

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy

Water Power Technologies Office
Hydropower Program

**NATIONAL LABORATORY CALL FOR TECHNICAL
ASSISTANCE WITH HYDROPOWER HYBRIDS AND
PUMPED STORAGE HYDROPOWER**

National Lab Call for Fiscal Year 2024

This call for proposals for National Lab-led technical assistance is being issued by the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Water Power Technologies Office (WPTO).

*Questions about this Lab Call? Email hydropowerrequestforinnovation@ee.doe.gov.
Problems with EERE eXCHANGE? Email EERE-eXCHANGESupport@hq.doe.gov.
WPTO National Lab Call for Technical Assistance (DE-LC-0000118).*

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I. Lab Call Description

A. Background and Context

i. Overview and Purpose

EERE National Laboratory Guiding Principles require all offices to pursue a merit review of direct-funded National Laboratory work. In line with these principles, WPTO is issuing this lab call for fiscal year 2024 (FY2024).

Some labs have continuing multi-year projects that have already gone through the merit review process. These will continue to be reviewed through the annual peer review process. Labs should work with WPTO project and program managers to ensure that ongoing projects are included in the annual operating plans (AOP) to meet AOP deadlines. This lab call will only pertain to the new topic areas below.

Building a clean and equitable energy economy and addressing the climate crisis is a top priority of the Biden Administration. This lab call will advance the Biden Administration's goals to achieve carbon pollution-free electricity by 2035 and to "deliver an equitable, clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050"¹ to the benefit of all Americans. The Department of Energy is committed to pushing the frontiers of science and engineering, catalyzing clean energy jobs through research, development, demonstration, and deployment (RDD&D), and ensuring environmental justice and inclusion of underserved communities.²

The research and development (R&D) activities to be funded under this call for proposals will support the government-wide approach to the climate crisis by driving the innovation that can lead to the deployment of clean energy technologies, which are critical for climate protection. Specifically, this call will enable the National Laboratories to pursue R&D that assists the industry with decisions to develop hydropower hybrids

¹ Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.

² 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.

and pumped storage hydropower (PSH). This call follows a 2023 technical assistance call that utilized a similar structure.³ General objectives are twofold:

1. Provide hybrid and PSH developers and other stakeholders with National Lab expertise and capabilities to address specific, timely challenges they face.
2. Disseminate results, outcomes, and lessons learned from the selected TA projects so that the broader hydropower community can utilize them to achieve expanded impact beyond the individual selected projects.

In addition, this lab call will emphasize increasing the diversity of research staff, increasing diversity of voices in research design, and increasing quantification and emphasis on supporting underserved communities.

ii. Timeline and Process Logistics

Timeline

KEY DATES	
Call Release Date:	March 1, 2024 5:00 p.m. ET
PROPOSAL DEADLINE AND DECISION DATES ¹	
Statement of Interest Deadline ²	April 1, 2024 5:00 p.m. ET
Industry Matching Finalized	April 15, 2024 5:00 p.m. ET
Full Application Submission Deadline ³ :	May 23, 2024 5:00 p.m. ET
Review Comments Available to Applicants:	June 24, 2024 5:00 p.m. ET
Replies to Reviewer Comments Deadline:	July 2, 2024 5:00 p.m. ET
Expected Decision Date:	August 2, 2024 5:00 p.m. ET

¹Dates subject to change

²Open to potential technical assistance recipients

³Restricted to National Laboratories only who have been paired by DOE with potential technical assistance recipients

Process Logistics

All communication to WPTO regarding this Lab call must use hydropowerrequestforinnovation@ee.doe.gov.

- **PROCESS:** WPTO will solicit ideas from potential technical assistance (TA) recipients (e.g., utilities, developers, etc.) through an Argonne National Lab-hosted website (<https://pshvt.egs.anl.gov/ta>), which includes a simple

³ [WPTO Announces \\$4.3 Million in Technical Assistance for the Hydropower Community | Department of Energy](#)

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webform taking only minutes to complete. After the Statement of Interest deadline, WPTO will lead a matching process between ideas from potential TA recipients and the National Labs. Labs will submit full applications in eXCHANGE under this Lab call. Following the merit review and selection, WPTO will provide funding directly to selected National Lab teams that will then provide TA to the recipient. **There is no direct financial assistance for the TA recipients; only technical assistance will be provided.** Furthermore, TA recipients will not be required to provide cash cost share; however, contributions in the form of data, information, and critical review of results may be necessary for project success.

Each TA recipient will receive assistance valued at \$200,000 - \$1,250,000 through specifically assembled National Lab teams comprised of subject matter experts from one or more of the following DOE National Laboratories: Argonne National Laboratory (ANL), Idaho National Laboratory (INL), National Renewable Energy Laboratory (NREL), Oak Ridge National Laboratory (ORNL), and Pacific Northwest National Laboratory (PNNL). Selected projects will be funded as a lab or multi-lab annual operating plan (AOP) with the TA recipient listed as an external partner. Additionally, WPTO is under no obligation to pay for any costs associated with preparation or submission of applications.

The anticipated studies that will be conducted as part of this lab call are data-intensive in nature and therefore, the success of the studies and value to potential TA recipients will be dependent on data quality and availability. Intellectual property, market data, or any other proprietary information furnished by the TA recipient for the purposes of TA will be protected under a non-disclosure agreement (NDA) that the corresponding National Lab team will abide by. The TA recipient and corresponding National Lab team will establish the detailed scope of work and ensure protection of proprietary information.

The tools and methodologies applied for the purpose of providing TA will be made publicly available along with key results, lessons learned, and other documentation produced. TA recipients will not be involved in development, or co-development, of new intellectual property through this TA. In addition, this lab call will not allow TA recipients access to National Lab facilities (e.g., applicants will not physically or virtually access National Lab buildings or networks). No work involving animals or human subject research will be permitted. Based on these limitations in scope, cooperative research and development agreements (CRADAs) will not be required as part of this funding opportunity.

Activities under this lab call are intended to support and inform current as well as future actions by industry decision-makers. WPTO and the National Lab

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teams will not direct behavior, make decisions, or require entities to take any particular course of action.

- **PROPOSAL SUBMISSIONS:** To apply to this Lab Call, lab personnel must register (and sign in) with their lab email address and submit application materials through EERE eXCHANGE. Application materials must be submitted through EERE eXCHANGE at <https://eere-eXCHANGE.energy.gov>, EERE's online application portal. Frequently asked questions for this Lab Call and the EERE Application process can be found at <https://eere-eXCHANGE.energy.gov/FAQ.aspx>.

Applicants are responsible for meeting the submission deadlines. DOE strongly encourages all applicants to submit the required information at least 24 hours in advance of the submission deadline. Applicants should not wait until the last minute—internet and data server traffic can be heavy in the last hours before the submission deadline, which may affect the applicants' ability to successfully submit the required information before the deadline.

- **QUESTIONS DURING OPEN LAB CALL PERIOD:** Specific questions about this Lab Call should be submitted via e-mail to hydropowerrequestforinnovation@ee.doe.gov. WPTO will provide answers related to this Lab Call on EERE eXCHANGE at: <https://eere-eXCHANGE.energy.gov>. Please note that you must first select the specific opportunity number for this Lab Call in order to view the questions and answers specific to this Lab Call. EERE will attempt to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-eXCHANGESupport@hq.doe.gov. To ensure fairness for all lab participants, please do not ask individual WPTO staff questions directly.

- **NOTIFICATION OF SELECTION:** When selections are finalized, lab leads will receive an email from WPTO.

B. Key Considerations and Topic Area(s)

i. Key Considerations

- **AVAILABLE FUNDING:** There is approximately \$7 million in total funding available to fund **all** projects solicited in this Lab Call pending appropriations, program direction, and go/no-go decision points. The division of funding

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between Topics 1 and 2 is an estimate and may be shifted between topics depending on the number of proposals.

- **ELIGIBILITY:** National labs are eligible to submit full applications under this opportunity only if they have been matched by WPTO with potential TA recipients. Potential TA recipients—including hydropower developers, system operators, utilities, energy co-ops, regulators, manufacturers, policymakers, nonprofits, and other relevant parties—must first apply through the Argonne National Lab-hosted website (<https://pshvt.egs.anl.gov/ta>) to be eligible for matching. Once matched with a National Lab, the potential TA recipient and National Lab team may work together to submit a full application under this opportunity, with the National Lab leading the submission.

Both for-profit and non-profit companies or entities that are incorporated (or otherwise formed) under the laws of a particular State or territory of the United States are eligible to apply as potential TA recipients. Entities must be U.S.-based to apply for this TA Opportunity. Federal owners of hydropower, power marketing administrations, and other federal government bodies are not eligible to apply under this TA opportunity, but they should instead consider partnering with the National Laboratories through the companion WPTO Hydropower Program Lab Call.

- **DIVERSITY, EQUITY, and INCLUSION:**

It is the policy of the Biden Administration that:

[T]he Federal Government should pursue a comprehensive approach to advancing equity⁴ 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 (agencies) must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

⁴ 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 (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. E.O. 13985.

By advancing equity across the Federal Government, we can create opportunities for the improvement of communities that have been historically underserved, which benefits everyone.⁵

As part of this whole of government approach, this lab call seeks to encourage the participation of underserved communities and underrepresented^{6,7} groups. Applicants are highly encouraged to include individuals from groups historically underrepresented, in STEM on their project teams. As part of the application, applicants are required to describe how diversity, equity, and inclusion objectives will be incorporated in the project. Specifically, applicants are required to reference, if available, the existing laboratory Diversity, Equity, and Inclusion Plan and describe within the technical volume the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project; and the extent the project activities will be located in or benefit underserved communities.

Because a diverse set of voices at the table in research design and execution has an illustrated impact on innovation, this implementation strategy for the lab-wide plan will be evaluated as part of the technical review process.

⁵ Executive Order 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government” (Jan. 20, 2021).

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—blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are vastly underrepresented in the STEM (science, technology, engineering and math) 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 U.S., Hispanics, African Americans and American Indians or Alaska Natives make up 24 percent of the overall workforce, yet only account for 9 percent 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.

Further, to the extent the proposed project will include external partners, the applicant is encouraged to include Minority Serving Institutions⁸, Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, Veteran Owned Businesses, or entities located in an underserved community. The Selection Official may consider the inclusion of these types of entities as part of the selection decision.

ii. Topic Area Descriptions

Topic 1: Hydropower Hybrids

- Eligibility:
 - Statements of Interest: Eligible entities as described above
 - Full Applications: ANL, INL, NREL, PNNL, ORNL
- Estimated DOE Funding Available: \$3.5M (subject to change)
 - Topic 1A: \$1M
 - Topic 1B: \$2.5M
- Estimated Number of Projects Expected: 5-9
 - Topic 1A: 3-5
 - Topic 1B: 2-4
- Funding per award:
 - Topic 1A: \$200-400K
 - Topic 1B: \$750k-1.25M
- Estimated Project Duration: 2-3 years
 - No more than half of the upper limit on funding per award may be requested in the first year.

While complementing hydropower with other generation, storage resources, or loads in hydropower hybrid configurations is the subject of increasing interest in the hydropower industry, greater insight into the value proposition is an important need. Some of the other questions about the benefits of hydro hybrid operation include 1) reduction in wear and tear on equipment, 2) improved offering of ancillary services, 3) increased capacity accreditation given to a hydropower hybrid system versus hydropower alone, or 4) increase in other types of flexibility and optimization of operations in systems with new generation, storage resources, or loads.

⁸ Minority Serving Institutions (MSIs), 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 minorities' institution list. See <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

HydroWIRES has multiple projects underway in the area of hybridization^{9,10,11,12,13,14,15}. Through these hydropower hybrid projects and interviews with utilities, industry has expressed a desire for more insight into the locational and operational considerations of hydropower hybrid systems. As a starting point, an Idaho National Laboratory-led team has developed a hydro hybrids tool to assist in the decision to hybridize hydropower plants. This tool is now ready for use with industry partners as part of this technical assistance (TA) topic area.¹⁶

This topic solicits industry, utility, and other potential TA recipients with hydropower equities to apply for technical assistance from a National Lab-led team by submitting a Statement of Interest in a simple webform found on the Argonne National Lab-hosted TA website (<https://pshvt.egs.anl.gov/ta>). Interested TA recipients will be asked to submit SOIs in one of two sub-topic areas within this topic:

Topic 1A) Tool Use. This level of technical assistance will use the existing hydro hybrids tool to evaluate opportunities for hybridization, and will be most helpful for utilities and other entities considering hydropower hybrids but still at a relatively early stage of evaluating options.

Topic 1B) Deeper Dives. This level of technical assistance will use the existing hydro hybrids tool in combination with deeper custom modeling and analysis studies to evaluate hydropower hybrid opportunities. This level will be most appropriate for more entities with more specialized questions or who are more advanced in the investigation of a hybrid opportunity, such as having already identified and studied a site of interest.

The potential TA recipient is expected to provide any market or proprietary data necessary to enable the TA to be completed as proposed. Data furnished by the

⁹ [Enhancing Local Grid Resilience with Small Hydropower Hybrids: Proving the concept through demonstration, simulation, and analysis with Idaho Falls Power \(Technical Report\) | OSTI.GOV](#)

¹⁰ [Idaho Falls Power Black Start Field Demonstration \(Preliminary Outcomes Paper\) \(Technical Report\) | OSTI.GOV](#)

¹¹ [New tech brings resilience to small-town hydropower - Idaho National Laboratory \(inl.gov\)](#)

¹² [U.S. Department of Energy Announces \\$8 Million for Technologies to Increase Hydropower Flexibility | Department of Energy](#)

¹³ [Enabling Floating Solar Photovoltaic \(FPV\) Deployment: Exploring the Operational Benefits of Floating Solar-Hydropower Hybrids \(Technical Report\) | OSTI.GOV](#)

¹⁴ [Solar Energy Technologies Office Lab Call FY2022-24 – Soft Costs | Department of Energy](#)

¹⁵ [National laboratories team with Idaho Power to evaluate hydrogen generation integrated with hydropower - Idaho National Laboratory \(inl.gov\)](#)

¹⁶ [Idaho National Laboratory Hydro Hybrids tool](#)

potential TA recipient will be protected under non-disclosure agreements as needed and determined by the recipient.

If multiple recipients request similar TA under this subtopic, the National Labs may consider organizing workshops, or other grouped TA efforts, with prior approval of all involved recipients.

Topic 2: Pumped Storage Hydropower Valuation

- Eligibility:
 - Statements of Interest: Eligible entities as described above
 - Full Applications: ANL, INL, NREL, PNNL, ORNL
- Estimated DOE Funding Available: \$3.5M (subject to change)
 - Topic 2A: \$1M
 - Topic 2B: \$2.5M
- Estimated Number of Projects Expected: 5-9
 - Topic 2A: 3-5
 - Topic 2B: 2-4
- Funding per award:
 - Topic 2A: \$200-400K
 - Topic 2B: \$750k-1.25M
- Estimated Project Duration: 2-3 years
 - No more than half of the upper limit on funding per award may be requested in the first year.

Pumped storage hydropower (PSH) is currently the only source of long-duration energy storage that has been widely commercialized, but new projects face challenges to deployment, due in part to the mismatch between the large capital cost and long lifetime of PSH with the shorter-term planning processes and return-on-investment generally required in the energy sector. One piece of this challenge that National Labs are well-suited to address is the accurate valuation of current or prospective PSH assets in the changing energy system. Within the HydroWIREs initiative, many different projects have focused on this question, including developing new models, tools, and other lab capabilities.

In March 2021, an ANL-led national lab team published the Pumped Storage Hydropower Valuation Guidebook – A Cost-Benefit and Decision Analysis Valuation Framework¹⁷ which provides a step-by-step valuation guidance for PSH developers, plant owners or operators, and other stakeholders to assess the value of existing or

¹⁷ [PSH Valuation Tool \(anl.gov\)](#)

potential new PSH plants. Following development of the guidebook, PNNL and ANL worked together to develop the online PSH Valuation Tool to facilitate straightforward access to results from the valuation methodology by developers and utilities evaluating options for PSH. This tool has been developed with industry and academia input, and the tool has been well-received by the industry as a valuable resource to developers who seek to reduce financial risk in the large capital expenditures necessary for a PSH project. A previous PSH valuation opportunity in 2023 selected a cohort of several projects, and this new opportunity will provide the chance for additional TA recipients to benefit from National Lab expertise in PSH valuation.

This topic solicits PSH developers, owners, or other entities with equities in PSH to apply for technical assistance from a National Lab-led team by submitting a Statement of Interest in a simple webform found on the Argonne National Lab-hosted TA website (<https://pshvt.egs.anl.gov/ta>). Interested TA recipients will be asked to submit SOIs in one of two sub-topic areas within this topic:

Topic 2A) Tool Use. This level of technical assistance will use the existing PSH valuation tool to evaluate opportunities for PSH development, and will be most helpful for developers, utilities, and other entities considering PSH but still at a relatively early stage of evaluating site options or investigating scenarios.

Topic 2B) Deeper Dives. This level of technical assistance will use the existing PSH valuation tool in combination with deeper custom modeling and analysis studies to evaluate PSH opportunities. This level will be most appropriate for more entities with more specialized questions or who are more advanced in the investigation of a PSH development opportunity, such as having already identified and studied a site of interest.

The potential TA recipient is expected to provide any market or proprietary data necessary to enable the TA to be completed as proposed. Data furnished by the recipient will be protected under non-disclosure agreements as needed and determined by the recipient.

If multiple recipients request similar TA under this subtopic, the National Labs may consider organizing workshops, or other grouped TA efforts, with prior approval of all involved recipients.

II. Application Submission and Review Information

A. Application and Submission Details

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Problems with EERE eXCHANGE? Email EERE-eXCHANGESupport@hq.doe.gov.

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i. Application Process

After Statement of Interests from potential TA recipients are received, WPTO will perform an initial eligibility review based on recipients' submitted Statements of Interest in order to determine that (1) the applicant is an eligible entity, (2) the information requested has been submitted, and (3) the application is responsive to the objectives of this Lab Call for Technical Assistance. Potential TA recipients that fail to pass this initial review will be deemed ineligible and will not be matched with a National Lab. Furthermore, the ineligible potential TA recipient will be removed from further consideration in this Lab Call. Potential TA recipients that are deemed eligible will be matched to participating National Labs. Only matched National Lab+TA recipient teams are eligible to submit full applications in eXCHANGE under this opportunity. Applications must be led and submitted by the National Lab team following the procedures below.

To apply to this Lab Call, applicants must register with their lab email address and submit application materials through EERE eXCHANGE at <https://eere-eXCHANGE.energy.gov>, EERE's online application portal. Beginning on July 8, 2022, eXCHANGE will be updated to integrate with Login.gov. As of August 5, 2022, potential applicants will be required to have a Login.gov account to access EERE eXCHANGE. As part of the eXCHANGE registration process, users will be directed to create an account in <https://login.gov/>. Please note that the email address associated with Login.gov must match the email address associated with the eXCHANGE account. For more information, refer to the Exchange Multi-Factor Authentication (MFA) Quick Guide in the [Manuals section](#) of eXCHANGE.

All submissions must conform to the guidelines for format and length, and be submitted at, or prior to, the deadline listed.

Applicants will be required to include project information and details in eXCHANGE that will be used to develop and accelerate negotiations of FY 2025 AOPs if selected. Appendix A provides a worksheet to guide applicants through this process in eXCHANGE. Any information the applicant considers to be of significance for the review process must be included in the proposal, as reviewers will not have access to the AOP development information entered in eXCHANGE.

ii. General Proposal Requirements

Full proposals should be formatted for 8.5 x 11 paper, single spaced, and have 1-inch margins on each side. Typeface size should be 12-point font, except tables and figures, which may be in 10-point font.

iii. Proposal Content

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Proposal content aligns with content required in the EERE AOP project forms, with additional information to assist reviewers in evaluating technical details. The narrative should build on the information provided as part of the EERE eXCHANGE template. Applicants must include all content they wish to have reviewed in the proposal (proposal reviewers will not review any information provided in eXCHANGE for AOP development).

Full Applications

- EERE will not review or consider ineligible Full Applications.
- Each Full Application shall be limited to a single concept or technology. Unrelated concepts and technologies shall not be consolidated in a single Full Application.

Full Applications must conform to the following requirements:

SECTION	FILE FORMAT	PAGE LIMIT	FILE NAME
Technical Volume	PDF	12	{{ControlNumber}}_{{LeadOrganization}}_TechnicalVolume
Resumes	PDF	Not Specified	{{ControlNumber}}_{{LeadOrganization}}_Resumes
Letters of Commitment	PDF	Not Specified	{{ControlNumber}}_{{LeadOrganization}}_LOCs
Summary/Abstract for Public Release	PDF	1	{{ControlNumber}}_{{LeadOrganization}}_Summary
Summary Slide	MS PowerPoint	1	{{ControlNumber}}_{{LeadOrganization}}_Slide
Diversity, Equity, Inclusion, and Accessibility (DEIA) Implementation Plan	PDF	1	{{ControlNumber}}_{{LeadOrganization}}_DEIAIP

Technical Volume

The Technical Volume must be submitted in PDF format. The Technical Volume must conform to the following content and form requirements, including the 12 page limit. If applicants exceed the 12 page limit indicated above, EERE will review only the authorized number of pages and disregard any additional pages. Save the Technical Volume in a single PDF file using the following convention for the title “{{ControlNumber}}_{{LeadOrganization}}_TechnicalVolume”.

Applicants must provide sufficient citations and references to the primary research literature to justify the claims and approaches made in the Technical Volume. However, EERE and reviewers are under no obligation to review cited sources.

The Technical Volume to the Full Application may not be more than 12 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all of the information in the table below. The applicant should consider the weighting of each of the evaluation criteria when preparing the Technical Volume.

The Technical Volume must conform to the following content requirements:

SECTION / PAGE LIMIT	DESCRIPTION
Cover Page 1 page	The cover page should include the project title, the specific Lab Call Topic Area being addressed, both the technical and business points of contact, names of all team member organizations, and any statements regarding confidentiality.
Problem Statement 1 page	The Problem Statement should include: <ul style="list-style-type: none"> • Background: Describe the problem that the proposed concept will address. • Project Goal: Explicitly identify the targeted improvements and knowledge gaps this proposal fills • Impact: Describe who in the broader community would benefit from this work, i.e. which stakeholder groups, in as much specificity as possible. • Role for the Government: Discuss why this work is appropriate for the government.
Technical Description and Impact 2-4 pages	The Technical Description and Impact should contain: <ul style="list-style-type: none"> • Innovation and Impacts: Describe the current state-of-the-art in the applicable field, the specific innovation of the proposal, the advantages of proposed method or technology over current and emerging ones, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful. • Relevance and Outcomes: Provide a detailed description of the technical objectives that will be pursued during the project and supporting scientific or engineering principles. This section should describe the relevance of the proposed project to the goals and objectives of the lab call, including the potential to meet specific DOE technical targets or other relevant performance targets. The applicant should clearly specify the expected outcomes of the project. Describe how success directly impacts the Hydropower Program’s goals and larger WPTO and DOE goals. • Feasibility: Demonstrate the technical feasibility of the proposed project and capability of achieving the anticipated project objectives, including a description of previous work done and prior results. Include a description of what success will look like.

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<p>Project Structure and Approach 3-5 pages</p>	<p>This section should explain the structure of activities, specific inputs and outputs, connectivity with other work in the Hydropower Program, WPTO, or DOE portfolio, and important partnerships within and outside of the national lab network. The Project Structure and Approach should include:</p> <ul style="list-style-type: none"> • Technical Scope Summary: Provide a summary description of the overall work scope and approach to achieve the objective(s). • Task Description Summary: Describe the work to be accomplished and how the applicant will achieve the milestones, will accomplish the final project goal(s), and will produce all deliverables. Please break into discrete tasks. Each task should be described in its own sub-section, detailing the planned methodology. • Milestone or Deliverable Summary: Provide a table or summary of appropriate milestones throughout the project to demonstrate success including their end date. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. The minimum requirement is that each project must have roughly one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). • Risks: Describe any points of concern/risks that exist in executing the proposed work. Include a description of the risk and a plan to respond to the risk. This should be in narrative form and may also be summarized into a table. • Project Schedule (Gantt Chart or similar): Provide a schedule for the entire project, including task and subtask durations, milestones, and decision points. • Budget: Include budget broken out into fiscal years for each task described. If possible, break out by lab. Also clearly note subcontract funding, if applicable.
<p>Team Suitability and Resources 1 page</p>	<p>The Team Suitability and Resources should contain the following information:</p> <ul style="list-style-type: none"> • Describe the project team’s unique qualifications and expertise, including those of key subrecipients. • Describe the project team’s existing equipment and facilities that will facilitate the successful completion of the proposed project • Describe the time commitment of the key team members to support the project. • For multi-organizational or multi-investigator projects, describe succinctly: <ul style="list-style-type: none"> ○ The roles and the work to be performed by each PI and Key Participant; ○ Business agreements between the applicant and each PI and Key Participant; ○ How the various efforts will be integrated and managed;

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	<ul style="list-style-type: none"> ○ Process for making decisions on scientific/technical direction; ○ And, if applicable, publication arrangements; intellectual property issues; and communication plans
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Resumes

Applicants are required to submit resumes for key participating team members. Save the resumes in a single PDF file using the following convention for the title “{{ControlNumber}}_{{LeadOrganization}}_Resumes”.

Letters of Commitment

Submit letters of commitment from all subrecipient and third-party cost share providers. If applicable, also include any letters of commitment from partners/end users. Save the letters of commitment in a single PDF file using the following convention for the title “{{ControlNumber}}_{{LeadOrganization}}_LOCs”.

Summary/Abstract for Public Release

Applicants are required to submit a single page summary/abstract of their project. The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (e.g., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as DOE may make it available to the public after selections are made. The project summary must not exceed a single page when printed using standard 8.5 x 11 paper with 1” margins (top, bottom, left, and right) with font not smaller than 12 point. Save the Summary for Public Release in a single PDF file using the following convention for the title “ControlNumber_LeadOrganization_Summary”.

Summary Slide

Applicants are required to provide a single MS Powerpoint slide summarizing the proposed project. This slide is used during the evaluation process.

The Summary Slide template requires the following information:

- A technology summary;
- A description of the technology’s impact;
- Proposed project goals;
- Any key graphics (illustrations, charts and/or tables);
- The project’s key idea/takeaway;

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- Project title, prime recipient, Principal Investigator, and Key Participant information; and
- Requested EERE funds and proposed applicant cost share.

Save the Summary Slide in a single page MS Powerpoint file using the following convention for the title “{{ControlNumber}}_{{LeadOrganization}}_Slide”.

Diversity, Equity, Inclusion, and Accessibility (DEIA) Implementation Plan

As part of the application, applicants are required to describe how diversity, equity, inclusion, and accessibility objectives will be incorporated in the project. Specifically, applicants are required to submit a description of how the project will incorporate DEIA and/or support, or integrate, the lab-wide DEIA Plan. The plan should 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; and the extent the project activities will be located in or benefit underserved communities. The plan should include SMART milestones supported by metrics to measure the success of the proposed actions. The DEIA Implementation Plan should reflect the size, scope, and resources of the project.

The Diversity, Equity, Inclusion, and Accessibility (DEIA) Implementation plan should be specific to the project and project team but may reference the lab DEIA plan if applicable, and contain the following information:

- Equity Impacts: the impacts of the proposed project on underserved or disadvantaged communities, including social and environmental impacts.
- Benefits: The overall benefits of the proposed project to underserved or disadvantaged communities and/or underrepresented individuals or groups; and
- How diversity, equity, inclusion, and accessibility 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 diversity, equity, and inclusion elements. These examples should not be considered either comprehensive or prescriptive. Applicants are encouraged to propose appropriate actions not covered by these examples.

- a. Engagement and inclusion of underrepresented individual or groups
 - i. Include persons from groups underrepresented in STEM as PI, co-PI, and/or other senior personnel;
 - ii. Include persons from groups underrepresented in STEM as student researchers or post-doctoral researchers;

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- iii. Implement evidence-based, diversity-focused education programs (such as implicit bias training for staff) in your organization;
- iv. Identify Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses and Veteran Owned Businesses to solicit as vendors and sub-contractors for bids on supplies, services and equipment
- v. Include faculty or students from Minority Serving Institutions as PI/co-PI, senior personnel, and/or student researchers;
- vi. Enhance or collaborate with existing diversity programs at your home organization and/or nearby organizations;
- vii. Collaborate with students, researchers, and staff in Minority Serving Institutions;
- b. Explicit diversity and accessibility in research impact
 - i. Illustrated outcome impact in underserved or disadvantaged communities
 - ii. Disseminate results of research and development in Minority Serving Institutions or other appropriate institutions serving underserved communities;
- c. Explicit diversity and equity considerations in research design. Inclusion of a broad community, academic, policymaking staff in research design and execution phase

Save the Diversity, Equity, Inclusion, and Accessibility (DEIA) Implementation Plan in a single PDF file using the following convention for the title “`{{ControlNumber}}_{{LeadOrganization}}_DEIAIP`”.

Content and Form of Replies to Reviewer Comments

WPTO will provide applicants with reviewer comments following the evaluation of all eligible Full Applications. Applicants will have a brief opportunity to review the comments and to prepare a short Reply to Reviewer Comments responding to the comments however they desire or supplementing their Full Application. The Reply to Reviewer Comments is an optional submission; applicants are not required to submit a Reply to Reviewer Comments. EERE will post the Reviewer Comments in EERE eXCHANGE. The expected submission deadline is on the cover page of the Lab Call; however, it is the applicant’s responsibility to monitor EERE eXCHANGE in the event that the expected date changes. The deadline will not be extended for applicants who are unable to timely submit their reply due to failure to check EERE eXCHANGE or relying on the expected date alone.

EERE will not review or consider ineligible Replies to Reviewer Comments. EERE will review and consider each eligible Full Application, even if no Reply is submitted or if the Reply is found to be ineligible.

Replies to Reviewer Comments must conform to the following content and form requirements, including maximum page lengths, described below. If a Reply to Reviewer Comments is more than 5 page[s] in length, EERE will review only the first 5 page[s] and disregard any additional pages.

SECTION	PAGE LIMIT	DESCRIPTION
Text	3	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	2	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

Please make sure to preface the responses with a short note about the context of what is being addressed. For example: *Concerns regarding our assumption around cost reduction – We used the following methodology to calculate the reduction in cost...*

Reviewers will not have a list of comments in front of them to match with short rebuttals. In other words DO NOT do the following as reviewers will not be able to reference the specific comment: *Reviewer 3 comment 5 - We used the following methodology to calculate the reduction in cost...*

It is important to note that it is usually best to use the allotted space to address a few of the most critical comments well, rather than try to respond to all of them.

Treatment of Application Information

Proprietary Information

In general, DOE will use data and other information contained in proposals only for evaluation purposes, unless such information is generally available to the public or is already the property of the government.

Proposals should not include trade secrets or commercial or financial information that is privileged or confidential unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the Lab Call.

B. Application Review Details

i. Merit Review and Selection Process

Upon receipt and review for initial compliance with requirements, all proposals received in eXCHANGE by the deadline will undergo a thorough technical review. WPTO will use expert reviewers familiar with the WPTO portfolio, goals, and objectives. WPTO will collect and collate review scores and comments for use in making final project

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selections. The WPTO Selection Official will consider the merit review results to make the final project selections. For transparency, WPTO will provide summaries of the review results to assist labs in understanding how their submission reviewed and aid in improving future work.

ii. Technical Review Criteria

Final Applications

Applications will be evaluated against the merit review criteria shown below:

Criterion 1: Technical Merit, Innovation, and Impact (40%)

This criterion involves consideration of the following factors:

Technical Merit and Innovation

- Extent to which the proposal is innovative;
- Degree to which the current state of the science and the proposed advancement(s) are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state-of-the-art to the proposed advancement; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and innovative, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work.

Impact

- The potential for the project to be replicable for broad positive impact across the hydropower community.
- How the project supports the topic area objectives and target specifications and metrics; and
- The potential impact of the project on advancing the state-of-the-art or state-of-practice.

Criterion 2: Project Approach (30%)

This criterion involves consideration of the following factors:

Approach and Tasks

- Degree to which the approach has been clearly described and thoughtfully considered; and
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed workplan succeed in meeting the project goals.

Identification of Technical Risks

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- Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the quantifiable metrics, milestones, and deliverables make meaningful progress to the project goals
- Strength of dissemination activities and other plans to ensure appropriate sharing of results across the hydropower community.

Criterion 3: Team Suitability and Resources (20%)

This criterion involves consideration of the following factors:

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- The sufficiency of the facilities to support the work;
- The degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Project Approach and Structure; and
- The reasonableness of the budget for the proposed project and objectives.

Criterion 4: Diversity, Equity, Inclusion, and Accessibility (10%)

This criterion involves consideration of the following factors:

- The quality and manner in which the measures incorporate diversity, equity, inclusion, and accessibility goals in the project and project team; and
- Extent to which the project benefits underserved or disadvantaged communities and/or underrepresented individuals or groups

Criteria for Replies to Reviewer Comments

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EERE has not established separate criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the Full Application.

iii. Selection for Award Negotiation

WPTO carefully considers all of the information obtained through the proposal process and makes an independent assessment of each compliant and responsive proposal based on the criteria set forth in this Lab Call. WPTO may select or not select a proposal for negotiations. WPTO may also postpone a final selection determination on one or more proposals until a later date, subject to availability of funds and other factors. WPTO will notify applicants if they are, or are not, selected for award negotiation.

iv. Selection Notification

WPTO anticipates completing the project selection process and notifying labs of selections during the week of July 29, 2024 **(subject to change)**.

WPTO will notify lab leads of selection results from WPTO and will provide lab leads with summaries of anonymized review comments for each proposal submitted.

v. Questions and Agency Contacts

Specific questions about this lab call should be submitted via e-mail to hydropowerrequestforinnovation@ee.doe.gov. To ensure fairness across all labs, individual WPTO staff cannot answer questions while the lab call remains open. To keep all labs informed, WPTO will post all questions and answers on EERE eXCHANGE.

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Appendix A: Lab Call Full Application Worksheet for eXCHANGE

Lab Call Full Application Worksheet

IMPORTANT: This document is provided as a courtesy to allow Lab Call applicants to collaborate offline to develop Full Applications for Lab Calls. All information must be entered into the eXCHANGE system and cannot be submitted with this document.

Please contact ITSIHelp@ee.doe.gov with any questions.

Project General Information

Control Number:

Applicant (Name and Email):

Organization Name:

Project Title:

Topic:

Project Start Date:

Project End Date:

Partner Laboratories:

Partner Laboratory	Email	First Name	Last Name

Is this a continuation of an existing project?

WBS Number:

Fiscal Year Existing Project:

Project Overview (Multi-year):

Project Objectives (Multi-year):

Contact Information

Lab Lead Point of Contact and Business Contact Information

Name:

Email:

Title:

Address:

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Phone:

Fax:

Financials

Please add a separate table for each partner laboratory.

Lead Laboratory Name:

Year	Planned Project Costs
2021	
2022	
2023	
Subtotal	

Partner Laboratory (If Applicable) Name:

Year	Planned Project Costs
2021	
2022	
2023	
Subtotal	

Total Planned Project Costs:

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Performers

Please add a separate table for each partner laboratory.

Lead Laboratory Name:

Subcontractor Name	Sub Type	Start Date	End Date	2021 Planned Costs	2022 Planned Costs	2023 Planned Costs	Total Funding
Subcontractor Subtotal							

Partner Laboratory (If Applicable) Name:

Subcontractor Name	Sub Type	Start Date	End Date	2021 Planned Costs	2022 Planned Costs	2023 Planned Costs	Total Funding
Subcontractor Subtotal							

Total Planned Project Costs:

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Project Plan

Project Tasks:

Task Number	Title	Description	Team Members	Planned Costs	Start Date	End Date

Project Milestones:

Item Number	Type	Title	Description	End Date	Team Members	Criteria

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Risks

Project Tasks:

Risk Name	Description	Response Plan	Severity	Probability	Response	Source	Classification	Team Members	Target Completion Date

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Modalities/TRL

Modalities:

Modality Number	Modality	FY21 Weight (%)	FY21 Planned Costs (\$)
Total:			

Current TRL of the proposed technology (1-9):

Estimated TRL the technology will reach at project end (2-9):

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Project Impacts

Deliverable/Product or "Output" Description:

Audience/Customer:

Audience/Customer Use:

Communications/Outreach Strategy:

Does this project involve significant industry engagement?

Description of Engagement:

Associated CRADAs?

CRADA Text

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