

Notice of Intent No. DE-FOA-0001950

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0001836

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Water Power Technologies Office, a Funding Opportunity Announcement (FOA) entitled “Innovative Design Concepts for Standard Modular Hydropower and Pumped Storage Hydropower.”

DOE’s Hydropower Vision report¹ identified 1.7 GW of hydropower potential in undeveloped sites and waterways, with an additional 15 GW enabled by the emergence of innovative—even transformational—technologies and designs to reduce costs and meet environmental performance objectives. To facilitate development of new stream-reach resources, innovation in standardization, modularity, and environmental compatibility is required. In addition, 43 pumped storage hydropower (PSH) plants provide over 95% of utility-scale electrical energy storage in the United States. To expand the value and contribution of PSH in the future electricity system, research into storage technology designs, optimization, and modeling tools are needed. To address these gaps, this FOA solicits new design concepts and associated modeling and analysis for standard modular hydropower and PSH.

The FOA may include the following topic areas:

Topic Area 1: Facility Designs for Standard Modular Hydropower Development

This topic area seeks to stimulate innovative designs for small, low-head hydropower facilities capable of lowering the capital costs and reducing the environmental impacts of hydropower development at new stream-reach (i.e., greenfield) sites. In 2016, Oak Ridge National Laboratory (ORNL) initiated a DOE-funded multi-year research and development effort—Standard Modular Hydropower (SMH) Technology Acceleration—to define standardization, modularity, and environmental compatibility as three enabling elements of a low-cost, environmentally sustainable hydropower growth strategy. Building on this effort, DOE will use competitive awards to engage the private sector in the use, validation, and refinement of siting and design tools for SMH development. The focus of the opportunity is whole-facility designs that integrate existing concepts for passage and generation modules with innovations in streambed, streambank, and inter-module interfaces that can deploy across multiple locations.

¹ “2017 Hydropower Market Report Highlights,” U.S. Department of Energy. April, 2018.
<https://www.energy.gov/eere/water/downloads/2017-hydropower-market-report>.

This is a Notice of Intent (NOI) only. EERE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or EERE may not issue a FOA at all.

Topic Area 2: New Use Cases for Pumped Storage Hydropower

This topic area explores new use cases for pumped storage hydropower that can improve electricity system resilience, reliability, and economics. Applicants are expected to propose innovative technology concepts or enhanced modeling and analysis capabilities that define a new, updated role for pumped storage in the evolving electricity system in the United States. This topic area may include the following sub-topics:

Sub-topic 2.1: Innovative conceptual designs for pumped storage systems. This sub-topic includes novel pumped storage technology concepts that can be competitive in the current and future electricity system. Concepts of interest include those that can markedly reduce costs of deployment and operation (e.g., time to commissioning) and expand siting access, and those that can provide additional non-electric value streams or avoided costs to other parties (e.g., water delivery, water purification).

Sub-topic 2.2: Modeling and analyzing the role of pumped storage in asset and system optimization. This sub-topic will support analysis of the technical capabilities of pumped storage to improve electricity system resilience, reliability, and economic efficiency, or to improve the performance of other grid assets. For example, modeling enhancements or analysis could explore the ability of storage to support system-wide strategies to manage fast ramps or high peak loads, or investigate operational connections between storage and other grid assets such as solar photovoltaic (PV) or wind energy.

EERE envisions awarding multiple financial assistance awards in the form of cooperative agreements. The expected outcomes of awards are conceptual designs or modeling and analytical results. The estimated period of performance for each award will be approximately 12-24 months.

This Notice is issued so that interested parties are aware of the EERE's intention to issue this FOA in the near term. All of the information contained in this Notice is subject to change. EERE will not respond to questions concerning this Notice. Once the FOA has been released, EERE will provide an avenue for potential Applicants to submit questions.

EERE plans to issue the FOA on or about late July via the EERE Exchange website <https://eere-exchange.energy.gov/>. If Applicants wish to receive official notifications and information from EERE regarding this FOA, they should register in EERE Exchange. When the FOA is released, applications will be accepted only through EERE Exchange.

In anticipation of the FOA being released, Applicants are advised to complete the following steps, which are **required** for application submission:

- Register and create an account in EERE Exchange at <https://eere-exchange.energy.gov/>.

This is a Notice of Intent (NOI) only. EERE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or EERE may not issue a FOA at all.

This account will allow the user to register for any open EERE FOAs that are currently in EERE Exchange. It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission.

Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-ExchangeSupport@hq.doe.gov

- Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number (including the plus 4 extension, if applicable) at <http://fedgov.dnb.com/webform>
- Register with the System for Award Management (SAM) at <https://www.sam.gov>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually.
- Register in FedConnect at <https://www.fedconnect.net/>. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf
- Register in Grants.gov to receive automatic updates when Amendments to a FOA are posted. However, please note that applications will not be accepted through Grants.gov. <http://www.grants.gov/>. All applications must be submitted through EERE Exchange.

This is a Notice of Intent (NOI) only. EERE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or EERE may not issue a FOA at all.
