

Expression of Interest

Partnership for Advanced Construction Technologies

I. Introduction

Battelle Energy Alliance, LLC (BEA), the managing and operating contractor for the Department of Energy's Idaho National Laboratory (INL) in Idaho Falls, Idaho, is seeking an Expression of Interest (EOI) from industry stakeholders interested in forming a partnership to develop and/or demonstrate advanced construction technologies and processes that would be transformative in nuclear energy system project economics and schedule success. This effort would be executed as an initiative of the National Reactor Innovation Center (NRIC).

The scope of such a Partnership could include, but not be limited to, the development and/or demonstration of advanced construction technologies and processes that would substantially reduce the cost and schedule risk of new nuclear plant construction as well as long-term economics of nuclear deployment on a global scale.

II. Background

Various studies of nuclear energy economics have identified the major role of construction material costs and schedule risks in driving up the costs of nuclear power plants. (e.g. *The Future of Nuclear Energy in a Carbon-Constrained World*, Massachusetts Institute of Technology 2018; *The ETI Nuclear Cost Drivers Project: Summary Report*, Energy Technologies Institute (ETI), 2018; *Advanced Nuclear Technology: Economic-Based Research and Development Roadmap for Nuclear Power Plant Construction*, Electric Power Research Institute (EPRI), 2019.)

NRIC enables advanced reactor demonstration and deployment. NRIC was authorized by Congress in 2018 and established by DOE in 2019. NRIC is led by INL in coordination with other national laboratories. NRIC will

- Inspire stakeholders and the public by
 - o Supporting the demonstration of advanced reactors by the end of 2025
 - o Providing an outreach/convening/showcasing capability
 - o Demonstrating game-changing construction technologies
- Empower innovators by
 - o Enabling access to materials, facilities, sites, and expertise including demonstration test bed platforms
 - o Supporting permitting and regulatory needs
 - o Facilitating contracting and engagement
- Deliver successful outcomes by
 - o Preparing sites for rapid demonstration
 - o Providing efficient coordination and optimization of resources
 - o Supporting navigation from start to finish
 - o Providing a core team for rapid demonstration excellence

NRIC will equip the nation to execute demonstrations on a routine cadence essential to innovation and progress.

The NRIC advanced construction technologies initiative will support a transformation in nuclear energy construction and deployment costs, enabling nuclear energy to make important contributions to the energy system of the future. This transformation will increase the confidence of investors, energy system planners, policymakers, and ultimately consumers in the capability of nuclear energy to meet

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future needs and thus is a critical element of advanced nuclear energy system demonstration. Development and/or demonstration project(s) will consider regulatory requirements for commercial nuclear implementation and will incorporate strategies to develop regulator experience and review of the technology.

III. Submittal Requirements

BEA seeks interested parties capable of forming a partnership under a cost-sharing arrangement to develop and/or demonstrate advanced construction technologies.

Responses should address and will be reviewed based on the following attributes:

- Scope, structure, cost-sharing, and teaming partner relationship of the proposed partnership.
- Benefits of the partnership to the interested party and benefits of the partnership to the Department of Energy and the public.
- Projected cost-reduction impact of the proposed advanced construction technology on future nuclear power plant construction or manufacturing, including the varieties of nuclear energy technologies or other technologies that could benefit from this advanced construction technology.
- Proposed pathway to demonstrate the advanced construction technology in a nuclear energy project in the future, if the initial proposed development and/or demonstration is not part of a nuclear energy project.
- Potential locations for the development and/or demonstration project, which may include Idaho National Laboratory or other locations.
- Approach to cost and schedule risk mitigation.
- Experience and credibility for accomplishing the development and/or demonstration of an advanced construction technology.

Interested parties who respond with information that demonstrates experience and capability relative to all of the attributes listed above may be considered for a future request for proposal (RFP).

All responses to this EOI must be provided as an attachment in an email message addressed to Steven.Gihring@inl.gov and cc: George.Wood@inl.gov with the subject line "Response to NRIC Advanced Construction EOI" no later than the close of business on May 16th, 2020. Responses must be provided as Microsoft Word (.doc/.docx), no more than 10 pages in length, no less than 12-point font, 1-inch margins, and no more than 20 MB in size. Only electronic responses will be accepted. Responses submitted by any other means will not be considered by BEA.

IV. Other Feedback

Please comment on whether this EOI is redundant to other funding opportunities. Feedback on any other topics is welcome, as well as suggestions for how to make this effort most successful.

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This is a request for information and sources sought information only. This RFI/Sources Sought is used solely for information capture and planning purposes and does not constitute a solicitation.