2023 University Global Research Award: Supporting a Clean Energy Future

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1. EPRI CORPORATE OVERVIEW

1.1 EPRI Background and Business Overview

The Electric Power Research Institute, Inc. (EPRI, www.epri.com) is a 501(c)(3) non-profit corporation that conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. As an independent, nonprofit organization, EPRI brings together scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and the environment. EPRI also provides technology, policy and economic analyses to drive long-range research and development planning, and supports research in emerging technologies. EPRI's members represent approximately 90 percent of the electricity generated and delivered in the United States, and international participation extends to more than 30 countries. EPRI's principal offices and laboratories are located in Palo Alto, CA; Charlotte, NC; Knoxville, TN; Dallas, TX; Lenox, MA; and Washington D.C.

1.2 EPRI's Goals and Values

EPRI takes all measures to ensure that accountability and integrity are ingrained in the company culture. Ethics and confidentiality are rigorously maintained at all levels of EPRI achieving an extremely high level of integrity. Innovation, excellence and quality are all driving forces behind EPRI's work. EPRI maintains the highest scientific standards, business standards, and credibility during all activities conducted in relation to

EPRI operations. The EPRI team is strongly committed to each other, external customers, internal customers, and to society as a whole.

2. RFP OVERVIEW

2.1 RFP Overview

EPRI is soliciting proposals from graduate and undergraduate universities to focus research that will transform the energy industry. We encourage proposals that are focused on exploring and/or accelerating:

i. Decarbonized (clean) energy solutions (i.e. Methods and technologies to decarbonize energy), or
ii. Economy-wide decarbonization that impacts the energy industry.

This call for proposals aims to catalyze clean energy research, development, demonstration, and deployment activities at colleges and universities around the globe by awarding research funding and providing access to EPRI's expertise. The capability of universities to transfer ongoing cutting-edge research into educational programs is essential to enhancing the skill sets of future engineers, while driving a collaborative dialogue around energy. The desired outcome of this solicitation is to help prepare students to meet the technological challenges of the evolving power system and inform the energy transition.

Research, development, demonstration, and deployment activities funded under this opportunity will support technology innovation and collaboration in pursuit of economy-wide decarbonization.

2.1 Code of Ethics

EPRI will be responsible for monitoring and enforcing a code of ethics for this RFP process. EPRI is committed to avoiding situations where the appearance of improprieties may arise. No candidate shall provide gifts, payments, entertainment, or other items of monetary value in an effort to influence EPRI's decision makers. EPRI has sole discretion to disqualify any candidate from this RFP process if EPRI deems a candidate's actions are improper or give rise to the appearance of impropriety.

EPRI prohibits any form of discrimination or harassment, including verbal or physical acts, jokes or slurs, relating to any of the following protected classes; race, color, religion, gender, sexual orientation, transgender status, gender identity, gender expression, pregnancy, national origin, ethnicity, citizenship status, marital status, domestic partner status, medical condition (as defined under California law), age, physical or mental disability, veteran status, genetic information, predisposition or carrier status, or any other basis protected by applicable law.

EPRI, as a non-profit scientific research organization, has core values which include research and business integrity, objectivity, and public benefit. In addition, EPRI is committed to interacting and transacting in an honest, transparent, and fair manner. To the extent applicable for this RFP, candidates agree to abide by the principles and requirements set forth by the EPRI Supplier Code of Conduct ("Code of Conduct"); a copy of the Code of Conduct is available at: http://contractor.epri.com.

2.3 RFP Conditions and Disclaimers

A response to this RFP is not and will not be considered a binding contract between any candidate and EPRI. A written contract may be executed after a candidate is chosen by EPRI, giving rise to mutual obligations for

the chosen candidate and EPRI. EPRI reserves the right to accept or reject any RFP submitted. See Attachment A for award requirements. EPRI reserves the right to amend or cancel this RFP at any point prior to executing an appropriate contract. If the successful candidate fails to execute a contract following selection, EPRI reserves the right to award the contract to another candidate. The proposal preparation costs will be borne by the individual candidates. EPRI is not bound to any course of action due to the release of this RFP and/or EPRI's receipt of a submission from any particular candidate. EPRI expects to make a total award amount of up to one million dollars ($1M USD) available annually through this program. It is anticipated that multiple awardees will be funded on an annual basis, with the opportunity to extend funding across multiple years. Typical individual award size is anticipated to be approximately $200,000 USD per annum. Proposals will be accepted, reviewed, and awarded on a rolling basis.

2.4 Submitting Questions

Any questions regarding this RFP must be submitted to the RFP contact (see 3.2) via electronic mail.. All questions and inquiries will be answered via electronic mail.

3. RFP SUBMISSION AND SELECTION DETAILS

3.1 RFP Submission Overview

All candidates shall electronically submit their RFP response to innovation-awards@epri.com. Submissions should be electronically sent to the contact email below and *any attachments should not exceed **10MB** in file size total.* For submissions larger than this size, please send an email requesting an upload portal and/or SFTP.

EPRI will **not** protect information provided by candidates which is marked as "Confidential". Candidates agree to this condition by submitting a proposal. Recipients shall only use this RFP for the purpose of preparing a response to this RFP. If a candidate wants to use, duplicate, or disclose the information contained in this RFP for any reason not expressly specified within this RFP, EPRI's prior written consent is required.

Submissions to EPRI, in response to this RFP, is **not** an offer to contract. EPRI is not bound to any course of action due to the release of this RFP and/or EPRI's receipt of a RFP submission from any candidate.

Submissions should provide adequate details to ensure clarity. Any exceptions to the scope of work should be clearly stated and explained.

A research application is required. Each application must contain:

1. Cover sheet
2. Abstract
3. Project narrative
4. Funding Request

1. Cover sheet

   A cover sheet containing the name and mailing address of the sponsoring academic institution; the title of the research application; the name, email address, and telephone number of the principal investigator and key personnel expected to be involved in the research. The cover sheet should not exceed one (1) page in length.

2. Abstract
   The cover sheet must be followed by a clear and concise description of the objectives of the research project and a description of the research project, including methods to be employed, and the potential impact of the research (i.e. benefits, outcomes). The description of the proposed research may not exceed one (1) page.

3. Project Narrative
   The Project Narrative comprises the research plan for the project. It should contain enough background material in the Introduction, including a brief review of the relevant literature and any prior research in this area, to demonstrate sufficient knowledge of the state of the science. The major part of the narrative should be devoted to a description and justification of the proposed project, including details of the methods to be used. The project narrative must not exceed a page limit of eight (8) pages, including technical information, including charts, graphs, maps, photographs, and other pictorial presentations.

   The following organization of the Project Narrative is suggested:
   - Background/Introduction: Explanation of the importance and relevance of the proposed work as well as a review of the relevant literature.
   - Project Objectives: This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
   - Proposed Research and Methods: Identify the hypotheses to be tested (if any) and details of the methods to be used including

4. Funding Request
   A budget breakdown of expected project costs related to the award funding must be provided. Sufficient detail should be provided which describes why funding is needed and for what it will be used. Applicable expenses may include items such as (but not limited to) equipment for testing, materials for prototyping, costs for modeling, printing costs, conference fees, or student travel to conferences to present results. Funding request may not exceed three (3) pages in length.

3.2 EPRI Contact Information

Proposals and questions about the RFP may be directed to innovation-awards@epri.com

3.3 RFP Submission Schedule

Proposals for the 2023 Award will be accepted on a rolling basis, until October 1st, or until funds are exhausted. On October 2nd, EPRI will open the 2024 call for proposals.

3.5 Post RFP Award Requirements

If your RFP application is selected for an Award, **applicant must agree to a Data Sharing Agreement** which

will allow EPRI to tell the world about the scientific research your university worked on over the course of the award year. See attachment A.

Applicant must also agree to provide a summary report or white-paper showcasing its hard-work and scientific research. This white-paper is suggested to be a high-level overview, typically between X-Y pages. The white-paper must be provided to EPRI within 365 days from each award disbursement. EPRI also encourages university applicant to provide additional supporting materials that may help communicate your progress with the award.

Failure to follow Post RFP Award Requirements could delay disbursement of funds, exclude your university from awards in subsequent years, and/or require disgorgement of funds used for purposes other than what applicant described in the RFP application.

EPRI understands that circumstances may change over the course of the year. If you believe your university will be unable to fulfill the obligations, please communicate your challenge as soon as possible. EPRI may be able to make reasonable accommodation, although not obligated.

4. RFP SCOPE

4.1 EPRI University Research Award: Supporting a Clean Energy Future

I. Overview & Objectives

EPRI is soliciting proposals from graduate and undergraduate universities to focus research that will transform the energy industry. We encourage proposals that are focused on exploring and/or accelerating:

i. Decarbonized (clean) energy solutions (i.e. Methods and technologies to decarbonize energy), or
ii. Economy-wide decarbonization that impacts the energy industry.

This call for proposals aims to catalyze clean energy research, development, demonstration, and deployment activities at colleges and universities around the globe by awarding research funding and providing access to EPRI's expertise. The capability of universities to transfer ongoing cutting-edge research into educational programs is essential to enhancing the skill sets of future engineers, while driving a collaborative dialogue around energy. The desired outcome of this solicitation is to help prepare students to meet the technological challenges of the evolving power system, and inform the energy transition.

Research, development, demonstration, and deployment activities funded under this opportunity will support technology innovation and collaboration in pursuit of economy-wide decarbonization.

a. Topic Areas

Within the interest areas of accelerating decarbonization and emerging clean energy technologies, EPRI is soliciting research proposals aligned with five research priorities:

i) Clean Energy Technologies
ii) Electric System and Customer Reliability & Resilience
iii) Electric System Flexibility,

iv) End-use and Economy-wide Carbon Reduction, and
v) Market Transformation.

Proposals that do not fit into one of these categories, but that demonstrate innovation and are aligned with EPRI's organizational mission, will also be considered.

Clean Energy Technologies

A portfolio of clean generation technologies are critical to achieving an equitable and affordable decarbonized future. Typical research areas include, but are not limited to:

- *Alternative fuels as a fuel source (i.e. hydrogen, ammonia, other)*
- *Renewable Energy Technologies (i.e. wind, solar, hydro, geothermal, tidal, etc...)*
- *CO2 capture, removal, transport, and storage technologies (i.e. CO2 capture, direct air capture, pipeline, underground assessment, etc...)*

Electric System and Customer Reliability & Resilience

Physical and cyber vulnerabilities are growing, increasing the frequency and intensity of potential electricity outages. Hardening the electric system - from planning to construction, introducing predictive and preventive maintenance, and implementing dynamic grid operations, and consumer are all part of providing reliable, resilient, and affordable electricity. Typical research projects may include, but are not limited to:

- *Defining and measuring resiliency, Identifying control challenges/opportunities,* siting expansion of assets, *Design standards for hardening individual assets and system control(s), such as communication and operations.*

System Flexibility and Flexible Resources

Flexible resources are expected to grow significantly as deployment of renewable energy and distributed energy resources, and adoption of customer solutions in transport, buildings, and industry, accelerate. Typical research projects may include, but are not limited to:

- *Distributed energy resources, scenario-based planning tools to optimize investments for resource adequacy, reliability, and resiliency, grid operations tools and processes to run a more distributed and variable system.*

End-Use/ Economy-Wide Carbon Reductions

Increased commitment to a low-carbon economy may affect the scale of investments that may be directed toward clean energy sources. This may accelerate technology shifts for new equipment purchases as well as capital stock turnover. Typical research projects may include, but are not limited to:

- *Cost/benefit analysis framework(s) supporting customer and/or grid investment(s) in infrastructure and incentive programs that support adoption of end-use electrification technologies.*

Market Transformation

Explore the impacts What impacts may this have, and what opportunities may this highlight on electricity markets, and may markets evolve so that reliability can be maintained as market flexibility

increases and as new resources and services are deployed and integrated.

Open Category: Innovation

Recognizing that the highlighted priorities do not fully address the abundant opportunities to support the energy transition

- *Innovation equals the value arising from change, including changes in technology and to the business model. Innovation opportunities for energy companies, as well as challenges, are significant. Major strains on current operations include a rapidly aging workforce, aging generation, and delivery assets, and the demand for improved performance and security. Addressing these challenges can provide excellent opportunities for innovation. Collaborative R&D and innovation are critically important to transition to a clean energy future and to meeting decarbonization goals while addressing reliability, affordability, and social equity. In this category, EPRI will consider innovative proposals related to reliability, resiliency, market transformation, equity, affordability, and safety.*