



OFFICE OF
Technology Transitions

U.S. Department of Energy
Office of Technology Transitions
Technology Commercialization Fund
Base Annual Appropriations

National Laboratory Call for Proposals
Core Laboratory Infrastructure for Market Readiness (CLIMR)

DE-LC-000L098

Fiscal Year 2023

This lab call is being issued as part of the Technology Commercialization Fund Base Annual Appropriations by the U.S. Department of Energy's (DOE's) Office of Technology Transitions, the Office of Electricity, Office of Nuclear Energy, the Office of Fossil Energy and Carbon Management, and the Office of Energy Efficiency and Renewable Energy, in particular: Geothermal Technologies Office, Hydrogen and Fuel Cell Technologies Office, Solar Energy Technologies Office, Water Power Technologies Office, and Wind Energy Technologies Office. This call solicits proposals from National Laboratory Technology Transfer Offices, in collaboration with partners across the DOE National Laboratory Complex, to develop and implement programming to facilitate an improved and more impactful lab commercialization process as well as advance technology-specific laboratory intellectual property to market.

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

Table of Contents

Table of Contents	ii
Lab Call Modification History	iv
I. Lab Call Description	1
A. Background and Context.....	1
i. Background and Overview	2
ii. Vision for FY23 TCF and Moving Forward.....	4
B. Timeline and Process Logistics.....	7
C. Key Considerations and Requirements.....	8
i. Available Funding.....	8
ii. Size, Scope, and Number of Selections.....	9
iii. Cost-Share	9
iv. Diversity, Equity, Inclusion, and Accessibility	11
v. National Laboratory Collaboration	14
vi. Teaming Partner List	14
D. Topic Area Descriptions	15
i. Topic 1: Market Needs Assessment.....	16
ii. Topic 2: Curation of Intellectual Property	17
iii. Topic 3: Matchmaking.....	19
iv. Topic 4: Technology Specific Partnerships.....	21
v. Topic 5: Streamlining Laboratory Processes and/or Requirements	33
vi. Topic 6: Increasing Partnerships with External Commercialization Parties	35
II. Application Submission and Review Information	37
A. Process and Submission Details.....	38

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

i.	Process	38
ii.	Concept Papers	40
iii.	Full Applications.....	41
iv.	Proprietary Information.....	48
B.	Application Review and Selection.....	50
i.	Concept Paper Merit Review	50
ii.	Full Application Merit Review and Selection Process.....	51
ii.	Selection for Award Negotiation	55
iii.	Selection Notification.....	55
C.	Project Administration and Reporting.....	55
D.	Questions and National Lab TTO Contacts	56
E.	Additional Information on Exchange	56
F.	Application Forms	56
	Appendix A: TCF Cost-Share and Nonfederal Cost-Share Information.....	57
	Appendix B: FY23 TCF Lab Calls by Program Office.....	62
	Appendix C: TCF Points of Contact at DOE National Lab TTOs	63

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

Lab Call Modification History

Modifications will appear here and will be distributed via email to the points of contact in Appendix C.

I. Lab Call Description

A. Background and Context

This lab call represents the combined effort of nine distinct U.S. Department of Energy (DOE) Technology Offices. The Department of Energy Technology Commercialization Fund (TCF) was established by Congress through the Energy Policy Act of 2005 (EPAct05)¹ and reauthorized by the Energy Act of 2020 (EA 2020) to “promote promising energy technologies for commercial purposes.”²

Within DOE, the Office of Technology Transitions (OTT) is charged with leading policy and programs related to technology commercialization, including TCF. The goal of TCF is to improve America’s energy competitiveness and security by accelerating commercialization and the shepherding of critical energy technologies from the lab to the market, where the private sector will continue to innovate.

For Fiscal Year 2023 (FY23), DOE continues to implement the revised approach with TCF for Base Annual Appropriations, which is described below. Persistent barriers and known gaps that deter the commercialization of laboratory technologies continue to exist and improvements are still needed. The intent of the Core Laboratory Infrastructure for Commercialization topics (Topics 1, 2, 3, 5, and 6 below) is to fill in missing infrastructure pieces and strengthen those already there by addressing core commercialization challenges, barriers, and gaps, as well as their root causes (inside and outside of the labs). Additionally, for FY23, the lab call will seek proposals from DOE’s Labs to advance the commercialization of individual energy-related technologies (Topic 4 below).

This solicitation offers an opportunity for private industry to partner with DOE’s National Labs to advance energy-related technologies and Lab intellectual property (IP) toward commercialization and to reduce the barriers to commercializing Lab developed energy-related technologies and IP. The intent is to increase the volume and speed to which Lab

¹ Energy Policy Act of 2005, Public Law 109–58, 109th Cong. (August 8, 2005), *Improved technology transfer of energy technologies*, 42 U.S. Code § 16391 (a).

² Consolidated Appropriations Act, 2021, Public Law 116–260, 116th Cong. (December 27, 2020), 134 Stat. 2597, Sec. 9003. <https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf>.

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.

PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &

INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

developed energy-related technologies and IP make it to market as a result of, and in connection with, the strengthened and improved lab commercialization ecosystem.

DOE recommends that interested National Laboratories read the below background on DOE's TCF efforts and context regarding DOE's approach to TCF to better understand the multiple lab call releases and how they relate to each other. While DOE highly recommends reading the entire lab call, the specific topics addressed under this lab call can be found in Section I.D.

i. Background and Overview

The DOE Technology Commercialization Fund is a primary component of DOE's ongoing effort to commercialize the cutting-edge technologies in which DOE invests. These technologies, developed with taxpayer funding, comprise a portfolio of energy and supporting, enabling technologies that have the potential to improve the lives of Americans and solve many of our country's most pressing energy and environmental challenges.³

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

"The Secretary, acting through the Chief Commercialization Officer established in section 1001(a) of the Energy Policy Act of 2005 (42 U.S.C. 16391(a)), shall establish a Technology Commercialization Fund (hereafter referred to as the 'Fund'), using nine-tenths of one percent of the amount of appropriations made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year, to be used to provide, in accordance with the cost-sharing requirements under Section 988, funds to private

³ DOE Office of Technology Transitions, "Mission." <https://www.energy.gov/technologytransitions/mission-0>.

⁴ Energy Policy Act of 2005, Public Law 109-58, 109th Cong. (August 8, 2005), *Improved technology transfer of energy technologies*, 42 U.S. Code § 16391.

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.

PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &

INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

partners, including national laboratories, to promote promising energy technologies for commercial purposes.”⁵

In 2015, DOE established the Office of Technology Transitions to promote the commercial impact of DOE investments.⁶ One of the first tasks OTT undertook as a new DOE office was management of the TCF. Prior to OTT’s involvement, DOE had not proactively administered the TCF; rather, DOE’s program offices officially met their annual TCF contribution requirements by accounting for investments they had made in cooperative research and development in the previous year.

Congressional feedback in 2014 indicated that DOE’s TCF process up to that point had not fully met the spirit and intent of the EAct05 and requested that OTT take on the responsibility of designing and managing a proactive TCF program. Beginning in 2015, OTT’s centralized management allowed for a more comprehensive and strategic approach to the TCF.

From 2015 through 2021, OTT served primarily as an administrator for the TCF, coordinating with program offices and managing a standardized TCF process across all DOE program offices. During this time, the program offices retained oversight of the TCF projects, which resulted in different approaches and levels of engagement.

EAct 2005, Section 1001 first authorized/mandated the TCF, as well as other technology transfer functions at DOE, and was amended to more fully articulate commercialization and technology transfer in the Energy Act of 2020 Sec 9001(a),⁷ which also established a DOE Chief Commercialization Officer to address articulated goals.

Further, the Energy Act of 2020 Sec 9001(g)⁸ directed OTT to develop additional technology transfer programs to:

⁵ Consolidated Appropriations Act, 2021, Public Law 116–260, 116th Cong. (December 27, 2020), 134 Stat. 2597, Sec. 9003. <https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf>.

⁶ U.S. Department of Energy, *Technology Transfer Execution Plan 2016–2018*. (Washington, D.C.: DOE, 2016). <https://www.energy.gov/sites/prod/files/2016/10/f33/TTEP%20Final.pdf>.

⁷ 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>.

⁸ *Id.*

OFFICE OF
Technology Transitions

- (1) support regional clean energy innovation systems;
- (2) support clean energy incubators;
- (3) provide small business vouchers;
- (4) provide financial and technical assistance for entrepreneurial fellowships at National Laboratories;
- (5) encourage students, energy researchers, and National Laboratory employees to develop entrepreneurial skill sets and engage in entrepreneurial opportunities;
- (6) support private companies and individuals in partnering with National Laboratories; and
- (7) 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.”⁹

The EA 2020 changes have enabled DOE to broaden its strategy to improve critical commercialization programming and represented an opportunity to talk to the key stakeholders in the program offices as well as assess the options available to DOE regarding TCF. In spring 2021, OTT began discussions with DOE program offices and technology managers, as well as laboratory stakeholders that participate in the TCF, to discuss the historical TCF process and explore potential areas for improvement afforded by the EA 2020 amendment. These discussions resulted in a new approach to TCF that was implemented in FY22 and is being improved upon for FY23.

ii. Vision for FY23 TCF and Moving Forward

U.S. leadership in innovation requires a comprehensive approach to technology development and commercialization—one that starts at research and development

⁹ Id.

OFFICE OF
Technology Transitions

(R&D) and ends at the market by moving through demonstration and deployment—the RDD&D continuum.

Now, more than ever, government has an essential role to play by providing a fertile environment for this ecosystem to thrive. Other countries are developing sophisticated, integrated strategies to leverage their R&D and industrial capabilities to get a leg up in the global economy. Getting ahead means pulling every lever available and doing it responsibly and with purpose.¹⁰

In this vein and building on the FY22 “Core Laboratory Infrastructure for Commercialization” lab call, OTT worked with multiple program offices to develop this lab call focusing on “Core Laboratory Infrastructure for Commercialization for Market Readiness (CLIMR).”

While many program offices have elected to collaboratively develop this joint lab call, several others have taken the opportunity to leverage DOE’s TCF Program flexibility and use their TCF funding in more program-specific ways. In each case, the focus of DOE TCF funding for this lab call remains on directly funding DOE National Laboratories to enable the promotion and commercialization of laboratory technologies.

The goal for FY23 is to identify opportunities to amplify what has worked and continue to make progress on improving the lab commercialization ecosystem DOE’s approach to the TCF offered program offices the following two options for deciding how to obligate their FY23 TCF funding:

1. **Customized, Technology-Specific Commercialization Programs:** DOE program offices were given the opportunity to develop their own proposed use of TCF funding that meets the statutory requirements of TCF. These proposed activities can leverage or expand existing technology-specific commercialization programs or create new ones. However, programs must coordinate these activities with OTT, and the focus must remain on funding to National Laboratories to promote the commercialization of DOE-funded technologies.

¹⁰ Dobni, C. Brooke. “Achieving synergy between strategy and innovation: The key to value creation.” *International Journal of Business Science and Applied Management* 5, no. 1 (2010).

OFFICE OF
Technology Transitions

2. **OTT-led, Joint “Core Laboratory Infrastructure for Commercialization for Market Readiness (CLIMR)” Lab Call:** DOE program offices were given the opportunity to work with OTT and develop a multiple program office joint lab call that combines available appropriated TCF funding to address systemic challenges, core barriers, and known gaps impeding DOE National Laboratory commercialization of promising energy technologies.¹¹ For FY23, the joint lab call will also seek proposals from Labs to advance the commercialization of individual energy-related technologies.

This lab call is being issued by DOE’s Office of Technology Transitions; the Office of Electricity (OE); the Office of Fossil Energy and Carbon Management (FECM); the Office of Nuclear Energy (NE); and the Office of Energy Efficiency and Renewable Energy’s (EERE’s) Geothermal Technologies Office (GTO), Hydrogen and Fuel Cell Technologies Office (HFTO), Solar Energy Technologies Office (SETO), Water Power Technologies Office (WPTO), and Wind Energy Technologies Office (WETO).

The program offices that have elected to pursue the Customized, Technology-Specific Commercialization Programs option this fiscal year can be found in Appendix B, along with their expected lab call release dates for those efforts.

Moving forward, OTT and all DOE program offices expect to learn from this FY23 approach and will incorporate lessons learned into future fiscal year TCF approaches and lab calls. The goal for all TCF lab calls and resulting projects or programs, as set forth in TCF’s authorizing statute, will continue to be “promoting promising energy technologies for commercial purposes.”

¹¹ Secretary of Energy Advisory Board, *SEAB Innovation Working Group Initial Findings* (Washington, D.C: DOE, 2020). www.energy.gov/sites/prod/files/2020/05/f74/SEAB_Inno_Preliminary%20Findings%20%28Final%29.pdf.

B. Timeline and Process Logistics

Timeline

KEY DATES	
Lab Call Release Date	December 14, 2022
Informational webinar for lab call overview	January 4, 2023, 1 p.m. (ET)
Informational webinar on diversity, equity, inclusion, and accessibility (DEIA) for FY23 TCF proposals	January 4, 2023, 2:30 p.m. (ET)
PROPOSAL DEADLINE AND DECISION DATES	
Submission deadline for concept papers (see Section II.A.i.)	January 25, 2023, 3 p.m. (ET)
Encourage/Discourage decisions on concept papers back to labs	February 17, 2023
Submission deadline for full applications (see Section II.A.ii.)	March 17, 2023, 3 p.m. (ET)
Expected date for selection notifications	Q3 FY23

Process Logistics

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

QUESTIONS DURING OPEN LAB CALL PERIOD: Specific questions about this lab call should be submitted by emailing TCF@hq.doe.gov. Answers to frequently asked questions (FAQs) for this lab call can be found at <https://ott-exchange.energy.gov/>. Answers to frequently asked questions for the Exchange system can be found at <https://eere-exchange.energy.gov/FAQ.aspx>. To view announcement-specific questions, applicants must first select the specific lab call number. OTT will attempt to respond to a question within three business days unless a similar question and the answer have

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

already been posted on the website. It is the expectation of DOE that applicants to this lab call will review the FAQs before submitting a question. Questions related to the registration process and use of the website should be submitted to EERE-ExchangeSupport@hq.doe.gov. Please include the lab call title and number in the subject line. To ensure fairness for all lab participants, any questions directed to individual DOE staff will be forwarded to TCF@hq.doe.gov for processing.

C. Key Considerations and Requirements

i. Available Funding

At the time of this solicitation release, Congress has not yet passed a full FY23 DOE appropriated budget. The estimated budget below is based on FY22. The total funding amount available for FY23 will be adjusted accordingly once an official FY23 DOE budget is passed. Based on FY22, approximately \$17.3M–\$20.4M in annual funding is expected to be available to fund all projects solicited in this lab call pending FY23 appropriations, program direction, and go/no-go decision points.

Estimated DOE Funding Available: \$17.3M–\$20.4M

Program	Funding Range (Millions)
Office of Electricity	\$1.5–\$1.8
Office of Energy Efficiency & Renewable Energy	\$5.8–\$7.3
Geothermal Technologies Office	\$0.9–\$1.0
Hydrogen and Fuel Cell Technologies Office	\$0.9–\$1.3
Solar Energy Technologies Office	\$2.1–\$2.5
Water Power Technologies Office	\$1.2–\$1.5
Wind Energy Technologies Office	\$0.7–\$1.0
Office of Fossil Energy and Carbon Management	\$2.0–\$2.3
Office of Nuclear Energy	\$8.0–\$9.0

Estimated number of projects: 5–15

Estimated project duration: 1–3 years

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

Budget per project: For the Core Laboratory Infrastructure for Commercialization topics (Topics 1, 2, 3, 5, and 6), DOE is highly encouraging multi-lab collaboration, and the below scale should be followed for the suggested budget per project. All Offices involved in this lab call plan to contribute funds towards Topics 1, 2, 3, 5 and 6. There are no budget limitations for Topic 4.

It is DOE's expectation 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 budget. The multi-lab collaboration, and how it will work, should also be described in the full application. The table below reflects DOE's interest in funding multiple labs to address shared commercialization challenges. Single-lab solutions are of interest; however, to be selected for larger funding amounts, this table suggests that labs should collaborate, and the proposed solutions must be applicable across the collaboration.

Suggested Budgets for Topics 1, 2, 3, 5, and 6

Number of Labs Fully Engaged on Project	Proposed Budget, First Year	Proposed Budget, Additional Years
1	\$250,000	
2	\$600,000	\$300,000
3	\$1,050,000	\$600,000
4+	\$1,500,000	\$750,000

ii. Size, Scope, and Number of Selections

The budget size, tasks, and scope of proposed projects can be adjusted by DOE during selections and negotiations. The number of selections will depend on the number of meritorious proposals and the availability of congressionally appropriated funds in DOE program offices participating in this lab call.

iii. Cost-Share

This lab call is subject to Section 988(b)(3) of the Energy Policy Act of 2005 regarding cost-share. DOE prefers all funded projects to meet 50% of the total project cost-share fund requirement; however, DOE acknowledges that some potentially high-impact proposed projects may not be able to meet this requirement. In this case and following

OFFICE OF
Technology Transitions

the requirements by topic below, labs may apply with less than 50% cost-share so that DOE can see the full universe of high-quality proposals. The scoring criteria reflect that providing cost-share will increase the likelihood of selection. While DOE highly recommends reading the entire lab call, the specific topics (Topics 1, 2, 3, 4, 5, and 6) mentioned below can be found in Section I.D. and are available to be funded.

- DOE has approved a Cost-Share Waiver for topics 1.b, 2.b, 3.b, 4.b, 4.c, 5.b, and 6.b of this lab call (full topic descriptions below). Projects applying under all subtopics 1.b, 2.b, 3.b, 4.b, 4.c, 5.b, and 6.b are not required to cost-share nonfederal funds of at least 50% of the total project cost to apply. This was done to ensure all project ideas can apply and the most impactful mix of projects can be selected.
- Each proposal that applies to a subtopic (a) commits to meet the 50% of total project cost-share funds requirement. Each proposal that applies to a subtopic 1.b, 2.b, 3.b, 5.b, and 6.b may propose to meet less than the 50% of total project cost-share funds requirement.
- Proposals that apply to subtopic 4.b must meet 20% of the total project cost-share funds. Proposals that apply to subtopic 4.c must meet 10% of the total project cost-share funds. Further details on the criteria for subtopics 4.b and 4.c are listed in the Topic 4 description (see Section I.D.iv.).
- DOE will evaluate the level of external industry engagement and collaboration as evidence by cost-share to ensure maximum impact of the selected projects. The selection official may determine that a subtopic (b) proposal would be selected except that the proposal does not provide adequate cost-share given the commercial nature of the project activities. In such cases, applicants would be provided the opportunity to increase their cost-share to the default level, and project selection would be contingent on the lab(s) committing to 50% cost-share for the project. If the lab(s) decline, DOE will not fund the project. This does not apply to subtopics 4.b and 4.c
- In addition, the selection official may establish a negotiation strategy that involves increasing cost-share for subtopic (b) applicants that lack adequate cost-share given the commercial nature of the project activities. Applicants

OFFICE OF
Technology Transitions

would be provided the opportunity to increase their cost-share, and successful project negotiations could be contingent on the lab(s) committing to an increased cost-share for the project. Labs will have the opportunity to accept or decline an adjustment in cost-share. If the lab(s) decline, DOE may not fund the project. This does not apply to subtopics 4.b and 4.c.

- For Topics 1.a, 2.a, 3.a, 4.a, 5.a, and 6.a, the nonfederal cost-share must be at least 50% of total project costs by the conclusion of the project. DOE reserves the right to require the nonfederal cost-share to be met by the end of each budget period.
- For topics 1.b, 2.b, 3.b, 5.b, and 6.b, DOE will negotiate a cost-share rate, which may be any percentage at or under 50%. The nonfederal cost-share at the end of the award must be at least the established percentage agreed upon at the time of award. DOE reserves the right to require the nonfederal cost-share to be met by the end of each budget period.
- The final cost-share requirements for each proposed project will be set at the time of selection and will not be changed during the life of the award. Cost-share requirements will be established on a budget-period-by-budget-period basis during project negotiations and prior to final project award.

iv. Diversity, Equity, Inclusion, and Accessibility

It is the policy of the Biden Administration that:

“[T]he Federal Government should pursue a comprehensive approach to advancing equity¹² for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the

¹² The term “equity” means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons; Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

OFFICE OF
Technology Transitions

whole of our Government. Because advancing equity requires a systematic approach to embedding fairness in decision-making processes, executive departments and agencies must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

By advancing equity across the Federal Government, we can create opportunities for the improvement of communities that have been historically underserved, which benefits everyone.¹³

As part of this whole-of-government approach, this lab call seeks to encourage the participation of underserved communities¹⁴ and underrepresented groups. Applicants are highly encouraged to include individuals from groups historically underrepresented^{15,16} in STEM on their project teams. Specifically, applicants are

¹³ Executive Order 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government” (Jan. 20, 2021).

¹⁴ The term “underserved communities” refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the definition of “equity.” E.O. 13985. For purposes of this lab call, as applicable to geographic communities, applicants can refer to economically distressed communities identified by the Internal Revenue Service as Qualified Opportunity Zones; communities identified as disadvantaged or underserved communities by their respective states; communities identified on the Index of Deep Disadvantage referenced at <https://news.umich.edu/new-index-ranks-americas-100-most-disadvantaged-communities/>; and communities that otherwise meet the definition of “underserved communities” stated above.

¹⁵ According to the National Science Foundation’s 2019 report titled “Women, Minorities and Persons with Disabilities in Science and Engineering,” women, persons with disabilities, and underrepresented minority groups—blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are vastly underrepresented in the science, technology, engineering, and math (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://nces.nsf.gov/pubs/nsf19304/digest/about-this-report>). For example, in the United States, Hispanics, African Americans, and American Indians or Alaska Natives make up 24% of the overall workforce, yet only account for 9% of the country’s science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions (<https://www.energy.gov/articles/introducing-minorities-energy-initiative>).

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

OFFICE OF
Technology Transitions

required to reference, if available, the existing laboratory DEIA plan and describe how diversity, equity, and inclusion objectives will be incorporated in the project. Specifically, applicants are required to describe the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project, and the extent to which the project activities will be located in or benefit underserved communities.¹⁷ The proposed project should include at least one SMART (Specific, Measurable, Assignable, Realistic and Time-Related) milestone per budget period supported by DEIA relevant metrics to measure the success of the proposed actions. Please refer to Section II.A.ii. for the full set of application requirements. Because a diverse set of voices at the table in research, design, and execution has an illustrated positive impact on innovation, this implementation strategy for the proposed project will be evaluated as part of the application review process.

Further, Minority Serving Institutions,¹⁸ Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, Veteran Owned Businesses, or entities located in an underserved community that meet the eligibility requirements are encouraged to participate in an application as a proposed partner to the prime applicant. The Selection Official may consider the inclusion of these types of entities as part of the selection decision. Please refer to Section II.B.i., Merit Review & Selection Process, for review criteria.

(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.

¹⁷ For more information, please see [DOE’s Office of Economic Impact and Diversity website](#).

¹⁸ Minority Serving Institutions, including Historically Black Colleges and Universities/Other Minority Institutions, as educational entities recognized by the Office of Civil Rights (OCR), U.S. Department of Education, and identified on the OCR’s Department of Education U.S. accredited postsecondary minority institutions list. See <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

OFFICE OF
Technology Transitions

v. National Laboratory Collaboration

DOE strongly encourages projects under Topics 1, 2, 3, 5, and 6 that bring together multiple labs to meet the strategic goals of this lab call to leverage multiple lab capabilities and to scale successful commercialization programs throughout all DOE Labs. To expedite multi-lab partnerships, Appendix C includes all National Lab Technology Transfer Office (TTO) Points of Contact (POCs).

vi. Teaming Partner List

To the extent possible and appropriate, DOE also seeks multi-lab projects that involve industry engagement or industry partners as well, to enhance the “market pull” aspects of the commercialization programming.

To expedite external partnerships in support of this lab call, DOE is compiling a “Teaming Partner List” to facilitate the formation of new project teams for this lab call. The Teaming Partner List allows organizations that 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-0000001) on [Exchange](#) and submit the following information: Organization Name, Organization Type, Website, Contact Name, Contact Address, Contact Email, Contact Phone, Area of Expertise, Brief Description of Capabilities, and Applicable Topic and Subtopic. Please refer to the Manuals section on Exchange for more detailed instructions on using the Teaming Partner List.

Disclaimer: By submitting a request to be included on the Teaming Partner List, the requesting organization consents to the publication of the submitted information. By enabling and publishing the Teaming Partner List, DOE is not endorsing, sponsoring, or otherwise evaluating the qualifications of the individuals and organizations that are identifying themselves for placement on this Teaming Partner List. DOE will not pay for

OFFICE OF
Technology Transitions

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

D. Topic Area Descriptions

Persistent barriers and known gaps that deter the commercialization of laboratory technologies continue to exist, and improvements are still needed. The intent of the Core Laboratory Infrastructure for Commercialization topics (Topics 1, 2, 3, 5, and 6 below) are to fill in missing infrastructure pieces and strengthen those already there by addressing core commercialization challenges, barriers, and gaps, as well as their root causes (inside and outside of the labs). Examples of projects funded in FY22 under Topics 1, 2, 3, 5 and 6 can be found on DOE's TCF homepage [here](#). Additionally, for FY23, the lab call will also seek proposals from Labs to advance the commercialization of individual energy-related technologies (Topic 4 below).

This solicitation offers an opportunity for private industry to partner with DOE's National Labs to advance energy-related technologies and Lab IP toward commercialization and to reduce the barriers to commercializing Lab developed energy-related technologies and IP. The intent is to increase the volume and speed to which Lab developed energy-related technologies and IP make it to market as a result of, and in connection with, the strengthened and improved lab commercialization ecosystem.

DOE encourages multi-lab teams to address more than one topic across Topics 1, 2, 3, 5, and 6 in an interwoven, holistic approach. In this case, all topics and subtopics that the team believes are addressed by the proposal should be listed on the title page, and the interconnectedness should be highlighted in the proposal itself. The proposal will be reviewed and evaluated under all respective topics indicated.

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.ii. on Impact Tracking to ensure these metrics and tracking requirements are built into any proposals. DOE highly encourages labs to partner with external organizations and private companies, as such partners may have deep knowledge and experience performing many of the activities described in the topics, some may have already built needed components under many of the topic areas below, and some may help advance DOE's DEIA goals.

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

As outlined in Section I.C. on cost-share funds, and to better facilitate identifying which projects meet the 50% cost-share funds requirement and which do not, Topics 1, 2, 3, 5, and 6 have two subtopics under which labs may apply. Each proposal that applies to subtopic (a) commits to meet the 50% of total project cost-share funds requirement. Each proposal that applies to subtopic 1.b, 2.b, 3.b, 5.b, and 6.b may propose to meet less than the 50% of total project cost-share funds requirement. Proposals that apply to subtopics 4.b and 4.c must meet 20% and 10%, respectively, of the total project cost-share funds requirement and the specific criteria listed in the Topic 4 description, below.

i. Topic 1: Market Needs Assessment

DOE RDD&D investments in National Laboratories generate a large amount of IP. However, the degree to which this IP is aligned to specific market and industry needs is inconsistent and at times unknown. For DOE energy technologies to reach their full potential and impact, they need to be developed with a clear understanding of their utility and potential impact to industry.

This topic will seek proposals from Labs and partner organizations to develop cross-lab industry- and sector-specific “market needs-assessment” capabilities to identify and understand emerging market needs and the related technology solutions that are needed for commercial purposes. This program should also assess the industry-specific technology market needs for clean generation and a secure and modernized energy infrastructure to meet the administration goal to equitably transition the U.S. economy to net-zero greenhouse gas emissions no later than 2050. DOE strongly encourages applicants to partner with external organizations on proposals for this topic.

Ideal programs will integrate market pull into new R&D development, thinking, and program strategy, forming a conduit of market insight and awareness. Outcomes of proposed projects could inform DOE and lab policies and programs that accelerate the commercial adoption of critical technologies. This integration of strategic priorities and market understanding would strengthen the DOE and National Lab Complex’s ability to support market-needed innovation.

Scalability and adaptability should be clear considerations for proposals in this topic area, as the innovation ecosystem is expected to continue to expand and evolve rapidly over the coming decades.

OFFICE OF
Technology Transitions

Subtopic 1.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 1.b: Proposals meet less than the 50% of total project cost-share funds requirement.

ii. Topic 2: Curation of Intellectual Property

Once market and industry needs have been identified in particular sectors, potential promising energy technologies for commercial purposes can be identified and pursued. A seamless, quick process of curating relevant government-owned IP to support and enhance developing technologies is a key element of promoting promising energy technologies for commercial purposes in a timely, market-relevant manner, such as in support of [DOE's Energy Earthshots Initiative](#).

This topic will seek bold ideas and significant improvements in how Labs bring their IP to market. Ideas could include enhanced information sharing, IP marketing, or other efforts to curate Lab IP but should generally focus on ensuring Lab-created IP supports solutions to timely energy technology problems. This topic seeks to innovate how Labs connect Lab-created IP with private sector partners. DOE strongly encourages applicants to incorporate findings of the market needs assessment in their proposals as described in Topic 1.

Proposed projects could build on and expand successful, existing activities and programs already underway by labs' TTOs, such as [Pacific Northwest National Laboratory's exploratory license](#) option. Proposals in this topic area are sought for programs and activities above and beyond existing lab efforts and/or to expand successful programs across the entire National Laboratory Complex.

If building on and expanding existing programs, any proposal covering this topic will need to provide an overview on how the proposed program differs from existing activities and/or how it will be expanded across labs. Additionally, proposed programs should help address root causes (inside and outside of the labs) of existing lab technology commercialization challenges and barriers, such as (but not limited to) complex IP access and/or barriers in finding partners. Proposals should consider leveraging existing resources developed in this space, such as the Lab Partnering

OFFICE OF
Technology Transitions

Service¹⁹ and/or tools that utilize artificial intelligence or natural language processing. Thus, proposed projects that find ways for these tools to be used in more impactful ways will likely better address the scoring criteria in Section II.B.i. than those proposing tools that are redundant or duplicative to tools already in existence.

Creativity is highly encouraged. DOE encourages the labs to work together to connect across programs and across labs when possible to provide a more united and consistent approach to readying IP for external partners. DOE strongly encourages applicants to partner with external organizations on proposals for this topic.

It is envisioned that programs under this topic would include, at a minimum:

- Assessing the relevant cross-lab IP opportunities
- Understanding the level of historical and present knowledge at the labs relevant to these inventions
- Gauging the interest level of the inventors in engaging in commercialization activities as well as the relative maturity and risk profile of the IP
- Vetting with external industry, such as (but not limited to) via an advisory board or with industry partners under the program
- With an informed understanding of industry needs, identifying the assets that are most relevant to these industry needs and their IP protection status.

Under this topic, proposed program IP reporting to the relevant DOE program offices will be required on a periodic basis, which could include, but not be limited to, updates on the following: overviews of the industry sectors and partners interested in the curated IP, possible applications of the IP both within and outside of the program office that funded its development, possible improvements requested by industry for full adoption of the IP, and feedback on the potential workforce needs that may result from implementing such IP at scale.

Proposals should incorporate this topic-specific required reporting and feedback mechanism into the proposed project plan to improve processes and matchmaking

¹⁹ <https://www.labpartnering.org/>.

OFFICE OF
Technology Transitions

effectiveness over time. These topic-specific reporting requirements are in addition to all impact-tracking requirements for all topics and proposals under this lab call.

Subtopic 2.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 2.b: Proposals meet less than the 50% of total project cost-share funds requirement.

iii. Topic 3: Matchmaking

Successful technology commercialization is never simply about having the right technology; it requires having a team with the right vision, skills, and ambition to bring that technology to market.

Once multiple IP portfolios have been developed and vetted against market needs and industry interest, teams must be built to commercialize the selected IP and then take the necessary actions to bring the new IP-integrated product to market. This topic will seek proposals from Labs to create or expand business incubation programming that will result in the creation of teams that will move Lab IP to market. Programming could include recruitment of talent outside of the Lab, matchmaking programs to connect entrepreneurs with Lab staff and resources, and additional support that will yield commercialization of promising, Lab-created IP.

However, matching and building the team alone is not sufficient. Proposals should also address the additional, needed programming and services such as business plan support, funding, business expertise and mentoring, investor and corporate connections, etc., that teams need as they bring their new product to market. DOE strongly encourages applicants to partner with external organizations on proposals for this topic. DOE also strongly encourages applicants to incorporate connections to programming in their proposals as described under Topics 1 and 2.

Competitive proposals in this space would seek to leverage and learn from previous and existing relevant DOE programs as well as existing programs outside of DOE such as the Defense Advanced Research Projects Agency's Embedded Entrepreneurship Initiative,²⁰ and may involve scaling programs across multiple labs. There are several external-to-lab

²⁰ <https://eei.darpa.mil/>.

OFFICE OF
Technology Transitions

programs in this area that could also be leveraged, built on, and expanded across the National Laboratory Complex.

Areas of interest for this subtopic include but are not limited to the following:

- Proposed programs to find qualified entrepreneurs who have the right experience (e.g., in scaling energy hardware technology) and then provide the programming and services, such as business plan support, funding, business expertise and mentoring, investor and corporate connections, etc., for these entrepreneurs to take the needed actions to move the new IP-integrated product to market.
- Incubators, accelerators, and other entrepreneurial support programs that are crucial to the innovation ecosystem, as they help innovators and small businesses further develop their technologies and products toward market adoption, incorporate and grow their businesses, help in attracting capital, and provide networking and support. Proposed projects could consider how to better leverage these networks and develop a program for pairing lab-developed IP with commercialization partners (e.g., qualified entrepreneurs, corporate partners, manufacturers, industry leaders, and natural language processing tools).
- Akin to the medical field's residency hospital match programs, proposed projects could identify how to best curate applications from interested entrepreneurs at a national level and then match the applicants to the most relevant lab physical assets, lab principal investigators (PIs), and lab IP. These matched teams could then be provided the programming and services needed to bring their new IP-integrated product to market.
- Applications should explain how to assess and mitigate conflicts of interest and challenges with leave that may arise when lab staff seek to start their own companies with lab technology, either leveraging existing processes or developing a novel streamlined process.
- Proposed projects could include new and innovative initiatives that accelerate the process of matching external teams with labs and their respective IP to

OFFICE OF
Technology Transitions

commercialize the selected IP as well as new and innovative programming and services that these matched teams would need.

Subtopic 3.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 3.b: Proposals meet less than the 50% of total project cost-share funds requirement.

iv. Topic 4: Technology Specific Partnerships

This topic will seek proposals from Labs to advance the commercialization of individual energy-related technologies. Projects funded under this topic will need to incorporate Lab-created IP and be at a stage that will generate private sector interest. The FY22 TCF Core Laboratory Infrastructure for Commercialization Lab Call did not accept proposals under this topic; however, proposals will be accepted under this topic in FY23.

Applications must demonstrate clear evidence of commercial potential that combines technology progress with market pull or interest. Examples of evidence of technology progress include:

- Demonstrated analytical and experimental proof of concept in a laboratory environment
- Experiments or modeling and simulation validating the functional performance of the technology

Examples of evidence of market pull or interest include:

- Market analysis demonstrating the technology's current or expected future cost and/or performance advantages vis-a-vis incumbent or competing technologies
- Demonstrated interest from private industry partners or investors

Ideal applications will include technologies with identified utility and potential impact to industry, market viability, and a clear commercialization path forward. Key milestones for applications under this topic must be commercialization focused, not technology focused, and demonstrate a clear understanding of barriers to commercial adoption (e.g., market entry barriers, regulatory barriers, supply chain barriers) and how they can be overcome.

OFFICE OF
Technology Transitions

The application must address what the project intends to accomplish in terms of advancing the technology's readiness for commercialization. Applications must clearly demonstrate the market need the technology will meet, differences that make the technology more competitive than similar technologies, and the feasibility of moving the technology to market. The pathway for the technology beyond TCF funding should also be clearly identified for proposals in this topic. Applications should identify any risks associated with commercializing the technology and the ways the proposed project will mitigate the risks involved.

There must be a clear articulation that the project team, industry partners, and resources are qualified and capable of successfully completing the project. This includes articulating both the facility and private-partner roles, tasks, and activities throughout the project.

Proposals should describe which activities need to be undertaken to achieve the commercialization goals of the project. There must be a clear explanation of the current state of the technology, as well as the anticipated state of the technology at the end of the project. To the degree they can be anticipated, the applicant should explain any technical challenges and unanswered technical questions that must be addressed to reach commercialization of the technology. There should be an explanation of any complementary technology(ies) necessary for the proposed technology to function and to have relevance in the market.

Applications including team members who have completed Energy I-Corps or similar programs are strongly encouraged.

Applicants with active projects seeking additional funding to complete their original scope of work are excluded from applying under this topic unless a new scope of work is proposed that meets the intent of this lab call. Determining what that could mean (a phase II effort, a different market, etc.) is at DOE's discretion, but the intention is that applicants cannot use this lab call to ask for additional funding on an existing project.

Areas of interest for this topic are limited to applications that address one or more of the technology missions listed below. Applicants should consult the mission statement for the program(s) they are seeking funding from. Applications from Labs centered on technologies developed under DOE consortia are encouraged but not required.

OFFICE OF
Technology Transitions

Crosscutting technology applications are also highly encouraged. Applications must fully demonstrate direct relevance to two or more technologies. Crosscut applications must fully demonstrate how the proposed project addresses each listed technology area. DOE reserves the right to move crosscut concepts to a single technology area or to move concepts submitted for a single technology area to the crosscut category.

Subtopic 4.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 4.b: Proposals commit to cost-share at least 20% of total project cost. To be eligible for this subtopic, labs must be partnered with a small business(es) as defined by the U.S. Small Business Administration.²¹

Subtopic 4.c: Proposals commit to cost-share at least 10% of total project cost. To be eligible for this subtopic, labs must be partnered with domestic institutions of higher education; domestic nonprofit entities; U.S. state, local, or tribal government entities; or small businesses that are also certified as veteran-owned; women-owned; lesbian, gay, bisexual, transgender (LGBT)-owned; or otherwise disadvantaged businesses by the U.S. Small Business Administration;²² members of the National LGBT Chamber of Commerce;²³ or verified Veteran-Owned by the Veterans Administration.²⁴

Cost-share is calculated based on the total project cost. Cost-share may be in-kind or cash, but cash cost-share is strongly encouraged. Cost-share from other DOE offices or federal agencies is not permitted. Proposals submitted with a higher degree of funds-in cost-share will have a greater likelihood of being considered for an award.

National laboratories and qualified partners are sought to participate in collaborative projects in one or more of the research areas described in the Areas of Interest (AOI) section below. Projects must include one or more national laboratories and shall also

²¹ U.S. Small Business Administration, "Size Standards." <https://www.sba.gov/federal-contracting/contracting-guide/size-standards>.

²² U.S. Small Business Administration, "Welcome to certify.sba.gov." <https://certify.sba.gov/>.

²³ National LGBT Chamber of Commerce, "LGBT-Owned Business Enterprise Certification." <https://www.nglcc.org/get-certified>.

²⁴ U.S. Department of Veterans Affairs, "Vets First Verification Program." <https://www.va.gov/osdbu/verification/>.

OFFICE OF
Technology Transitions

include partners from one or more of the following: industry, universities, nonprofits, institutes, codes and standards organizations, associations, and other relevant stakeholders. Multiple collaborative projects are sought under this solicitation, subject to the availability of funding.

[Skip to Topic 5: Streamlining Laboratory Processes and/or Requirements](#)

Areas of Interest (AOI)

AOI 1: Office of Electricity

The Office of Electricity (OE) leads the Department’s efforts in developing new technologies to strengthen, transform, and improve electricity delivery infrastructure so consumers have access to resilient, secure, and clean sources of electricity. OE provides solutions to technical, market, institutional, and operational failures that go beyond any one utility’s ability to solve. To accomplish this critical mission, OE engages stakeholders throughout the sector on a variety of innovative technology solutions to modernize the electric grid and enhance key characteristics of the U.S. electric transmission and distribution systems:

- Resilience—the ability to withstand and quickly recover from disruptions and maintain critical function
- Security—the ability to protect system assets and critical functions from unauthorized/undesirable actors
- Reliability—consistent and dependable delivery of high-quality power
- Flexibility—the ability to accommodate changing supply and demand patterns and new technologies
- Affordability—more optimal deployment of assets to meet system needs and minimize costs
- Efficiency—low losses in electricity delivery and more optimal use of system assets
- Energy justice—investing in research and development that addresses energy resilience in disadvantaged and energy-burdened communities.

To effectively achieve a carbon-pollution-free power system by 2035, certain research technologies must be accelerated and commercialized. OE seeks proposals in the following topical areas:

OFFICE OF
Technology Transitions

- **Grid Scale Energy Storage**—Commercialization of tools and technologies that enable the financing and mass deployment of novel (nonlithium) long-duration energy storage technologies. Storage is emerging as an integral component to grid modernization to provide a diverse range of services, including energy management, backup power, load leveling, frequency regulation, voltage support, and grid stabilization.
- **Resilience and Risk Assessment Capabilities**—Commercialization of technologies, tools, and analytical platforms to enable assessment of risks and uncertainty, and evaluation and implementation of effective prevention and mitigation strategies. Hazards could include wildfires, drought, and other climate and weather-related events.
- **Distribution System Innovations**—Commercialization of transformative technologies, tools, and techniques to enable industry to modernize the distribution system, support transformation of the electric grid through the growing convergence of transmission and distribution portions of the electricity delivery system with the grid edge and develop solutions that enable consumers to participate in the clean energy economy. This includes simulation technologies that advance scalable management and control/coordination approaches.

AOI 2: EERE Geothermal Technology Office

The Geothermal Technologies Office (GTO) works to reduce costs and risks associated with geothermal development by supporting innovative technologies that address key exploration and operational challenges. GTO seeks any proposal that fits the mission of its programs.

AOI 3: EERE Hydrogen and Fuel Cell Technology Office

The Hydrogen and Fuel Cell Technologies Office (HFTO) focuses on research, development, and demonstration of hydrogen (H₂) and fuel cell technologies across multiple sectors enabling innovation; a strong domestic economy; and a clean, equitable energy future. HFTO seeks proposals in the following topical areas:

OFFICE OF
Technology Transitions

1: Commercialization of Hydrogen Infrastructure Components and Hardware

HFTO conducts RD&D to lower the cost and improve the reliability of hydrogen distribution, storage, and dispensing technologies critical to support and enable commercialization of hydrogen fueling for medium- and heavy-duty (MD/HD) vehicles in on- and off-road applications. MD/HD vehicle applications are expected to require from 20 to more than 100 kg of hydrogen to be fueled in 10 minutes or less (average rate of ≥ 10 kg H₂/minute, peak rates of ≥ 20 kg H₂/minute).²⁵ Daily station dispensing capacities are expected to be measured in tons of hydrogen per day. These requirements significantly exceed those for light-duty vehicles, which typically refuel less than 5 kg H₂ per fill-up, at average rates of less than 2 kg H₂/minute, and with station dispensing capacities of less than one metric ton of hydrogen per day. The target cost for delivery and dispensing of hydrogen in MD/HD vehicle applications is \leq \$5/kg H₂ by 2025. Currently, both compressed hydrogen (at pressures of up to 700 bar onboard storage and 875 bar dispensing) and liquid hydrogen are being investigated as onboard storage options. Due to the high station capacities and potential use of liquid hydrogen for onboard storage, liquid delivery and storage at fueling stations is expected. Use of liquid hydrogen, with the need for very low-temperature cryogenic storage, increases the concern of potential venting and loss of hydrogen to the environment and its potential global warming impact. Hydrogen exposure is also known to negatively affect the performance of many materials, potentially leading to premature failure. It is therefore necessary to understand and account for hydrogen effects on any material used in components used in hydrogen applications. Safety and reliability need to be a primary consideration in the design, selection, and use of any material and component used with hydrogen.

Improved, advanced technologies are needed throughout the delivery, storage, and dispensing pathway for hydrogen refueling of MD/HD vehicles. This subtopic seeks applications for collaborative efforts that involve industrial partners working with national laboratories to further develop and commercialize hydrogen infrastructure technologies that address the needs for hydrogen delivery, storage, and dispensing for MD/HD vehicle applications. Potential infrastructure components of interest include but are not limited to liquid cryopumps; meters; nozzles/receptacles; hoses; high-

²⁵ See, for example: <https://www.nrel.gov/news/program/2022/fast-flow-future-heavy-duty-hydrogen-trucks.html>.

OFFICE OF
Technology Transitions

throughput compressors; cascade storage systems; and fast response, high-capacity mass flow meters. Also of interest are strategies to eliminate or mitigate hydrogen loss resulting from venting, purging, or boil-off from lines, pumps, and storage vessels.

All proposed hydrogen infrastructure hardware and components need to be rated for operating temperatures between -40°C to $+85^{\circ}\text{C}$, except for liquid hydrogen components which must also be suitable for the applicable liquid hydrogen service. Refueling hardware must be capable of average hydrogen flows of at least $10\text{ kg H}_2/\text{min}$, and $20\text{ kg H}_2/\text{min}$ peak. Components for high-pressure refueling must be rated for service pressures of at least the 875 bar fueling pressure, but typically at least 1,000 bar. Applications must describe the technology and components to be developed and commercialized, and provide cost and performance targets.

2: Commercialization of High-Efficiency, Low-Cost Intermediate Temperature Solid Oxide Electrolyzers (IT-SOEs)

Commercial High Temperature Solid Oxide Electrolyzers (HT-SOEs) are almost exclusively constructed using cells with Yttria Stabilized Zirconia (YSZ)-based electrolytes. These HT-SOE systems benefit from the high mechanical strength of the YSZ-based cells, and the nearly pure ionic (O^{2-}) conductivity of the electrolytes but require operation at high temperature ($>700^{\circ}\text{C}$, typically 800°C) to ensure adequate electrolyte conductivity and reasonable cell performance ($1.0\sim 1.5\text{ A}/\text{cm}^2$). These operating temperatures place strict materials requirements on the HT-SOE stack components and balance of plant (end plates, interconnects, manifolding, etc.), requiring high-cost, high-performance, and difficult-to-machine steel alloys to withstand high operating temperatures.

Recent advancements in mixed ionic electronic conducting (MIEC) ceramics have demonstrated dramatic improvements in ionic conductivity at lower temperatures, with sufficient ionic conductivities (H^+ , O^{2-}) for electrochemical cells beginning at temperatures as low as 400°C .²⁶ Electronic conductivity, while present, is readily suppressed through careful operating point selection or inclusion of an additional thin electrolyte layer with high ionic but low electronic conductivity. Such MEIC electrolytes allow for intermediate temperature ($400^{\circ}\text{C}\text{--}600^{\circ}\text{C}$) operation and stack construction

²⁶ See, for example, work with [HydroGEN Advanced Water Splitting Materials Consortium \(h2awasm.org\)](https://www.h2awasm.org) and [Hydrogen from Next-generation Electrolyzers of Water \(h2new.energy.gov\)](https://www.h2new.energy.gov)

OFFICE OF
Technology Transitions

with low-cost steels. The improved low-temperature conductivity performance arises from fundamentally weaker intermolecular bonds than YSZ, requiring some process redesign to accommodate the lower mechanical strength of the MEIC materials. Deliberate selection and application of the electrolyte materials combined with recent advances in electrolyte/electrode interface engineering have demonstrated efficient cells with high current densities ($>3 \text{ A/cm}^2$), creating an opportunity for high-power-density, lower-cost IT-SOE systems capable of exceeding the performance and costs of current commercial HT-SOE systems.²⁷

This subtopic seeks applications for collaborative efforts that involve industrial partners working with national laboratories to incorporate recent advancements in materials composition, sintering behavior, multilayer electrolytes, interface engineering, and/or other developments into commercially viable IT-SOE systems. Such IT-SOE systems must offer hydrogen-production cost advantages over HT-SOE systems, aiming to achieve the Hydrogen Shot's cost target of \$1/kg H₂ by 2031.

The proposed work is not restricted to a specific ionic species, and proposals for either proton (H⁺) or oxide ion (O²⁻) conducting electrolytes are acceptable. Proposals that include improving materials processability during manufacturing, improved thermal processing techniques during electrolyte sintering/densification, interface engineering and optimization, cell durability under operation, and cell/stack tolerance to changing operating conditions are encouraged. Proposed work should present in detail the current state of the art of the cell architecture being implemented, along with projected impacts on performance and cost from the proposed collaboration.

3: Commercialization of Sensors for Hydrogen Leak Detection, Analysis, and Mitigation

HFTO conducts RD&D that informs hydrogen safety, codes, and standards, including the development, validation, and deployment assessments of sensors for safety applications according to the technical targets outlined in the Multi-Year Research, Development and Demonstration Plan.²⁸ Recently, the HFTO sensor RD&D activities have expanded to include sensor development and validation for the purpose of monitoring hydrogen leakage and emissions impact, addressing technical gaps identified at the Clean

²⁷ See, for example, [Revitalizing interface in protonic ceramic cells by acid etch](#).

²⁸ [Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan - Section 3.7 Hydrogen Safety, Codes and Standards \(energy.gov\)](#).

OFFICE OF
Technology Transitions

Hydrogen JU Expert Workshop on Environmental Impacts of Hydrogen, co-hosted by HFTO and the European Commission.²⁹

In line with the workshop findings, this subtopic specifically seeks proposals to advance and commercialize lab-developed technologies for analysis and mitigation of hydrogen leakage to ensure safety monitoring and to limit the potential environmental impacts of hydrogen. Mitigating hydrogen leakage can also reduce the cost impact of losses throughout the supply chain.

Applicable areas of interest include sensor and gas analyzer technologies with quantitative measurement capabilities, such as the NREL-developed FCEV exhaust gas analyzer device, or mitigation technologies for capture or recycle of operational hydrogen releases. Also of interest is the advancement of lab-developed sensor technologies originally intended for safety monitoring, such as the Los Alamos National Lab-developed electrochemical sensor, which has the potential to be developed further (e.g., for ppb-level detection).

Example technology scenarios of interest for use of the commercialized sensors include monitoring and mitigation of exhaust gas from fuel cell vehicles, vent stacks associated with stationary fuel cells, or liquid hydrogen boil-off. Modular technologies that can filter or prepare operational releases for hydrogen-specific analysis conditions are also of interest.

AOI 4: EERE Solar Energy Technology Office

The Solar Energy Technologies Office (SETO) accelerates the advancement and deployment of solar technology in support of an equitable transition to a decarbonized economy. SETO is seeking technologies that accelerate photovoltaics (PV) production and improve quality in the following topical areas:

- 1) Innovations that improve PV manufacturing reliability and/or reliability testing
- 2) Innovations that improve PV manufacturing processes (including metrology)
- 3) Innovations that improve PV manufacturing quality (including systems and techniques)

²⁹ [JRC Publications Repository - Hydrogen emissions from a hydrogen economy and their potential global warming impact \(europa.eu\)](https://www.jrc.ec.europa.eu/publications/repository/entry?id=JRC100977).

OFFICE OF
Technology Transitions

- 4) Innovations focused on dual-use, application-, and climate-specific applications (e.g., agrivoltaics, building-integrated solar PV, floating solar PV, vehicle-integrated solar PV)

The below topical areas are not of interest to SETO as part of this solicitation:

- 1) Space, unmanned aerial vehicle, high-altitude spaceship applications
- 2) Internet of things, wearables, consumer electronics
- 3) Applications with product lifetimes below 10 years.

AOI 5: EERE Water Power Technology Office

The Water Power Technologies Office (WPTO) enables research, development, and testing of emerging technologies to advance marine energy as well as next-generation hydropower and pumped storage systems for a flexible, reliable grid. WPTO seeks proposals related to the commercialization of water power technologies.

To advance the state of marine energy and hydropower technologies and reduce costs of electricity and energy served by marine energy and hydropower, commercialization of technologies developed by the national laboratories is critical. Technologies and products developed by the national laboratories seek to advance the industry at large and include applications that could be used by several developers. Additionally, research and IP developed by the labs could help researchers de-risk investments that could result in commercially relevant technologies. Lab PIs are strongly encouraged to work with external partners from industry, end users, communities where these technologies may be deployed, and other relevant groups.

AOI 6: EERE Wind Energy Technology Office

The Wind Energy Technologies Office (WETO) invests in energy science research and development activities that enable the innovations needed to advance U.S. wind systems, reduce the cost of electricity, and accelerate the deployment of wind power. WETO seeks proposals that address technology R&D gaps designed to advance innovation and accelerate deployment of offshore, land-based, and distributed wind energy technologies, and facilitate their integration with the transmission and distribution electric grid.

OFFICE OF
Technology Transitions

AOI 7: Office of Fossil Energy and Carbon Management

The Office of Fossil Energy and Carbon Management is not accepting proposals under this topic for this solicitation. Instead, FECM will be issuing a separate, forthcoming technology-specific solicitation.

AOI 8: Office of Nuclear Energy

Nuclear energy is a key element of President Biden’s plan to put the United States on a path to net-zero emissions by 2050. America’s nuclear energy sector provides approximately 55% of the nation’s annual clean electricity production and generates about 20% of U.S. electricity from a fleet of 93 operating units in 28 states. America’s nuclear energy sector also plays key national security and global strategic roles for the United States, including nuclear nonproliferation.

The Office of Nuclear Energy (NE) focuses on four major mission areas: enabling the continued operation of the nation’s existing nuclear fleet, accelerating development and deployment of advanced nuclear reactor concepts, securing and sustaining the global nuclear fuel cycle, and expanding international nuclear energy cooperation.

NE seeks proposals in the following topical areas:

1. Reactor Concepts Research, Development, and Demonstration (NE-RCRDD)

The Reactor Concepts RD&D program supports conducting RD&D on existing and advanced reactor designs and technologies to enable industry to address technical and regulatory challenges associated with maintaining the existing fleet of nuclear reactors, promoting the development of a robust pipeline of advanced reactor designs and technologies and associated supply chains, and progressing these advanced reactor designs and technologies toward demonstration when deemed appropriate. Program activities are focused on addressing technical, economic, safety, and security enhancement challenges associated with the existing commercial light water reactor fleet and advanced reactor technologies, covering large, small, and micro-sized designs and an array of reactor types, including fast reactors using liquid metal coolants and high-temperature reactors using gas or molten salt coolants.

In maximizing the benefits of nuclear power, work must be done to address the following challenges:

OFFICE OF
Technology Transitions

- Improving affordability of nuclear energy technologies
- Enhancing safety and reducing technical and regulatory risk
- Minimizing proliferation risks of nuclear materials
- Improving the economic outlook for the U.S. nuclear industry.

2. Fuel Cycle Research and Development (NE-FCRD)

The Fuel Cycle Research and Development (FCR&D) program presently has three focus areas. In the first, the program conducts applied R&D on advanced fuel cycle technologies that have the potential to enhance safety, improve resource utilization and energy generation, reduce waste generation, and limit proliferation risk. Advancements in fuel cycle technologies support the enhanced availability, economics, safety, and security of nuclear-generated electricity in the United States, further enhancing U.S. energy independence and economic competitiveness. In the second area, the program conducts system analyses of advanced fuel cycle options to help guide decision-making and prioritization of R&D activities. In the third focus area, the FCR&D program also provides technical support for the Department's uranium management policies to mitigate negative impacts on domestic producers from departmental actions.

3. Used Nuclear Fuel Disposition R&D (NE-UNFD)

The Used Nuclear Fuel Disposition (UNFD) R&D subprogram conducts scientific research and technology development to enable long-term storage, transportation, and disposal of spent nuclear fuel and wastes. The primary focus of this subprogram supports the development of disposition-path-neutral waste management systems and options in the context of the current inventory of spent nuclear fuel and waste.

4. Nuclear Energy Enabling Technologies (NE-NEET)

The Nuclear Energy Enabling Technologies (NEET) program conducts R&D and makes strategic investments in research capabilities to develop innovative and crosscutting nuclear energy technologies to resolve nuclear technology development issues. The Crosscutting Technology Development subprogram focuses on innovative research that directly supports the existing fleet of nuclear reactors and enables the development of advanced reactors and fuel cycle technologies, including topical areas such as advanced sensors and instrumentation, nuclear cybersecurity, advanced materials and manufacturing technologies, integrated energy systems, and other stakeholder-

OFFICE OF
Technology Transitions

identified research areas. NEET also invests in modeling and simulation tools for existing and advanced reactor and fuel system technologies. Further, the program provides U.S. industry, U.S. universities, and national laboratories access to unique nuclear energy research capabilities through the Nuclear Science User Facilities. In addition, NEET-sponsored activities support the goals, objectives, and activities of the Gateway for Accelerated Innovation in Nuclear initiative to make these technology advancements accessible to U.S. industry through private-public partnerships. Collectively, NEET-sponsored activities support the Department's priorities to combat the climate crisis, create clean energy jobs with the free and fair chance to join a union and bargain collectively, and promote equity and environmental justice by delivering innovative clean energy and advanced manufacturing technologies for nuclear energy systems.

v. Topic 5: Streamlining Laboratory Processes and/or Requirements

In addition to the above topics, DOE has identified two critical enabling and supporting activities that are vital to effective technology transition out of National Labs. These activities and their related processes and requirements are currently different at different labs.

As such, individually and cumulatively, they present major barriers to external partners wanting to commercialize lab IP, particularly when each lab has its own unique processes or requirements. Thus, external parties interested in working with more than one lab must learn and work through multiple processes and sets of requirements.

DOE encourages labs to work together to address these core barriers in coordination with streamlining and improving Topic 1 through 3 processes and approaches for market needs assessment, IP curation, and matchmaking programs. This topic focuses on streamlining connecting elements and making them similar across labs, when possible, in order to provide a more united and consistent approach to engaging external partners.

One of the largest perennial barriers to DOE laboratory commercialization are the limited mechanisms available at most labs to allow lab staff to engage in entrepreneurial pursuits and/or partner with external entities. This topic will seek proposals from Labs to streamline internal Lab processes to move Lab-developed, promising energy-related technologies toward commercial purposes, as well as to enable faster and simpler

OFFICE OF
Technology Transitions

commercialization processes. Process improvements could focus on improvements to contracting mechanisms, licensing of IP, and other ideas to streamline processes and catalyze synergies.

DOE envisions that these improvements could connect and flow into the new or enhanced programming described in Topics 1 through 3 as well as Topic 6. DOE strongly encourages applicants to partner with external organizations on proposals for this topic.

Creativity is highly encouraged. DOE encourages the labs to work together to streamline cross-program, cross-lab connecting processes and/or requirements, and make them similar across labs, when possible, to provide a more united and consistent approach to engaging external partners. Thus, proposed projects to create streamlined multi-lab approaches will likely better address the scoring criteria in Section II.B.i. than single-lab proposed projects.

Additionally, proposals should clearly describe how they are either building on existing infrastructure and programming or making changes or improvements. Redundant infrastructure, programming, and projects are unlikely to address the stated scoring criteria in Section II.B.i.

Proposed efforts should also help address any root causes (inside and outside of the labs) of existing commercialization challenges and barriers.

Proposed methods and models could include but are not limited to:

- Improvements and broader implementation of lab Master Scopes of Work
- Actions or infrastructure (e.g., websites) to make lab expertise or IP widely available, such as providing fairness of opportunity through publication of an opportunity to collaborate or license
- Simplified and standardized licensing, cooperative research and development agreement (CRADA), user agreement, and other transaction authority templates, processes, and approvals
- Streamlining of all steps to accelerate and reduce transaction costs of moving from lab to market

OFFICE OF
Technology Transitions

- Development of new models of engagement to address business and technological realities impeding commercialization
- Streamlined and enhanced programs to allow staff to charge a defined and reasonable amount of time to commercialization and entrepreneurial efforts, which could include talking with external companies, taking commercialization training, etc.
- Streamlined and enhanced programs to allow lab staff to engage in entrepreneurial ventures without concerns for conflicts of interest, etc., if no improvements are proposed under Topic 1.

Subtopic 5.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 5.b: Proposals meet less than the 50% of total project cost-share funds requirement.

vi. Topic 6: Increasing Partnerships with External Commercialization Parties

This topic seeks to address the second critical enabling and supporting activity that is vital to effective technology transition out of National Labs. Activities focused on partnering with external parties and their related programs and efforts, such as industry day events, industry advising on lab projects, and even industry-led incubation or acceleration programs, are currently different at different labs. As such, individually and cumulatively, they present major barriers to external partners wanting to commercialize lab IP, particularly when each lab has its own unique programs, events, etc. Thus, external parties interested in working with more than one lab must learn and work through multiple approaches to external partner engagement.

This topic seeks proposals from Labs to make it easier for the private sector to work with National Labs. Proposals could include streamlining the partnering process as well as efforts to standardize the partnering process across multiple Labs. Goals of this topic area are to decrease barriers to working with the Labs, increase the number and diversity of private sector partners, and accelerate and deepen connectivity with external commercialization parties.

OFFICE OF
Technology Transitions

These activities are meant to improve how labs attract, recruit, and retain external partners to further develop and commercialize technologies. DOE envisions that these activities could connect and flow into the new or enhanced programming described in Topics 1 through 3 as well as Topic 5.

DOE strongly encourages applicants to partner with external organizations on proposals for this topic. Creativity is highly encouraged. DOE encourages the labs to work together to connect cross-program and cross-lab approaches, as well as make them similar across Labs, when possible, to provide a more united and consistent approach to engaging external partners. Thus, proposed projects to create multi-lab approaches will likely better address the scoring criteria in Section II.B.i. than single-lab proposed projects.

Additionally, proposals should clearly describe how they are either building on existing infrastructure and programming or making changes or improvements. Redundant infrastructure, programming, and projects are unlikely to address the stated scoring criteria in Section II.B.i.

Proposed efforts should also help address any root causes (inside and outside of the labs) of existing commercialization challenges and barriers.

Proposed projects could include but are not limited to:

- Industry partners and/or small businesses stationed at a National Lab and working alongside lab researchers on improving and commercializing technologies
- Industry-led and -funded incubation or acceleration programming to attract, recruit, and retain external partners to further develop and commercialize technologies
- Industry-led and -funded commercialization-focused mentoring and advisor programming
- Teaming events, such as offering potential industry partners opportunities for laboratory tours or vice-versa
- One-on-one connections to researchers with technologies of interest

OFFICE OF
Technology Transitions

- Organizing lab-run, sector-specific demonstration or innovation days paired with relevant conferences, such as in support of DOE's Energy Earthshots Initiative.

Subtopic 6.a: Proposals commit to meet the 50% of total project cost-share funds requirement.

Subtopic 6.b: Proposals meet less than the 50% of total project cost-share funds requirement.

II. Application Submission and Review Information

The application process will include two phases: a Concept Paper phase, and a Full Application phase. **Only applicants who have submitted an eligible concept paper will be eligible to submit a full application.**

At each phase, DOE performs an initial eligibility review of the applicant submissions to determine whether they meet the eligibility requirements of the lab call. DOE will not review or consider submissions that do not meet the eligibility requirements. All submissions must conform to the following form and content requirements, including maximum page lengths (described below) and must be submitted via Exchange, unless specifically stated otherwise. **DOE will not review or consider submissions that are received through means other than Exchange, submitted after the applicable deadline, or incomplete.** DOE will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion.

A control number will be issued when an applicant begins the Exchange application process. This control number must be included with all application documents, as described below.

The concept paper, full application, and reply to reviewer comments must conform to the following requirements:

- Each must be submitted in Adobe PDF format unless stated otherwise.
- Each must be written in English.
- All pages must be formatted to fit on 8.5 x 11-inch paper with margins not less than one inch on every side. Use Calibri typeface, black font color, and a font size of 12 point or

OFFICE OF
Technology Transitions

larger (except in figures or tables, which may be 10-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies. References must be included as footnotes or endnotes in a font size of 10 or larger. Footnotes and endnotes are counted toward the maximum page requirement.

- The control number must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page.
- Each submission must not exceed the specified maximum page limit, including cover page, charts, graphs, maps, and photographs, when printed using the formatting requirements set forth above and single-spaced. If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages.

A. Process and Submission Details

i. Process

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

- **ELIGIBILITY:** Only DOE national laboratories and facilities are eligible for funding from this lab call. All applications must be submitted to DOE from each lab's respective Office of Research and Technology Application (ORTA)³⁰ Technology Transfer Offices. Applications received from offices other than a lab's ORTA will be rejected. All other National Laboratory offices and programs must coordinate with their respective TTOs to submit applications. Proposals that involve more than one laboratory are highly encouraged.

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

- Laboratories applying to Topics 1, 2, 3, 5, and 6 are expected to coordinate on the concept paper and application submission, both internally and with multi-lab collaborators.

³⁰ 15 USC 3710.

OFFICE OF
Technology Transitions

- Though there is no limit on the number of concept papers submitted, each National Laboratory ORTA TTO may submit **no more than two full project applications that include only single-lab participation under Topics 1, 2, 3, 5 and 6, whereas each National Laboratory ORTA TTO can submit under Topics 1, 2, 3, 5, and 6 an unlimited number of full project applications that include more than one lab partner.** Any submitted applications that exceed this threshold will not be considered. Applications will be counted in the order in which they are received.
- There are no limits on the number of full project applications each National Laboratory ORTA TTO can submit under Topic 4.
- Only applicants who have submitted a concept paper and received an encourage determination from DOE will be eligible to submit a full application.
- **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, ORTA TTO personnel 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. **Only ORTA TTO personnel can submit applications under this lab call.** Application materials must be submitted through [Exchange](#).

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

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

OFFICE OF
Technology Transitions

Additional Information on Exchange:

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. Should applicants experience problems with Exchange, the following information may be helpful to applicants that experience issues with submission *prior* to the deadline:

In the event that an applicant experiences technical difficulties with a submission, the applicant should contact the EERE Exchange helpdesk for assistance (EEREExchangeSupport@hq.doe.gov). The EERE Exchange helpdesk and/or the EERE Exchange system administrators will assist applicants in resolving issues.

ii. Concept Papers

To be eligible to submit a full application, applicants must submit a concept paper. Labs are required to submit the concept paper in Exchange no later than the date and time listed in the Section I.B. Timeline.

DOE will review the concept paper, and applicants will receive an official determination. DOE will encourage or discourage concepts at this stage. The intent is to help the labs focus their efforts on the concepts with the highest potential under this lab call. Labs will receive a DOE determination as to whether they are encouraged to move to the next step or discouraged from moving forward. Only Labs that receive an encourage determination on the concept paper will be allowed to submit a full application.

The concept paper must conform to the following content requirements:

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, the topic(s) and/or AOs being addressed, points of contact, and name of the lab and any partners.
Project Description	3 pages maximum	Applicants are required to: <ul style="list-style-type: none"> Describe the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
 PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
 INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

		<ul style="list-style-type: none"> • Describe relevant background information that helps demonstrate the need for this project, including the problem statement or major challenges and barriers being overcome through the project and the approach to solving the problem • Show the impact that DOE funding and the proposed project would have on the relevant field and application • Describe how the proposed project, if successfully accomplished, would clearly meet the objectives stated in the lab call.
Addendum	2 pages maximum	<p>Applicants are required to describe succinctly the qualifications, experience, and capabilities of the proposed project team, including:</p> <ul style="list-style-type: none"> • Whether the project team has the skill and expertise needed to successfully execute the project plan • Whether the applicant has prior experience that demonstrates an ability to perform tasks of similar risk and complexity • Whether the applicant has worked together with their teaming partners on prior projects or programs • Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how they intend to obtain access to the necessary equipment and facilities. • Applicants may provide graphs, charts, or other data to supplement their project description.

iii. Full Applications

If labs receive an encourage determination from DOE at the concept paper stage, they are invited to further expand their concept into a full application. **Full applications are required to be eligible for award(s) under this solicitation.** Application materials must be submitted through [Exchange](#).

OFFICE OF
Technology Transitions

DOE will not review or consider ineligible full applications. Each full application shall be limited to a single concept. Unrelated concepts shall not be consolidated in a single full application. Full applications must conform to the requirements below.

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

Documents must conform to this naming convention: “2023 TCF ‘Name of File’ [Tracking ID #].pdf.” 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(s) and subtopic(s) being applied for, PI(s) and business POCs, names of all team member organizations, any statements regarding confidentiality, a nonproprietary project summary, and a 200-or-less-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 issues and project issues.
 - For Topics 1, 2, 3, 5, and 6, DOE encourages multi-lab teams to address more than one topic in an interwoven, holistic approach. In this case, **all topics and subtopics the team believes are addressed by the proposal should be listed on the title page** and the interconnectedness should be highlighted in the proposal itself. The proposal will be reviewed and evaluated under all respective topics indicated.
- **1.0 Summary:** The summary 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

OFFICE OF
Technology Transitions

explain how DOE funding—relative to prior, current, or anticipated funding from other public and private sources—is necessary to achieve the project objectives.

- **2.0 Project Description:** Describe the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives. Describe relevant background information that helps demonstrate the need for this project, including the problem statement or major challenges and barriers being overcome through the project, how the proposed project supports one or more of the lab call objectives, the approach to solving the problem, and why this funding is needed to enable this work.

For 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 Diversity, Equity, Inclusion, and Accessibility:** As part of the application, applicants are required to describe how DEIA objectives will be incorporated in the project. Specifically, applicants are required to submit a description of how the project will support or implement the lab wide DEIA plan and describe the actions the applicant will take to foster a welcoming and inclusive environment, support people from groups underrepresented in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project, as well as the extent to which the project activities will be located in or benefit underserved communities (also see the subsection on DEIA in Section I.C.). The plan should include at least one SMART milestone per budget period supported by metrics to measure the success of the proposed actions, which will be

OFFICE OF
Technology Transitions

incorporated into the award if selected. The DEIA section should contain the following information:

- Equity Impacts: the impacts of the proposed project on underserved communities, including social and environmental impacts
- Benefits: The anticipated overall benefits of the proposed project, if funded, to underserved communities
- How DEIA objectives will be incorporated in the project.

The following is a non-exhaustive list of actions that can serve as examples of ways the proposed project could incorporate DEIA elements:

- Include persons from groups underrepresented in STEM as PI, co-PI, and/or other senior personnel
- Include persons from groups underrepresented in STEM as student researchers or postdoctoral researchers
- Include faculty or students from Minority Serving Institutions as PI/co-PI, senior personnel, and/or student researchers, as applicable
- Enhance or collaborate with existing diversity programs at your home organization and/or nearby organizations
- Collaborate with students, researchers, and staff in Minority Serving Institutions
- Disseminate results of research and development in Minority Serving Institutions or other appropriate institutions serving underserved communities
- Implement evidence-based, diversity-focused education programs (such as implicit bias training for staff) in your organization
- Identify Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, and Veteran Owned Businesses to solicit as vendors and subcontractors for bids on supplies, services, and equipment.

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

These examples should not be considered either comprehensive or prescriptive. Applicants may include appropriate actions not covered by these examples.

- **4.0 Potential Commercialization Advances:** For Topics 1, 2, 3, 5, and 6, identify root causes (inside and outside of the labs) of the existing lab commercialization challenges and barriers that, if addressed, will result in significant advances for commercializing technologies. For Topic 4, describe the expected path for the proposed project toward commercialization successes, including the anticipated timeline for market entry or increased market adoption for technologies involved in the proposal.
- **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 (WBS), milestones, go/no-go decision points, and project schedule. A detailed WBS is requested separately.

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

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

Proposals must describe how the team will implement and track impact metrics. Proposals must include outcome-focused metrics that are most applicable for the proposed project and describe how and when the team will track and report against those metrics. Metrics should focus on outcomes that show traction and not steps or deliverables the team has complete control over. If the project is selected, OTT will provide a metric input form for impact metrics reporting.

OFFICE OF
Technology Transitions

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

- Acceptable metrics include but are not limited to: 1) number of commercialized technologies, 2) number of CRADAs or other partnering arrangements that come out of the labs, 3) increase in number of licensed lab technologies, 4) number of tangible improvements to lab-related activities based on customer discovery, 5) qualitative data before and after activity measuring understanding or perspective shift, 6) number of lab technology transfer professionals trained in areas outside of normal activities, 7) private funds invested in solutions, 8) number and value of established industry/incubator partnerships, 9) number of inquiries for new partnerships, 10) innovation/IP generation, 11) annual revenue from commercialized technologies, and 12) others.
- Unacceptable metrics include but are not limited to: 1) general reports describing activities, 2) exploratory experiments that lack a goal, 3) unverifiable data, 4) time spent on project, and 5) other subjective, vague, and/or ambiguous metrics.
- **7.0 Team and Required Resources:** Describe the expected DOE and National Laboratory member resources, including proposed work areas, staff time, and any facility/equipment needs. Include specific locations and laboratories to be used.
- **8.0 Cost Sharing:** Provide a detailed table describing any proposed cost-sharing, clearly articulating cash versus in-kind. This is required for all applications that propose cost-share. For any proposals applying to subtopics 1.b, 2.b, 3.b, 5.b, or 6.b, provide reasoning as to why less than 50% cost-share is appropriate.
 - If applicable, submit letters of commitment from all subrecipient and third-party cost-share providers. If applicable, also include any letters of

OFFICE OF
Technology Transitions

commitment from partners/end users (1-page maximum per letter; these are not counted in the 15-page limit).

- See Appendix A for additional cost-share information and requirements.
- **9.0 Proposed Base Budget and Options:** Provide an Excel spreadsheet with the minimum budget of all project expenses by each National Lab and project partner. The minimum budget should include a high-level summary of the main project components that could be included at that cost. Please also provide a recommended budget broken out by tasks, where the total budget is the sum of the tasks. This is to itemize the cost estimate (total) for each task, with total costs for the project. Additionally, the recommended budget should be broken down by cost category (for example, personnel, travel, equipment, supplies, contractual, indirect, etc.). Other sources of funding, including cost-share information, shall be provided here, if applicable.

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

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

This are not counted in the 15-page limit and should be included in the application as an appendix.

- **10.0 References:** References are not counted in the 15-page limit and should be included in the application as an appendix.

OFFICE OF
Technology Transitions

- **11.0 Team Resumes:** Include single-page resumes of key project participants. These are not counted in 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 (not counted in the 15-page limit). This slide must not include any proprietary or business-sensitive information because DOE may make it available to the public if the project is selected for award. The document must conform to this naming convention: “2023 TCF Public Summary [Tracking ID #].ppt.” The summary slide requires the following information:
 - A project summary
 - A description of the project’s impact
 - Proposed project goals
 - Any key graphics (illustrations, charts, and/or tables)
 - The project’s key idea/takeaway
 - Project title, prime recipient, PI, and key participant information
 - Requested TCF funds and proposed applicant cost-share, if applicable.

iv. Proprietary Information

Applicants should not include trade secrets or commercial or financial information that is privileged or confidential in their proposals, 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 against 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:

OFFICE OF
Technology Transitions

Notice of Restriction on Disclosure and Use of Data:

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

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

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

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

The above-referenced markings enable DOE to follow the provisions of 10 C.F.R. §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 DOE 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.

OFFICE OF
Technology Transitions

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

OFFICE OF
Technology Transitions

ii. Full Application Merit Review and Selection Process

Selection of winning proposals will be determined based on available funding and input from DOE and external reviewers. In general, DOE will use data and other information contained in proposals for evaluation purposes only, unless such information is generally available to the public or is already the property of the government.

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

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

Criterion 1: Innovation and Impact (45%)

This criterion involves consideration of the following factors:

- How innovative and impactful is the project, assuming the stated outcomes can be achieved as written?
 - Innovative—Extent to which the proposed project or solution is innovative. Extent to which the proposed project or solution incorporates DEIA objectives. Degree to which the proposed project integrates market pull into its thinking and program design, forming a conduit of market insight and awareness.
 - Impactful—Extent to which the proposed project or solution, if successful, impacts the core goals outlined in the lab call and/or the root causes (inside and outside of the labs) of the existing commercialization challenges and barriers. Also includes the impact of forging collaborations on the challenges being addressed (e.g., 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 the National Labs). For Topics 1, 2, 3, 5, and 6, multi-lab collaboration will be scored as inherently more impactful than single-lab projects.

OFFICE OF
Technology Transitions

- Accelerates Speed of Commercialization—Degree to which the proposal has the potential to accelerate the speed of commercialization, to move quickly, and to embrace agility with the proposed project. Degree to which the proposal supports achieving the statutory requirement of the TCF to “promote promising energy technologies for commercial purposes.”
- Long-Term Viability—Degree to which the proposal has the potential to continue to be impactful without long-term, continued, direct funding from DOE. Extent to which multiyear strategic partnerships are proposed or will be developed to continue the program beyond initial funding. Level of proposed cost-share for the project will be taken into consideration.
- Differentiated—Extent of differentiation with respect to existing commercialization programs or efforts. Potential to enhance commercialization activities at the National Laboratories.
- Scalable—Likelihood that the proposed solution, if successful, could be scaled to have a broader impact. Likelihood that the project could be scaled beyond the proposed multi-lab collaboration and to all labs, even those not directly participating in the proposed project.
- Commercialization Outcomes—Likelihood of the proposed solution achieving the proposed commercialization outcome metrics. Likelihood of the proposed team tracking and reporting on the commercialization outcome metrics. Degree to which proposal is likely to positively impact DEIA objectives outlined in Section I.C.
- Cost-Share Commitment—Extent to which partners’ interest and level of involvement is reflected in appropriate levels of proposed cost-share for the project will be taken into consideration.
- Evidence of Commercial Potential—Degree to which Topic 4 proposal demonstrates both technology progress and market pull or interest. Extent to which the proposed technology will result in a commercially successful product and/or company. Extent to which the proposed

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.

PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &

INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

technology can be successfully commercialized in a reasonable timeframe.

Criterion 2: Quality and Likelihood of Completion of Stated Goals (35%)

This criterion involves consideration of the following factors:

- Are the stated goals of the project SMART, and are they likely to be accomplished within the scope of this project? Is there a likelihood of success for the proposed project?
 - Measurable—Degree to which the proposal is structured to produce a measurable result/impact, including the required DEIA milestones. Extent to which the applicant shows a clear understanding of the importance of SMART, verifiable milestones and proposes milestones that demonstrate clear progress, are aggressive but achievable, and are quantitative.
 - Risks mitigated—Extent to which the applicant understands and discusses the risks, core barriers, and challenges the proposed work will face, and the soundness of the strategies and methods that will be used to mitigate risks. Degree to which the proposal adequately describes how the team will manage and mitigate risks.
 - Validated—Degree to which the proposed project fits within and builds on the laboratory ecosystem. Level of validation (letters of support/interest, partners, customer trials, data from prior work, report references, etc.).
 - Reasonable assumptions—Reasonableness of the assumptions used to form the execution strategy (e.g., lab staff participation, costs, throughput at full scale, speed of proposed scale-up or adoption, and mode of long-term funding).
 - Reasonable budget—The reasonableness of the overall funding requested to achieve the proposed project and objectives. The reasonableness and clarity of the budget and scope options. Level of proposed cost-share for the project will be taken into consideration.

OFFICE OF
Technology Transitions

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

This criterion involves consideration of the following factors:

- Is the team well-qualified and positioned to successfully complete this project?
 - Collaboration—Extent to which there are multiple labs engaged on the proposed project. Degree to which the proposed project branches out, connects, and builds on the innovation ecosystem across the country. Extent to which connections and alliances are forged to harness the power of regional economies; state/local organizations; and other federal, state, or local agencies.
 - Capable—Extent to which the training, capabilities, and experience of the assembled team will result in the successful completion of the proposed project. Extent to which this team (including proposed subrecipients) will be able to achieve the final results on time and to specification.
 - Participation—The level of participation by project participants, as evidenced by letter(s) of commitment demonstrating cost-share and how well they are integrated into the work plan. Degree to which multi-lab, internal lab, and external collaboration is proposed. Extent to which teams include representation from diverse entities, such as, but not limited to: Minority Serving Institutions, including Historically Black Colleges and Universities/Other Minority Institutions, or through linkages with Opportunity Zones.
 - Team Quality—Extent to which the final team required to complete this project is fully assembled and committed to the project (e.g., Are there any key members that are “to be hired” in the future?). Level of proposed cost-share for the project will be taken into consideration.
 - Past Performance—Extent to which the assembled team has shown success in the past. (Note: new performers will not be penalized.) DOE encourages new entrants and new ideas, but past successes and/or failures will be noted.

OFFICE OF
Technology Transitions

- Access—Extent to which the team has access to facilities, equipment, people, expertise, data, knowledge, and any other resources required to complete the proposed project.

ii. Selection for Award Negotiation

DOE carefully considers all information obtained through the selection process. DOE may select or not select a proposal for negotiations. DOE may also postpone a final selection determination on one or more proposals until a later date, subject to availability of funds and other factors. OTT will notify applicants if they are, or are not, selected for award negotiation.

DOE will only select proposed projects that support the statutory requirement of the TCF to “promote promising energy technologies for commercial purposes.”

Type of Award Instrument: TCF awards will be documented and funded through OTT’s work authorization and funds management processes within the Program Information Collection System (PICS). DOE facilities will be required to track federal funds in accordance with normal departmental processes. 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 M&O contracts.

iii. 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

Projects selected for award are managed by the DOE facilities in accordance with their requisite policies and procedures. OTT will provide all required project oversight and

OFFICE OF
Technology Transitions

engagement with TCF project recipients; DOE program offices participating in this lab call are welcome 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.

D. Questions and National Lab TTO Contacts

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

Because only National Laboratory TTO staff are eligible to apply and are responsible for coordinating inter-lab, across labs, and with external partners, a list of lab TTO points of contact are provided in Appendix C.

E. Additional Information on Exchange

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. Should applicants experience problems with Exchange, the following information may be helpful to applicants that experience issues with submission *prior* to the deadline:

If an applicant experiences technical difficulties with a submission, the applicant should contact the EERE Exchange helpdesk for assistance (EEREExchangeSupport@hq.doe.gov). The EERE Exchange helpdesk and/or the EERE Exchange system administrators will assist applicants in resolving issues.

F. Application Forms

The application forms and instructions are available on EERE Exchange. To access these materials, go to <https://eere-Exchange.energy.gov> and select the appropriate funding opportunity number.

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

COST-SHARE

This lab call is subject to Section 988(b)(3) of the Energy Policy Act of 2005 regarding cost-share. DOE prefers all funded projects to meet this 50% of the total project cost-share fund requirement; however, DOE acknowledges that some potentially high-impact proposed projects may not be able to meet this requirement. In this case and following the requirements by topic below, labs may still apply with less than 50% cost-share so that DOE can see the full universe of high-quality proposals. The scoring criteria reflect that higher levels of cost-share mitigate the risk of commercializing earlier stage technologies.

DOE has approved a Cost-Share Waiver for topics 1.b, 2.b, 3.b, 4.b, 4.c, 5.b, and 6.b of this lab call (full topic descriptions above). Projects applying under all subtopics 1.b, 2.b, 3.b, 4.b, 4.c, 5.b, and 6.b are not required to cost-share nonfederal funds of at least 50% of the total project cost to apply. This was done to ensure all project ideas can apply and the most impactful mix of projects can be selected.

Each proposal that applies to a subtopic (a) commits to meet the 50% of total project cost-share funds requirement. Each proposal that applies to subtopics 1.b, 2.b, 3.b, 5.b, and 6.b may propose to meet less than the 50% of total project cost-share funds requirement.

Proposals that apply to subtopic 4.b must cost-share 20% of total project cost. Proposals that apply to subtopic 4.c must cost-share 10% of total project cost. Further details on the criteria for subtopics 4.b and 4.c are listed in the Topic 4 description (see Section I.D.iv.).

DOE will evaluate the level of external industry engagement and collaboration as evidence by cost-share to ensure maximum impact of the selected projects. The selection official may determine that a subtopic (b) proposal would be selected except that the proposal does not provide adequate cost-share given the commercial nature of the project activities. In such cases, applicants would be provided the opportunity to increase their cost-share to the default level, and project selection would be contingent on the lab(s) committing to 50% cost-share for the project. If the lab(s) decline, DOE will not fund the project. This does not apply to subtopics 4.b and 4.c.

In addition, the selection official may establish a negotiation strategy that involves increasing cost-share for subtopic (b) applicants that lack adequate cost-share given the commercial

OFFICE OF
Technology Transitions

nature of the project activities. Applicants would be provided the opportunity to increase their cost-share, and successful project negotiations could be contingent on the lab(s) committing to an increased cost-share for the project. Labs will have the opportunity to accept or decline an adjustment in cost-share. If the lab(s) decline, DOE may not fund the project. This does not apply to subtopics 4.b and 4.c.

For Topics 1.a, 2.a, 3.a, 4.a, 5.a, and 6.a, the nonfederal cost-share must be at least 50% of total project costs by the conclusion of the project. DOE reserves the right to require the nonfederal cost-share to be met by the end of each budget period.

For topics 1.b, 2.b, 3.b, 5.b, and 6.b, DOE will negotiate a cost-share rate, which may be any percentage at or under 50%. The nonfederal cost-share at the end of the award must be at least the established percentage agreed upon at the time of award. DOE reserves the right to require the nonfederal cost-share to be met by the end of each budget period.

The final cost-share requirements for each proposed project will be set at the time of selection and will not be changed during the life of the award. Cost-share requirements will be established on a budget-period-by-budget-period basis during project negotiations and prior to final project award.

Cost-share funds are subject to audit by the Department or other authorized government entities (e.g., General Accounting Office). A written agreement may be advisable—either between the DOE facility and the third party or between the CRADA 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 statutorily required 50% of total project costs from nonfederal sources.

OTT has no policy regarding foreign expenditures. 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.

OFFICE OF
Technology Transitions

WHAT QUALIFIES FOR NONFEDERAL COST-SHARE

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

In addition to the regulations referenced above, 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.

Additionally, DOE will not allow pre-award costs.

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

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

1. They are verifiable from the recipient's records
2. They are not included as contributions for any other federally assisted project or program
3. They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives
4. They are allowable under the cost principles applicable to the type of entity incurring the cost
5. They are not paid by the federal government under another award unless authorized by federal statute
6. They are provided for in the approved budget.

B. Valuing and documenting contributions.

1. Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which means

OFFICE OF
Technology Transitions

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

- a) The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or
 - b) The current fair market value. If there is sufficient justification, the contracting officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The contracting officer may accept the use of any reasonable basis for determining the fair market value of the property.
2. Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided the 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.

OFFICE OF
Technology Transitions

- a) Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the nonfederal match share must be reasonable and must not exceed the fair market value of the property at the time of the donation.
 - b) Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the contracting officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:
 - i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately owned building in the same locality.
 - ii. The value of loaned equipment must not exceed its fair rental value.
5. Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:
- a) Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
 - b) The basis for determining the valuation for personal services and property must be documented.

OFFICE OF
Technology Transitions

Appendix B: FY23 TCF Lab Calls by Program Office

Program Office	Lab Call Type
Office of Electricity	Joint Lab Call
Office of Fossil Energy and Carbon Management	Joint Lab Call
Energy Efficiency & Renewable Energy—Geothermal Technologies Office	Joint Lab Call
Energy Efficiency & Renewable Energy—Hydrogen and Fuel Cell Technologies Office	Joint Lab Call
Energy Efficiency & Renewable Energy—Solar Energy Technologies Office	Joint Lab Call
Energy Efficiency & Renewable Energy—Water Power Technologies Office	Joint Lab Call
Energy Efficiency & Renewable Energy—Wind Energy Technologies Office	Joint Lab Call
Office of Nuclear Energy	Joint Lab Call

Customized, Technology-Specific Commercialization Program TCF Lab Calls		
Cybersecurity, Energy Security, and Emergency Response	Technology Area Lab Call	Q2 FY 2023
Energy Efficiency & Renewable Energy—Advanced Materials and Manufacturing Office, Industrial Efficiency and Decarbonization Office, and Building Technologies Office	Technology Area Joint Lab Call	Q2 FY 2023
Energy Efficiency & Renewable Energy—Bioenergy Technologies Office	Technology Area Lab Call	Q2 FY 2023
Energy Efficiency & Renewable Energy—Vehicle Technologies Office	Technology Area Lab Call	Q2 FY 2023
Fossil Energy and Carbon Management	Technology Area Lab Call	Q2 FY 2023

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
 PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
 INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

OFFICE OF
Technology Transitions

Appendix C: TCF Points of Contact at DOE National Lab TTOs

Facility	TCF Points of Contact
The Ames Laboratory	Julienne Krennrich jmkrenn@ameslab.gov 515-294-1202
Argonne National Laboratory	Hemant Bhimnathwala hbhimnathwala@anl.gov 630-252-2354 David McCallum dsm@anl.gov 630-252-4338
Brookhaven National Laboratory	Poornima Upadhya pupadhya@bnl.gov 631-344-4711 Eric Hunt ehunt@bnl.gov 631-344-2103 Ivar Strand istrand@bnl.gov 631-344-7579
Fermi National Accelerator Laboratory	Mauricio Suarez suarez@fnal.gov 630-840-6947 Cherri J. Schmidt cherri@fnal.gov 630-840-5178
Idaho National Laboratory	Lisa Aldrich lisa.aldrich@inl.gov 208-569-0405 Jason Stolworthy jason.stolworthy@inl.gov

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
 PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
 INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

	208-526-3437
Kansas City National Security Campus	Andrew Myers amyers@kcncs.doe.gov 816-488-4432
Lawrence Berkeley National Laboratory	Shanshan Li shanshanli@lbl.gov 510-486-5366 Todd Pray tpray@lbl.gov 510-486-6053 Gail Chen gailchen@lbl.gov Jasbir (Jesse) Kindra jkindra@lbl.gov
Lawrence Livermore National Laboratory	Elsie Quaiter-Randall quaiterandal1@llnl.gov 925-423-5210 Chris Hartman hartmann6@llnl.gov
Los Alamos National Laboratory	MaryAnn D. Morgan mary_ann@lanl.gov 505-667-5324 Andrea Maestas andream@lanl.gov 505-667-1230 Jerome Garcia jgarcia@lanl.gov 505-665-9090
National Energy Technology Laboratory	Jessica Lamp jessica.lamp@netl.doe.gov 412-452-3645

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

	<p>Chris Bond chris.bond@netl.doe.gov 412-386-5133</p> <p>Samantha Zhang Samantha.zhang@netl.doe.gov 541-918-4517</p>
National Renewable Energy Laboratory	<p>Jennifer Fetzer jennifer.fetzer@nrel.gov 303-275-3014</p> <p>Eric Payne eric.payne@nrel.gov 303-275-3166</p>
Nevada National Security Site	<p>Robert Koss kossrj@nv.doe.gov 702-295-1213</p> <p>Matthew Pasulka pasulkmp@nv.doe.gov 702-295-2963</p>
Oak Ridge National Laboratory	<p>Michael J. Paulus paulusmj@ornl.gov 865-574-1051</p> <p>Eugene Cochran cochraner@ornl.gov 865-576-2830</p> <p>Jennifer Caldwell caldwelljt@ornl.gov 865-574-4180</p>
Pacific Northwest National Laboratory	<p>Christina Lomasney christina.lomasney@pnnl.gov</p> <p>Allan C. Tuan allan.tuan@pnnl.gov 509-375-6866</p>

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

Pantex Plant	Jeremy Benton jeremy.benton@cns.doe.gov 865-241-5981
Princeton Plasma Physics Laboratory	Laurie Bagley lbagley@pppl.gov 609-243-2425
Sandia National Laboratories	Liz Hillman elucero@sandia.gov 505-206-8434 Mary Monson mamonso@sandia.gov 505-844-3289 Monica Martinez monmart@sandia.gov Lily Shain lshain@sandia.gov
Savannah River National Laboratory	Amy Ramsey amy.ramsey@srnl.doe.gov Byron Sohovich Byron.sohovich@srnl.doe.gov
SLAC National Accelerator Laboratory	Diana Creswell ddoon@slac.stanford.edu 650-926-8608 Matt Garrett mgarrett@slac.stanford.edu
Thomas Jefferson National Accelerator Facility	Deborah Dowd dowd@jlab.org 757-269-7180 Marla Schuchman marla@jlab.org

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.

U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

Y-12 National Security Complex	Jeremy Benton Jeremy.Benton@cns.doe.gov 865-241-5981
---------------------------------------	---

QUESTIONS ABOUT THIS LAB CALL? EMAIL TCF@HQ.DOE.GOV.
PROBLEMS WITH EXCHANGE? EMAIL EERE-EXCHANGESUPPORT@HQ.DOE.GOV &
INCLUDE LAB CALL NAME AND NUMBER IN SUBJECT LINE.