Notice of Intent (NOI) No. DE-FOA-0003128

Issue Date: July 13, 2023

DISCLAIMER: The "Notice of Intent to Issue" is for informational purposes only; the Department of Energy is not requesting comments on the information in this notice.

This is a Notice of Intent to Issue
Funding Opportunity Announcement No. DE-FOA-0003127
"Enhancing the Electric Power Systems' Reliability and Resilience via Sensor Data Analytics Demonstrations"

Around the November 2023 timeframe, the United States (U.S.) Department of Energy (DOE) intends to issue a Funding Opportunity Announcement (FOA) seeking applications for financial assistance awards that would support various Office of Electricity (OE) and other DOE programs. This FOA would support the Department's vision to enhance grid reliability and resilience in the age of big data to accelerate pathways towards grid modernization goals.

OVERALL BACKGROUND AND TECHNICAL OBJECTIVES

The objective of this potential FOA is to enhance grid reliability and resilience in the age of big data. The electric power industry is witnessing an explosive growth in the volume, variety, and velocity of utility data. Specifically, the tsunami of data generated by the Advanced Metering Infrastructure (AMI) as well as sensors with fast-streaming data sets (e.g., phasor measurement units) have been challenging the traditional methods of data acquisition, use, and storage in utilities. However, the availability of utility-specific data analytics products and services for taming this data deluge has been very limited to date.

Advanced analytics are critical for harnessing the power of big data that are generated by sensors at unprecedented rates to address challenges related to (i) variable system dynamics caused by renewable integration, (ii) increased vulnerability to climatic extremes, and (iii) increased infrastructure decentralization and interdependency. Advanced analytics that extract actionable information from sensor data need to consider not only systems' physics but also human factors to be effective.

Demonstrations and direct partnerships with data providers and power sector utilities would be strongly encouraged since they ensure that the analytics can meaningfully support planning and operations decision.

The FOA is anticipated to focus on a single Topic Area, Sensor Data Analytics Demonstrations, as described below:

This Topic Area would seek applications to conduct Research and Development and Demonstration (RD&D) activities that achieve the following FOA objectives:

- Design and validate case studies that consider both rural and urban uses of sensor data for enhancing the resilience and reliability of the grid.
- Develop scalable methodologies for enabling distribution system protection using senor data.
- Develop novel methods for harnessing big data to enable automated event detection and classification.
- Establish innovative approaches for generating and recording contextual information associated with historical data to enable automated data labeling.
- Develop new approaches for capturing contextual information associated with data generated by grid sensors.
- Develop rigorously validated approaches to enable uncertainty-informed load forecasting with variable (moving) prediction time horizons as well as computationally efficient online learning; a focus on extreme weather and climate conditions is encouraged.
- Develop technology that integrates human factors and/or cognitive science considerations to enhance effectiveness of decision support systems related sensor data analytics.
- Develop uncertainty-informed data-integration methods to enable integrating data from multiple sensors and sources with variable degrees of data veracity.
- Projects would culminate in a field demonstration – this should be no less than 15% of the project scope.
- Projects would have a distribution focus but projects that look at both transmission and distribution would not be excluded.

Each application would require, at a minimum:

- Budgetary Cost Estimates
- Clear Identification of Potential Challenges and Mitigations
- Clear Workforce/Business Development Plan
- Clear description of data types and sources (e.g., [Big Data Synchrophasor Analysis | Department of Energy](#)), and letters of commitment from data owners when necessary.
- A comprehensive data management and dissemination plan

This FOA would seek to establish a portfolio of projects that have demonstrations across a variety of geographic, economic, and climate conditions to create a varied and more comprehensive assessment of future deployment of advanced sensors technologies.

Although DOE is not requesting comments on this NOI, interested parties can choose to submit comments to DOE at FOA3127@netl.doe.gov. DOE will **not** entertain questions at this time regarding issuance of the FOA. Details on how to submit questions and comments will be provided in the FOA, if released.

PROJECT TEAMS

It is anticipated that an applicant's project teams should, at a minimum, include (1) an electric utility or a system operating entity serving the area with the field demonstration, (2) a system planner relevant to the service territory of the demonstration, (3) a domestic technology product provider, and (4) a domestic technology developer.

It is anticipated that the eligibility requirements will include the following in the FOA: (1) Electric Transmission Utilities, domestic sensor technology product providers (manufacturer, vendor, or commercialization entity), domestic technology developer (a university or research institution) may apply for funding as a prime recipient or as a sub-recipient; and (2) Other Federal agencies, instrumentalities and Federally Funded Research and Development Center (FFRDC) are only eligible to be included as a sub-recipient.

ANTICIPATED AWARDS

If the FOA is released, approximately $4 M in Federal Funds, subject to annual congressional appropriation, is expected to be available for awarding new cooperative agreements. The number of applications selected for negotiations leading to award is anticipated to be up to 6.

The number of awards will depend on the applications submitted and the availability of funds. DOE anticipates making awards that have a single Budget Period and do not exceed three (3) years.

DOE envisions that the awarded projects will consist of both Research and Development (R&D) and Demonstration tasks. Award Recipients would be required to provide a minimum 20% non-federal cost share for R&D activities and a minimum 50% non-federal cost share for Demonstration activities.

CONCEPT PAPERS

If the FOA is released, Concept Papers will be required prior to submitting a Full Application. That is, if an applicant does not submit a Concept Paper, it cannot submit a Full Application. DOE would make an independent assessment of each Concept Paper based on the established criteria and will encourage a subset of applicants to submit Full Applications. Other applicants would be discouraged from submitting a Full Application. An applicant who receives a

"discouraged" notification may still submit a Full Application. By discouraging the submission of a Full Application, DOE intends to convey its lack of programmatic interest in the proposed project to save the applicant the time and expense of preparing an application that is unlikely to be selected for award negotiations.

Concept Papers would be submitted to an email address designated in the FOA. Concept Papers are not being requested under this NOI.

SUBMISSION AND REGISTRATION REQUIREMENTS FOR FULL APPLICATION

If the FOA is released, it will be posted at Grants.gov (http://www.grants.gov) and at FedConnect (http://www.fedconnect.net). Entities interested in applying for awards under the FOA are strongly encouraged to register at these sites to receive notification of announcements regarding the FOA. If DOE decides to issue the FOA, applications can only be submitted through Grants.gov.

There are several one-time actions an applicant must complete to submit a Full Application in Grants.gov (e.g., register with the System for Award Management (SAM), obtain a Unique Entity Identifier (UEI) number, register with Grants.gov, and register with FedConnect.net to submit questions). It is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant's ability to apply to this FOA.

➢ **SAM** - Applicants must register with SAM at http://www.sam.gov/ prior to submitting an application in response to an FOA. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Failure to register with SAM will prevent your organization from applying through Grants.gov. The applicant must maintain an active SAM registration with current information at all times during which it has an active Federal award or an application under consideration. More information about SAM registration for applicants is found at:
https://www.fsd.gov/gsafsd_sp?id=gsafsd_kb_articles&sys_id=650d493e1bab7c105465eaccac4bcbcb.

    NOTE: If clicking the SAM links do not work, please copy and paste the link into your browser.

➢ **UEI** - Applicants must obtain an UEI from the SAM to uniquely identify the entity. The UEI is available in the SAM entity registration record.

    NOTE: Subawardees/subrecipients at all tiers must also obtain an UEI from SAM and provide the UEI to the Prime Recipient before the subaward can be issued.

➢ **Grants.gov** - Applicants must register with Grants.gov and set up your WorkSpace. You cannot submit an application through Grants.gov unless registered. **Please read the**

registration requirements carefully and start the process immediately.

1) The Authorized Organizational Representative (AOR) must register at:
   https://apply07.grants.gov/apply/OrcRegister

2) An email is sent to the E-Business (E-Biz) POC listed in SAM. The E-Biz POC must approve the AOR registration using their MPIN from their SAM registration.

More information about the registration steps for Grants.gov is provided at:
https://www.grants.gov/web/grants/applicants/registration.html

In addition:

o Add a Profile to a Grants.gov Account: A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an individual applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the UEI for the organization in the UEI field while adding a profile. For more detailed instructions about creating a profile on Grants.gov, refer to:

   https://www.grants.gov/web/grants/applicants/registration/add-profile.html

o EBiz POC Authorized Profile Roles: After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant's request for Grants.gov roles and access is sent to the EBiz POC. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role.

   NOTE: When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must** authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed and it is crucial for valid and timely submissions.**

   For more detailed instructions about creating a profile on Grants.gov, refer to:
   https://www.grants.gov/web/grants/applicants/registration/authorize-roles.html

   To track your role request, refer to:
   https://www.grants.gov/web/grants/applicants/registration/track-role-status.html

Questions relating to the **registration process, system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.
➢ **FedConnect.net** - Applicants must register with FedConnect to submit questions. FedConnect website: www.fedconnect.net.

DISCLAIMER

This NOI is issued so that interested parties are aware that DOE may issue a FOA on this topic. Any information contained in this NOI is subject to change.

No Concept Papers or Full Applications are being accepted currently.