U.S. DEPARTMENT OF
ENERGY

OFFICE OF
Technology Transitions

U.S. Department of Energy
Office of Fossil Energy and Carbon Management
Technology Commercialization Fund
Base Annual Appropriations

National Laboratory Call for Proposals

Fossil Energy and Carbon Management Program-Led Topics

DE-LC-000L101

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 Fossil Energy and Carbon Management (FECM) and the Office of Technology Transitions. This call solicits proposals from National Laboratory Technology Transfer Offices, in collaboration with partners across the DOE National Laboratory Complex, to advance technology-specific laboratory intellectual property to market.

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Lab Call Modification History

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

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I. Lab Call Description

A. Background and Context

This lab call focuses on advancing four technology-focused areas under the Office of Fossil Energy and Carbon Management (FECM) within the U.S. Department of Energy (DOE). 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 National Laboratories to the market, where the private sector will continue to innovate.

For Fiscal Year 2023 (FY23), FECM has elected to use a portion of its Base Annual Appropriations to fund program-led topics under this lab call in addition to the Core Laboratory Infrastructure for Commercialization topics under the DE-LC-000L098 FY23 TCF Base Core Laboratory Infrastructure for Market Readiness (CLIMR) Lab Call. The intent of the Technology-Specific, FECM program-led commercialization topics in this lab call (Topics 1, 2, 3, and 4, below) are to address critical technology gaps in the fields covered by FECM's strategic vision.

Given the pressing need for technologies that are critical for furthering several fields within FECM's strategic vision (specifically, carbon dioxide removal, hydrogen production with carbon management, mineral sustainability, and methane mitigation), FECM has elected to fund this lab call and associated program. 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.

[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.

DOE recommends that interested National Laboratories read the background on DOE's TCF efforts and context regarding DOE's approach to TCF in the DE-LC-000L098 FY23 TCF Base CLIMR Lab Call 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.

B. Timeline and Process Logistics

Timeline

KEY DATES	
Lab call release date	March 3, 2023
Informational webinar for lab call overview	March 13, 2023, 1 p.m. ET
PROPOSAL DEADLINE AND DECISION DATES	
Submission deadline for concept papers (see Section II.A.ii.)	April 7, 2023, 3:00 p.m. ET
Release of encourage or discourage decisions on concept papers back to labs	April 26, 2023
Submission deadline for full applications (see Section II.A.iii.)	May 25, 2023, 3:00 p.m. ET
Expected date for selection notifications	Q4, FY 2023

Process Logistics

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

QUESTIONS DURING OPEN LAB CALL PERIOD: Specific questions about this lab call must be submitted by emailing FECM-TCF@hq.doe.gov. Answers to frequently asked questions (FAQs) for this lab call can be found at Exchange. To view announcement-specific questions, applicants must first select the specific lab call number. DOE will attempt to respond to a question within three business days unless a similar question

and the answer have already been posted on the website. It is the expectation of DOE that applicants to this lab call will review the FAQs before submitting a question. To ensure fairness for all lab participants, any questions directed to individual DOE staff will be forwarded to FECM-TCF@hq.doe.gov for processing.

C. Key Considerations and Requirements

i. Available Funding

Approximately $8M–$11M in annual funding is expected to be available to fund projects solicited in this FY23 TCF lab call pending program direction and go or no-go decision points.

Estimated FECM Funding Available: $8M–$11M

Estimated project duration: 1–3 years

ii. Size, Scope, and Number of Selections

The budget size, tasks, and scope of proposed projects can be adjusted by FECM during selections and negotiations. The number of selections will depend on the number of meritorious proposals and the availability of congressionally appropriated funds.

iii. Cost-Share

This lab call is subject to Section 988(c) 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, labs may apply with 30% cost-share so that DOE can see the full array of high-quality proposals. The scoring criteria reflect that providing cost-share will increase the likelihood of selection.

- DOE has approved a Cost-Share Waiver to reduce cost-share for topics 1, 2, 3, and 4 of this lab call (full topic descriptions below). This was done to ensure all project ideas can apply and the most impactful mix of projects can be selected. Applications with a cost-share below the default cost-share level of 50% must meet a cost-share level of 30%.
- 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 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 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 equity[3] 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 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.[4]"

As part of this whole-of-government approach, this lab call seeks to encourage the participation of underserved communities[5] and underrepresented groups. Applicants

[3] 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.

[4] Executive Order 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" (Jan. 20, 2021).

[5] 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

are highly encouraged to include individuals from groups historically underrepresented[6,7] in science, technology, engineering, and mathematics (STEM) fields on their project teams. Specifically, applicants are required to reference, if available, the existing laboratory DEIA plan and describe how diversity, equity, and inclusion objectives will be incorporated in the project. Additionally, 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 fields, 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[8]. 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 II.A.iii for the full application requirements. Because a diverse set of voices at the table in research, design, and execution has an illustrated positive impact

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.

[6] 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—black or African American, Hispanic or Latino, and American Indian or Alaska Native people—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://ncses.nsf.gov/pubs/nsf19304/digest/about-this-report). For example, in the United States, Hispanics, African Americans, and American Indians or Alaska Natives make up 24% of the overall workforce, yet only account for 9% of the country's science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions (https://www.energy.gov/articles/introducing-minorities-energy-initiative).

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

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

[8] For more information, please see DOE's Office of Economic Impact and Diversity website.

on innovation, this implementation strategy for the proposed project will be evaluated as part of the application review process. will be evaluated as part of the application review process.

Further, Minority Serving Institutions[9], 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., Application Review & Selection, for review criteria.

v. National Laboratory Collaboration

FECM also accepts projects 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 B includes all National Lab Technology Transfer Office (TTO) points of contact (POCs).

vi. Teaming Partner List

To the extent possible and appropriate, FECM seeks lab projects that involve industry engagement or industry partners, to demonstrate the market pull aspects of the technology commercialization.

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.

[9] 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.

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 submit the following information within the Teaming Partners sections on Exchange: Organization Name, Organization Type, Website, Contact Name, Contact Address, Contact Email, Contact Phone, Area of Expertise, Brief Description of Capabilities, and Applicable Topic. Please refer to the Manuals section on Exchange for more detailed instructions on using the Teaming Partner List.

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

D. Topic Area Descriptions

Several of the technology areas covered by FECM's strategic vision have critical gaps that impede their deployment and ultimate ability to meet the Administration's goal of net-zero greenhouse gas emissions by 2050. The intent of the FECM program-led commercialization topics (Topics 1, 2, 3, and 4 below) are to address these critical gaps by developing and commercializing new technologies.

This solicitation offers an opportunity for private industry to partner with DOE's National Labs to advance energy-related technologies and lab-developed IP toward commercialization. The main objective of these four topics is to mature and commercialize promising technologies that can meet the Administration's 2030 and 2050 goals.

All proposals must include how the team will track and show their respective commercialization impact and outcomes from the proposed project. Please refer to Section II.A.iii. 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 that may have deep knowledge and experience performing many of the activities described in the topics, some may have already built needed components under any of the topic areas below, and some may help advance DOE's DEIA goals.

Proposal requirements across all topics:

- Teams must be interdisciplinary, including expertise on sustainability, social and public acceptance, and environmental justice issues.
- Applications must include developing or draft prototype(s) and field test(s) using "real" materials, such as industrial waste streams and targeted mine waste feedstocks.
- Applications must show progress towards and intent to commercialize the technologies as well as be at a stage that will generate private sector interest.
- Proposals have a proposed deployment site or have deployment partners. Letters of support can be included at the full application stage (see Section II.A.iii.).
- Proposals must produce sufficient materials to complete end-use specific testing, i.e., accelerated stress tests, material characterizations, and purity levels of final product.
- National Lab participation should provide the regional technical gap assessment and define how their expertise can catalyze near-term commercial success for industry partners. Projects leveraging existing lab or industry consortia may be prioritized.

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-á-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.

i. Topic 1: Carbon Dioxide Removal Monitoring, Reporting, and Verification

Carbon dioxide removal (CDR) is an essential piece to meeting our goal of net-zero greenhouse gas emissions by mid-century. There are several types of systems for CDR that can remove CO_2 from the atmosphere and sequester it in various forms (e.g., carbonate minerals, bicarbonate anions, soil organic carbon); all of which present unique challenges in quantifying the volume of CO_2 sequestered over time. To ensure durable and long-lasting sequestration of CO_2, we must develop and commercialize robust and reliable monitoring, reporting, and verification (MRV) protocols. FECM is seeking proposals involving lab-developed technologies for development and commercialization of MRV protocols for CDR systems involving pathways such as (but not limited to) carbon mineralization, ocean-based CDR, and soil carbon sequestration.

ii. Topic 2: Hydrogen Quantification

The clean hydrogen (H_2) value chain is expected to develop rapidly in the coming decades to decarbonize many sectors of the economy, accelerated by DOE initiatives including H2@Scale, H2 Hubs, and equities in BIL and IRA including the clean hydrogen production tax credit. As production, distribution, storage, and use of H_2 becomes more widespread, operators and project developers must take careful steps to mitigate the risk of H_2 leakage across the H_2 value chain. H_2 is a colorless, mobile, highly flammable, and small molecule, so controlling or detecting its leakage is particularly difficult. Development and commercialization of ppm and ppb H_2 leak detection technologies are imperative to achieve the full emissions-reduction potential of clean H_2, and to ensure

safe, long-term operations at all stages of the value chain. FECM is seeking proposals involving lab-developed technologies for development and commercialization of technologies that can quantify leakage of H_2 during its production, distribution, storage, and use, with detection capabilities in ambient air at the ppm or ppb (more desirable) level.

iii. Topic 3: Critical Mineral and Rare-Earth Element Characterization and Extraction

Building the infrastructure necessary to reach net-zero GHG emissions will result in a significant increase in demand for critical minerals (CMs) and rare-earth elements (REEs) over the next several decades. Currently the majority of the CMs and REEs consumed in the U.S. are mined, processed, and produced in a handful of locations overseas that typically have lower standards on environmental quality, labor, and wages. Developing a domestic supply chain of CMs and REEs is imperative to meet our net-zero GHG emission goal in an economic and just way, while also reducing import dependency of many of our critical minerals on foreign sources. One low-hanging fruit for domestic production of CM is remediation of secondary sources (e.g., coal ash, coal waste/refuse, metal mine tailings), which are currently present at the hundreds of thousands of active and abandoned coal and hard rock mine sites across the United States. To establish a supply chain from these unconventional feedstocks, we must develop and commercialize new technologies capable of characterizing and extracting the CMs and REEs within unconventional and secondary feedstocks.

FECM is seeking proposals involving lab-developed technologies for development and commercialization of technologies that can rapidly detect the quantity and/or form of CMs and REEs present within secondary feedstocks, such as coal ash, coal refuse, or metal mine tailings. Technologies that are inexpensive, can be taken in the field (e.g., portable), for surface or subsurface (e.g., remote or downhole), and produce reasonably accurate results (e.g., able to detect quantities >10ppm) are preferable to highly accurate but relatively slow and costly technologies that can assess quantities at the ppb level. This can include the application of new software and Machine Learning/Artificial Intelligence algorithms to existing instruments and tools that would enable near real time detection of CMs and REEs both at the surface and in the subsurface. Technologies that can provide insights on the chemical form of the CMs and REEs within the feedstocks that will help inform on effectiveness of extraction technologies are also of

interest. Leveraging the capabilities of the National Labs through the TCF program to bring such technologies to commercialization will decrease the time and cost to get the REE and CM resources into production. Another funding goal of this program will be to increase the visibility and realization of the potential for REE/CM production from secondary and unconventional feedstocks.

iv. Topic 4: Natural Gas Infrastructure Methane Quantification

Domestic natural gas production, distribution, and storage are critical to transition the U.S. energy supply towards zero-emissions resource utilization that can meet demands both domestically and abroad for critical global allies. Ensuring near-zero methane emissions as part of the integrity and reliability of our natural gas distribution and delivery infrastructure has always been important but will become even more so as our need for natural gas persists over the next several decades.

The Administration's targets include a 50 percent reduction in carbon emissions by 2030, 100 percent clean electricity by 2035, and net-zero carbon emissions by 2050. These aggressive carbon emissions reduction targets will be met, in part, by advancing and commercializing technologies that reduce and potentially eliminate methane emissions associated with the production and distribution of oil and natural gas.

Natural gas pipelines (e.g., gathering lines, intrastate lines, interstate transmission lines, and distribution systems) are a part of this infrastructure that will require increased monitoring and more effective inspection capabilities over the coming decades as large segments of the natural gas pipeline network age while still being called upon to deliver increasing amounts of natural gas to end users.

FECM is interested in catalyzing the commercialization of novel sensor technologies and systems that will improve industry's ability to efficiently monitor and quantify methane emissions across natural gas pipeline infrastructure in a continuous, near real-time manner, in upstream and midstream applications. Since 2016, DOE FECM has supported technology development directly or indirectly related to this topic and recognizes that in order to meet the Administration's carbon emissions targets, it is necessary to promote the rapid scale-up and commercialization of advanced pipeline methane sensing technologies capable of continuous monitoring and quantification of pipeline leak events. Projects funded under this topic will incorporate lab-developed IP related to

methane sensing and quantification technologies and be at a development scale consistent with near-term industry acceptance and commercialization. Using the unique capabilities of the National Labs through the TCF program, this topic aims to accelerate the rapid scale-up and commercialization needed for wide-scale deployment to the field.

II. Application Submission and Review Information

The application process will include two phases: a concept paper phase, and a full application phase. Concept papers are optional but highly encouraged. **Applicants must submit a full application to be eligible for funding**.

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). All concept papers are to be submitted to the FECM-TCF@hq.doe.gov email. When submitting the concept please include in the subject line "FECM TCF CONCEPT PAPER TOPIC [insert the applicable topic number]". DOE will not review or consider full application 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 or connection congestion.

A control number will be issued when an applicant begins the Exchange application process. This control number must be included with all full 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 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.

- For full applications 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 DOE regarding this lab call must be via email to FECM-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)[10] TTOs. 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.

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

  - Laboratories applying to Topics 1, 2, 3, and 4 are expected to coordinate on the concept paper and full application submission, both internally and with lab collaborators.

[10] 15 USC 3710.

- There is no limit on the number of concept papers or full applications that each National Laboratory ORTA TTO may submit. Applications will be reviewed in the order in which they are received.
- Applicants who have submitted a concept paper will receive a non-binding "encourage" or "discourage" determination. Applicants may proceed to submit a full application regardless of this determination.
- Applicants may submit a full application regardless of whether they submitted a concept paper.

- **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 full 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**. Full applications must be submitted through Exchange, and concept papers must be submitted via email with subject line "FECM TCF CONCEPT PAPER TOPIC [insert the applicable topic number]" to FECM-TCF@hq.doe.gov.

  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 and full applications at least 48 hours in advance of the submission deadline.

  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 (EERE-ExchangeSupport@hq.doe.gov). The EERE Exchange helpdesk and/or the EERE Exchange system administrators will assist applicants in resolving issues.

ii. Concept Papers

Applicants are encouraged to submit a concept paper. Labs are encouraged to submit the concept paper to FECM-TCF@hq.doe.gov no later than the date and time listed in the Section I.B. Please include in the subject line: "FECM TCF CONCEPT PAPER TOPIC [insert applicable topic number]".

DOE will review the concept paper, and applicants will receive a 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. Applicants can choose to submit a full application regardless of DOE's determination.

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) being addressed, points of contact, total project budget including amount of funds being requested from DOE, proposed cost-share, and name of the lab and any partners.
Project description	3 pages maximum	Applicants are required to: • Describe the project in enough detail that it may be evaluated for its innovation, impact, and relevance to the topic objectives. • Describe relevant background information that helps demonstrate the need for this project, including the problem

		statement or major challenges and barriers being overcome through the project and the approach to solving the problem. • Show the impact that DOE funding and the proposed project would have on the relevant field and application. • Describe how the proposed project, if successfully accomplished, would clearly meet the objectives stated in the lab call.
Addendum	2 pages maximum	Applicants are required to succinctly describe the qualifications, experience, and capabilities of the proposed project team, including: • Whether the project team has the skill and expertise needed to successfully execute the project plan. • Whether the applicant has prior experience that demonstrates an ability to perform tasks of similar risk and complexity. • Whether the applicant has worked together with their teaming partners on prior projects or programs. • Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how they intend to obtain access to the necessary equipment and facilities. • Applicants may provide graphs, charts, or other data to supplement their project description.

iii. Full Applications

Full applications are required to be eligible for award(s) under this solicitation. Application materials must be submitted through Exchange.

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

FULL APPLICATIONS ARE DUE BY THE DATE AND TIME LISTED IN SECTION I.B. 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) 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.

- **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 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, including how individual efforts will be coordinated to achieve the overall project goal, should 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, IP, 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 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.
    - Objective incorporation: 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.

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:** 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:** The purpose of 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, DOE will provide a metric input form for impact metrics reporting.

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

  - Acceptable metrics include but are not limited to: 1) number of 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 and/or incubator partnerships, 9) number of inquiries for new partnerships, 10) innovation or 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 or 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 for 30% cost-share, 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 commitment from partners or 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 (e.g., personnel, travel, equipment, supplies, contractual, indirect, etc.). Other sources of funding, including cost-share information, shall be provided here, if applicable.

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

During the evaluation process, DOE reserves the right to determine 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 is 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.
- **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 or 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:

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.

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.

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%)

How innovative and impactful is the project, assuming the stated outcomes can be achieved as written? This criterion involves consideration of the following factors:

- Innovative—the extent to which the proposed project or solution is innovative, extent to which the proposed project or solution incorporates DEIA objectives, and

the degree to which the proposed project integrates market pull into its thinking and program design, forming a conduit of market insight and awareness.

- Impactful—the extent to which the proposed project or solution, if successful, impacts the core goals outlined in the lab call and/or the root causes (inside and outside of the labs) of the existing commercialization challenges and barriers; the impact of forging collaborations on the challenges being addressed (e.g., industry-leveraged effort); and the impact of collaboration on other interested and impacted stakeholders (e.g., through collaboration with stakeholders outside the National Labs).
- Scalable—the likelihood that the proposed technology, if successful, could be scaled across the field to have a broader impact.
- Commercialization outcomes—the likelihood of the proposed solution achieving the proposed commercialization outcome metrics, the likelihood of the proposed team tracking and reporting on the commercialization outcome metrics, and the degree to which proposal is likely to positively impact DEIA objectives outlined in Section I.C.
- Cost-share commitment—the 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—the degree to which the proposal demonstrates both technology progress and market pull or interest, the extent to which the proposed technology will result in a commercially successful product and/or company, and the extent to which the proposed technology can be successfully commercialized in a reasonable timeframe.

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

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? This criterion involves consideration of the following factors:

- Measurable—the degree to which the proposal is structured to produce a measurable result or impact, including the required DEIA milestones; the extent to

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

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

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

Is the team well-qualified and positioned to successfully complete this project? This criterion involves consideration of the following factors:

- Capable—the extent to which the training, capabilities, and experience of the assembled team will result in the successful completion of the proposed project and the extent to which this team (including proposed subrecipients) will be able to achieve the final results on time and to specification.
- Participation—the level of participation by project participants, as evidenced by letter(s) of commitment demonstrating cost-share and how well they are integrated into the work plan and the extent to which teams include representation from

diverse entities, such as, but not limited to: Minority Serving Institutions, including Historically Black Colleges and Universities/Other Minority Institutions, or through linkages with Opportunity Zones.

- Team quality—the extent to which the final team required to complete this project is fully assembled and committed to the project (e.g., Are there any key members that are "to be hired" in the future?) and the level of proposed cost-share for the project will be taken into consideration.
- Past performance—the extent to which the assembled team has shown success in the past (new performers will not be penalized). DOE encourages new entrants and new ideas, but past successes and/or failures will be noted.
- Access—the extent to which the team has access to facilities, equipment, people, expertise, data, knowledge, and any other resources required to complete the proposed project.

iii. Selection for Award Negotiation

DOE carefully considers all information obtained through the selection process. DOE may select or not select a proposal for negotiations. DOE may also postpone a final selection determination on one or more proposals until a later date, subject to availability of funds and other factors. DOE 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.

iv. Selection Notification

DOE anticipates completing the selection and negotiation process by Q4 FY23 (subject to change). DOE will notify lab leads electronically of selection results. All of DOE's decisions are final when communicated to applicants.

C. Project Administration and Reporting

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

TCF project recipients will be required to meet quarterly with DOE 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 FECM-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, DOE 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 B.

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 (EERE-ExchangeSupport@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(c) 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, 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 to reduce cost for topics 1, 2, 3, and 4 of this lab call (full topic descriptions above). This was done to ensure all project ideas can apply and the most impactful mix of projects can be selected. Each proposal may propose to meet less than the 50% of total project cost-share funds requirement, with a cost-share level of 30%.

DOE will evaluate the level of external industry engagement and collaboration as evidence by cost-share to ensure maximum impact of the selected projects.

For projects proposing cost-share, the nonfederal cost-share must be at least the percentage agreed upon 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.
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.

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 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 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.

    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.

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Technology Transitions

Appendix B: 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

	208-526-3437
Kansas City National Security Campus	Andrew Myers amyers@kcnsc.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 Quaite-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

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

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

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