Notice of Intent No. DE-FOA-0001038

Notice of Intent to Issue
Funding Opportunity Announcement No. DE-FOA-0000971

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Wind and Water Power Technologies Office, a Funding Opportunity Announcement (FOA) entitled "Environmental Stewardship for Renewable Energy Technologies: Marine and Hydrokinetic (MHK) Environmental and Resource Characterization Instrumentation".

The mission of the DOE Water Power Technologies Office is to support research, testing, and development of innovative technologies capable of generating renewable, environmentally responsible and cost-effective electricity from U.S. water resources. DOE investments in these technologies aim to advance the technical readiness of marine and hydrokinetic (MHK) systems and support the development of a robust and competitive MHK industry in the United States. The DOE Water Power Technologies Office has a strong interest in supporting research efforts to enhance technical readiness, reduce market barriers and inform the environmentally responsible deployment of these new technologies.

This FOA will support the development of instrumentation, associated processing tools, and integration of instrumentation packages for monitoring the environmental impacts of marine and hydrokinetic technologies. It will also support the development and testing of sensors, instrumentation, or processing techniques to collect physical data on ocean waves (e.g., height, period, directionality, steepness) and characterize the available resources.

It is anticipated that the FOA may include the following Topic Areas:

Topic Area 1 – MHK Environmental Instrumentation Development

This Topic Area seeks to improve the tools that MHK developers have at their disposal for environmental monitoring, with the goal of taking a critical step towards reducing environmental, and thus regulatory, uncertainty for future MHK projects. Under this topic area, the Department of Energy seeks applications that will increase the cost-effectiveness and quality of these studies by enhancing and, where necessary, developing new remote-sensing methods for baseline biological monitoring and/or observing effects of MHK devices on marine organisms.

Two levels of funding will be available for applications under this Topic Area. A lower level of funding will support the development of signal processing tools aimed at improving automation and reducing data processing time and costs. At the end of the project period, recipients will be asked to demonstrate the effectiveness of the tools developed through testing and demonstration with a relevant data set (e.g., image detection algorithms must demonstrate effective detection of organisms within the marine environment). A higher level of funding will be used to support the

development or enhancement of devices, which may include some system processing tool development, but must also include hardware development and testing.

This Topic Area will support development and advancement of technologies including, but not limited to:

A) Active Acoustic Devices – This sub-topic will support the development, enhancement, and testing of active acoustic technologies for detecting animal interactions, such as turbine blade strike, with and around MHK devices and for conducting more accurate pre- and post-construction assessments of changes in species composition, abundance, and/or behavior. This sub-topic will also support the development of image recognition and additional signal processing algorithms and related tools for active acoustic systems.

B) Passive Acoustic Devices – This sub-topic would support the development, enhancement, and testing of passive acoustic systems for improving the detection, classification, localization, and density estimation of marine mammals around MHK devices and development sites, with the aim of evaluating the effects of MHK deployments on the presence, abundance, and behavior of marine mammals at project sites. This sub-topic will also support the development of signal algorithms and related tools.

C) Optical Devices – This sub-topic would support the development, enhancement, and testing of optical systems aimed at monitoring marine animal interactions with MHK devices. This sub-topic will also support the development of image recognition and other signal processing algorithms and related tools.

Topic Area 2 - Development and Integration of Instrumentation Packages

As part of the environmental review and monitoring process, MHK developers are often asked to perform a number of studies looking at the presence, behavior, and abundance of species in their prospective sites. Further, once projects are in operation, developers may be required to perform extensive monitoring of the impacts of their projects on these species. However, the extreme, high-energy, and often low-light conditions of MHK sites pose unique challenges for environmental baseline and effect monitoring. Environmental assessment and monitoring will remain challenging until sufficient tools and methodologies are created to allow for the collection of adequate and accurate data.

This topic area will support development and testing of combined instrumentation packages directly tailored for baseline biological monitoring and/or observing effects of MHK devices on marine organisms. The primary focus of this Topic Area is to support instrumentation integration and testing efforts, however some improvement of instruments, components or software may also occur as part of this larger effort.

Topic Area 3 - Wave Resource Characterization

This topic area will support development and testing of sensors, instrumentation, or processing techniques to collect and evaluate wave data (e.g., height, period, directionality, steepness). Measurement solutions and sensors are needed across a range of time scales for the purposes of developing localized spectra, generating shorter term statistics for slow tuning of wave energy conversion (WEC) devices, and measuring individual waves that inform fast tuning of WEC devices. In order to support WEC arrays and larger farms, affordability of measurement solutions will be crucial to providing the spatial coverage required.

EERE anticipates awarding multiple financial assistance awards in the form of cooperative agreements. The estimated period of performance for each award will be approximately 24 months for Topic Areas 1 and 3, and 30 months for Topic Area 2.

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 in the first quarter of calendar year 2014 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 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/PublicPages/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.