab call to ensure that a diverse group of stakeholders are included in the working groups to be established, including the communities that will benefit from these critical energy technologies. To ensure these goals are met, applications must include a community benefits plan that describes how the proposed project would incorporate the objectives previously stated.

[55] Energy Policy Act, 2005, Public Law 109-58, 109th Cong. (August 8, 2005), 119 Stat. 910, Section 988(b)(3). https://www1.eere.energy.gov/femp/pdfs/epact_2005.pdf.
[56] Please see Appendix A: Additional TCF Cost-Share and Nonfederal Cost-Share Information for more information, including what qualifies as cost-share.
[57] Cost-share contribution requirement cannot be eliminated for demonstration and commercial application activities.

Applicants are encouraged to engage with established 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 project will deliver measurable community and jobs benefits. See Section II.A.iii. for the community benefits plan content requirements.

Applicants are highly encouraged to include individuals from groups historically underrepresented[58,59] in science, technology, engineering, and math (STEM) in their working groups. 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. 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.

[58] 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).

[59] Note that Congress recognized in Section 305 of the American Innovation and Competitiveness Act of 2017, Public Law 114-329. https://www.congress.gov/bill/114th-congress/senate-bill/3084/text:

(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.

Further, projects are particularly encouraged to include minority-serving institutions,[60] minority business enterprises, minority-owned businesses, woman-owned businesses, veteran-owned businesses, or entities located in an underserved community in the working groups.

- **NATIONAL LABORATORY COLLABORATION:** DOE strongly encourages projects that bring together multiple labs to leverage diverse lab capabilities, avoid duplication of effort, and ensure the strongest possible applications are put forward. DOE will host a webinar to help facilitate collaborative applications. Please see the Executive Summary for more information.

- **TEAMING PARTNER LIST:** DOE anticipates that meeting project goals will require multi-lab projects with significant industry engagement and partnership. 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-0000014) on OTT 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,

[60] 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.)

nor will it compensate any applicants or requesting organizations for the development of such information.

- **CURRENT AND FUTURE PARTNERSHIPS:** DOE recognizes and encourages national laboratories to work in close partnership (as subrecipients or project partners) with specific companies on financial assistance awards. Existing or future collaboration with industry will not make national labs ineligible to participate to this announcement, but applicants must clearly specify what measures are taken to segregate different work streams, avoid knowledge spillovers from work with an individual company, and maintain the national lab's role as a trusted independent party.

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 expected.

  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 multi-lab 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. If an applicant experiences technical difficulties with a submission, the applicant should contact the Exchange help desk for assistance (OCED-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 Executive Summary.

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. DOE is most interested in proposals that work toward identifying solutions that can be actioned by industry and demonstrate support for implementation. Proposals offering only to generate a report at the end of the project are not of interest.

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, the topic under which the proposal is applying, amount of federal funding requested, the expected amount of cost-share to be provided and justification for reduction in cost-share if requested, 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. • 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, particularly ensuring inclusivity and methods for effective facilitation and consensus-building. • Describe how the proposed project will advance goals related to: (1) community engagement and (2) advancing DEIA. • Consider how to build long-term sustainability into program design such that relationships and solutions endure beyond the project's conclusion.
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, expertise, and access to the equipment and resources 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. • 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 to receive funding 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 EXECUTIVE SUMMARY 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, topic being applied for, PI(s) and business points of contact, names of all team member organizations, any statements regarding confidentiality, the amount of federal funding requested, the proposed cost-share amount, the topic being applied to, 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 how the proposed project would clearly meet the lab call objectives, particularly ensuring participation of all relevant stakeholders, effectively building consensus, and incentivizing implementation. For multi-lab 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:** The Community Benefits Plan: Job Quality and Equity (Community Benefits Plan) must set forth the applicant's approach to ensuring that federal investments advance the following goals: (1) community engagement and (2) advancing DEIA. 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.

    - 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 project, and the recipient will be required to meet the community benefits plan they proposed. During the life of the DOE project, 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.

3.2 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. For example, commitment to include minority business enterprises, minority-owned businesses, woman-owned businesses, and veteran-owned businesses in working groups.

3.3 Justice40 Initiative: Applicants must include a plan for how to maximize benefits to disadvantaged communities that the specific technology area project can deliver in the objectives of each working group. Benefits might include (but are not limited to): (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.

- **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. Recipients must report every year over a 5-year time period, which includes the up-to-3-year project 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 may include but are not limited to: (1) numbers of prototypes generated during project activities; (2) number of demonstrations conducted in real-world environments as a result of project activities; (3) number of engagements performed as part of project activities; (4) the number of validated documents created through project activities; (5) number of validated documents successfully operationalized; (6) number of formal partnerships established; and (7) number of commercialized technologies as a result of project activities.
  - 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**: Clearly indicate the expected cost-share contribution for the proposed project. Please provide a justification if less than 50% cost-share is proposed. Provide a detailed table describing any proposed cost-sharing, clearly articulating cash versus in-kind. 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-project 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 and 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 a project 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 funding. 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.

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."

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 they are applying for and how they meet the required elements of the topic.
- 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.
- The proposed work demonstrates a likelihood of implementation and incorporation into industry practices. The proposed work includes planning for the long-term sustainability of the relationships and implementation strategies that will develop over the period of performance.

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 highly encourages bold, innovative, and impactful proposals.

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

Criterion 1: Innovation and Impact (20%)

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—the extent to which the proposed project or solution is innovative and the degree to which the proposed project integrates market pull into its thinking and program design, forming a conduit of market insight and awareness.
    - Impactful—the 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. This also includes the impact of forging collaborations on the challenges being addressed (e.g., multi-lab 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). Multi-lab collaboration will be scored as inherently more impactful than single-lab projects.
    - Accelerates speed of commercialization—the 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; and the degree to which the proposal supports achieving the statutory requirement of the TCF to "promote promising energy technologies for commercial purposes."
    - Long-term viability—the degree to which the proposal has the potential to continue to be impactful without long-term, continued, direct funding from DOE; the extent to which multiyear strategic partnerships are proposed or will be developed to continue the program beyond initial funding; and the level of proposed cost-share for the project will be taken into consideration.

- Differentiated—the extent of differentiation with respect to existing commercialization programs or efforts and the potential to enhance commercialization activities at the national laboratories.
- Scalable—the likelihood that the proposed solution, if successful, could be scaled to have a broader impact and that the working group, if successful, could be scaled and become self-sustaining.
- Commercialization outcomes—the likelihood of the proposed solution achieving the proposed commercialization outcome metrics; the likelihood of the proposed project leading to outcomes that are actionable by industry; and the 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—the degree to which the proposal is structured to produce a measurable result/impact, including the required DEIA milestones and the 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—the 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 and the degree to which the proposal adequately describes how the team will manage and mitigate risks.
  - Validated—the degree to which the proposed project fits within and builds on the laboratory ecosystem and the level of validation (letters of support/interest, partners, customer trials, data from prior work, report references, etc.).
  - Reasonable assumptions—the 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; and the level of proposed cost-share for the project will be taken into consideration.

- Is the proposal likely to result in implementation of recommendations, over and beyond publishing best practices?
- Is the proposal likely to lead to outcomes that are adopted?

Criterion 3: Collaboration and Capability of the Applicant and Holistic Project Team (30%)

This criterion involves consideration of the following factors:

- Is the team well-qualified and positioned to successfully complete this project?
  - Collaboration—the extent to which there are multiple labs engaged on the proposed project; the degree to which the proposed project branches out, connects, and builds on the innovation ecosystem across the country; and the 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—the extent to which the training, capabilities, and experience of the assembled team will result in the successful completion of the proposed project, and the 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; the degree to which multilab, internal lab, and external collaboration is proposed; and the 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—the 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?) and the level of proposed cost-share for the project will be taken into consideration.
- Past performance—the extent to which the assembled team has shown success in the past (new performers will not be penalized). DOE encourages new entrants and new ideas, but past successes and/or failures will be noted.
- Access—the 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:

- Community and labor engagement—the 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.
- DEIA goals—the 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.
- Community evaluation—the 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.
- Equitable—the 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.

Other Selection Factors:

In addition to the previous criteria, the selection official may make additional considerations in determining which full applications to select for negotiations, such as:

- 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, 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, 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 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 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 Project 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 negotiations.

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 funding instrument: TCF BIL projects 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

Section II.C. 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 Q4 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

Selected projects 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:

- Justice and equity data, including:
    - Minority business enterprises, minority-owned businesses, woman-owned businesses, and veteran-owned businesses.
    - Other DEIA-relevant indicators.
- Funding leveraged, follow-on-funding, intellectual property generation and intellectual property utilization.

- Reporting, tracking, and segregation of incurred costs.
- Publication of information on the internet.
- Access to records by Inspectors General and the Government Accountability Office.
- 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 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 project or fully depreciated by the end of the project. 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 project or fully depreciated by the end of the project, 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.