

**FINANCIAL ASSISTANCE  
REQUEST FOR INFORMATION**



**U.S. Department of Energy  
Golden Field Office**

**Environmental Research and Observations at the First U.S. Offshore Wind  
Facilities**

**Request For Information: DE-FOA-0000911  
CFDA Number: 81.087**

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**Closing Date: 05/30/2013, 5:00 PM Eastern Time**

**Responses Submitted to: [Enviro@go.doe.gov](mailto:Enviro@go.doe.gov)**

**Environmental Research and Observations at the First U.S. Offshore Wind Facilities**  
**DOE Request for Information (RFI)**  
**DE-FOA-0000911**

**Program Area:** Wind & Water Power Technologies Office (WWPTO), Office of Energy Efficiency and Renewable Energy (EERE), U.S. Department of Energy (DOE)

**Requested Information Topics**

DOE and Bureau of Ocean Energy Management (BOEM) invite input from the public regarding a research campaign to inform our understanding of offshore wind energy development that could be conducted in the next two to five years during the construction and operation of the first generation of deployed facilities. We aim to quantify the impact-producing factors (i.e. the characteristics of a project that may cause an impact, such as the sound produced during construction) associated with a project and to evaluate the efficacy of monitoring technologies and techniques deployed at offshore wind farms selected at a future date.

**Request for Information Guidelines**

**PURPOSE:** The sole purpose of this Request for Information (RFI) is to gain input from industry, academia, local, state and Federal government agencies, tribes, and other offshore wind stakeholders. The information gathered with this RFI will be used to improve assessments of wind energy facility environmental effects. DOE and BOEM will not pay for information provided under this RFI and will not provide reimbursement for costs incurred in responding to this RFI. This is solely a request for information and not a Funding Opportunity Announcement (FOA). DOE is not accepting applications.

**DISCLAIMER AND IMPORTANT NOTES:** This is an RFI issued solely for information and program planning purposes; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. In accordance with the Federal Acquisition Regulations, 48 C.F.R. 15.201(e), responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. DOE will not provide reimbursement for costs incurred in responding to this RFI.

**PROPRIETARY INFORMATION:** Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, may be included in responses to this RFI. The use and disclosure of such data may be restricted, provided the respondent includes the following legend on the first page of the response narrative and specifies the pages of the response which are to be restricted:

“The data contained in pages \_\_\_\_\_ of this response have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for information and program planning purposes. This restriction does not limit the government’s right to use or disclose data obtained without restriction from any source, including the respondent, consistent with applicable law.”

**RFI Guidelines:** This RFI does not constitute a solicitation for specific project proposals. Responses to the RFI will be treated as informational only and will not be viewed as a binding commitment for the

respondent to develop or pursue the project or ideas discussed. This is not a Funding Opportunity Announcement (FOA) and DOE and BOEM are not accepting applications for financial assistance or financial incentives under this RFI. DOE or BOEM may or may not decide at a later date to issue a FOA or other type of solicitation based on consideration of the input received from this RFI, but there is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI. Because information received in response to this RFI may be used to structure future funding opportunities and/or otherwise be made available to the public, respondents are strongly advised to not include any information in their responses that might be considered business-sensitive, proprietary, or otherwise confidential. If, however, a respondent chooses to submit business-sensitive, proprietary, or otherwise confidential information, it must be clearly and conspicuously marked as such in the response.

In order to avoid any possible conflict with future funding opportunities, DOE will not respond to any respondent questions or contacts received after the closure of the submission period for this RFI. Respondents are advised that DOE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind DOE to any further actions related to this topic. DOE thanks you for your assistance and input.

**EVALUATION AND ADMINISTRATION BY FEDERAL AND NON-FEDERAL PERSONNEL:** Federal employees are subject to the non-disclosure requirements of a criminal statute, the Trade Secrets Act, 18 USC 1905. The Government may seek the advice of qualified non-Federal personnel. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The respondents, by submitting their response, consent to DOE providing their response to non-Federal parties. Non-Federal parties given access to responses must be subject to an appropriate obligation of confidentiality prior to being given the access. Submissions may be reviewed by support contractors and private consultants.

**RFI Response Instructions:** Responses to this RFI must be submitted electronically to [Enviro@go.doe.gov](mailto:Enviro@go.doe.gov) by 5:00 PM Eastern Standard Time on May 30, 2013. Responses should include: cover page, 1 page executive summary, and up to a 5 page full response. Responses must be provided as attachments (in Microsoft Word or PDF Format) to an email. The subject line should read "Researching the Environmental Effects of Offshore Wind at the First U.S. Facilities (insert name-organization)." One inch margins and 12 point font should be used. Please indicate the questions being addressed (e.g., Section A.1. or Section B.2.). Questions regarding the content of this RFI must be submitted to the email address provided above. Respondents are requested to include the following information in their responses to this RFI: Company/institutional name; individual contact (mailing address, phone number, e-mail address); facility location(s) (zip code); and area of expertise/interest. The WWPTO recognizes that all listed questions may not be applicable to all respondents, and respondents may provide responses to all or a portion of the RFI questions. WWPTO requests that respondents focus only on the questions for which they can provide concise information.

### **Wind & Water Power Technologies Office Background**

The WWPTO is within the Department of Energy's Office of Energy Efficiency and Renewable Energy. The WWPTO's mission is to focus the passion, ingenuity, and diversity of the nation to enable rapid expansion of clean, affordable, reliable and domestic wind and water power to promote national security, economic vitality and environmental quality. To find more information about the WWPTO, please visit the [Wind Power Program](#) and [Water Power Program](#) websites.

The WWPTO funds research nationwide to develop and deploy offshore wind technologies that can capture wind resources off the coasts of the United States and convert the wind out at sea into electricity. Offshore wind resources are abundant, stronger, and blow more consistently than land-based wind resources. Data suggest a more than 4,000 giga-watts (GW) gross total offshore wind energy resource exists in state and Federal waters along the United States and the Great Lakes coasts, approximately four times the combined generating capacity of all U.S. electric power plants.

### **Bureau of Ocean Energy Management Background**

The [Bureau of Ocean Energy Management \(BOEM\)](#), within the Department of the Interior, manages the exploration and development of the nation's offshore energy resources. The Bureau seeks to balance economic development, energy independence, and environmental protection through responsible management of offshore conventional and renewable energy development based on the best available science.

BOEM conducts environmental reviews, including National Environmental Policy Act (NEPA) analyses and compliance documents for each major stage of energy development planning. These analyses inform the bureau's decisions on exploration and development activities. Additionally, BOEM's scientists conduct and oversee environmental studies to inform policy decisions relating to the management of energy and marine mineral resources on the outer continental shelf (OCS).

Over the next five years, the Department of Energy and the Department of the Interior are advancing a national strategy for offshore wind research and development. The WWPTO is leading market analysis and technology development research that will overcome key barriers including the relatively high cost of energy, the mitigation of environmental impacts, the technical challenges of project installation, and grid interconnection.

### **Environmental Research Background**

In leasing and permitting offshore wind projects, agencies must consider a range of environmental and cultural resources, protected areas, and competing uses. Some of the key environmental resources of concern are bird and bat species, marine mammals, pelagic and benthic species and habitats, and water quality. Through the licensing and permitting process, projects must ensure that they comply with environmental statutes including the Marine Mammal Protection Act, the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, among others.

Hundreds of environmental studies have been conducted in Europe in conjunction with offshore wind development, before, during, and after construction. Although the United States can leverage lessons learned from these studies, the lack of construction to date in U.S. waters has not enabled the collection of the most relevant environmental information. Consequently, major data gaps exist that can delay and add significant risk to the installation of offshore facilities for both project developers and regulators. WWPTO and BOEM are seeking input on environmental research that could be conducted at offshore wind projects in the U.S. that would help reduce regulatory uncertainty regarding environmental risk for these and future projects. Specifically, WWPTO and BOEM deem the pending construction of offshore wind facilities in U.S. Federal and state waters as an opportunity to collect environmental information to address key questions and provide realistic analyses of the environmental consequences of offshore wind development.

## **Context for the Requested Information**

Over the next several years, Federal agencies are considering supporting research at offshore wind projects to increase our understanding of the environmental effects of offshore wind development. BOEM and DOE are considering an effort composed of two rounds of research. The timing of these rounds will be driven by the construction of the first offshore wind projects, however we anticipate that the first round would focus on projects constructed over the next three years and the second round on projects constructed in the subsequent three to five years. This RFI focuses on the first round of this effort.

The goal of this first round would be to gather data at one or more wind facilities through construction and operation in order 1) to quantify the impact-producing factors (i.e. the characteristics of a project that may cause an impact, such as the sound produced during construction) associated with construction and operations activities and 2) to evaluate the efficacy of monitoring technologies and techniques deployed at these projects. Under the current vision, the primary focus of research in this round will not be on evaluating environmental impacts of projects. Rather, the immediate focus will be on measuring the characteristics of the project that cause impacts. Data gathered during the first round will then be used to inform predictions of impacts and focus research efforts in a broader second round of research.

The questions of focus for the first round would be those that are addressed in the NEPA and permitting processes for offshore wind development. The effort will prioritize investigations of interactions with species deemed to be of high priority, i.e. those which receive special regulatory protection and are deemed likely to be impacted by the project in question. Studies under this round would be designed in a way to maximize applicability of results to future commercial developments and to ensure consistency across projects so that the results from multiple studies can be compared. Further, this round will not attempt to answer questions that are not addressable on the scale of an individual project (e.g. cumulative impacts of multiple wind facilities) or that would require long-term post construction research; for example, population level changes in local species. While data gathered under such an effort will likely be of value to the wind facilities studied, this effort is not meant to replace the existing monitoring efforts of offshore wind developers required by regulatory regimes. Instead, this effort is designed to build the body of environmental knowledge on offshore wind facilities in the U.S., thereby helping to inform the evaluation of future projects and spur the growth of the industry.

A well-thought-out environmental research strategy will help maximize the value of the first generation of offshore wind turbines deployed in the United States. The knowledge gained from these projects can help us identify, reduce, and mitigate environmental risks in the future, and significantly increase the efficiency and efficacy of the regulatory review process for offshore wind. To this end, DOE and BOEM are seeking input from researchers, regulators, developers and others on this vision, as well as more generally on priorities for the first round of research at offshore wind projects. For instance, what questions can be asked and answered in this time frame? What topics should we address first? How should we design these inquiries, and how can they be seamlessly integrated into wind facility construction and operation? Below, you will find examples of near-term research questions that an initial effort may seek to answer. We welcome your input on this approach. The feedback we receive from this Request for Information may, in turn, help us to ask and answer appropriate questions with the first round of offshore wind projects.

**Example Topics and Questions for Near-Term Research:** *Please note, these questions are meant to be a representative sample of the types of questions we intend to address, rather than a comprehensive list.*

*Underwater Acoustics*

- What are the pre-existing ambient noise levels associated with the project site prior to development?
- What are the characteristics of sound (intensity, duration, and frequency) generated during construction activities, such as pile driving and cable laying?
  - What are the most effective scales (temporal and spatial) at which to measure a representative sample of construction and operation noise?
- What level of sound is created by the increase in vessel traffic during construction and operation periods? What levels of sound are generated and propagated during operations?
- What are the behavioral responses of high priority marine and avian fauna to acoustic stressors during construction and operation?
- Which devices or technologies are most effective and most practicable for reducing sound levels during construction activities?

### *Seafloor Disturbance*

#### *Anchors*

- What are the anchor patterns for vessels and floating offshore wind turbines?
- What types of scarring occurs from the anchor chains?
- What is the recovery time for the scarring?
- What is the average duration of anchor/chain use (days, months, etc.)?

#### *Construction and Operations*

- What is the extent of changes to benthic communities due to sediment disturbance from construction activities and operations?
- Does seafloor disturbance due to construction of wind energy facilities impact bottom ocean currents?

### *Air Quality*

- How many ships and/or aircraft are used for construction of offshore wind energy facilities?
- What types of ships (e.g. jack-up rig) and/or aircraft (e.g. helicopter) are used, and what are their emissions (pollutant type)?
- What is the duration of various types of construction activities requiring different vessels?
- What is the frequency of maintenance vessel/aircraft trips?

### *Monitoring, Methodologies, and Instrumentation*

- What types of observations should be included within an environmental monitoring strategy?
- What types of equipment are effective for monitoring air quality, water quality, benthic environments, aquatic communities, sediment disturbance, wildlife, acoustics, and strike frequency?
- What is the most effective and cost-effective method, or suite of methods, for detecting marine mammals during construction activities? How would this method, or methods, vary by geographic region?

### **Questions for Respondents:**

Respondents are encouraged to answer any of the questions below, and are not limited to answering those questions directed toward the group with which the respondent is affiliated. Research suggestions should focus on the upcoming opportunities to collect environmental information during the initial construction and operation of offshore wind facilities.

Questions for all respondents:

- a. Please provide feedback on the proposed approach articulated above.
- b. Do the questions above address the environmental questions of highest priority in your opinion? If not, what additional questions should be asked? Are there questions listed above that you consider being of lower priority?
- c. In general terms, what methodologies would you suggest to answer high priority questions?
- d. For research conducted at pilot scale projects, given the relatively small scale of these projects (<10 turbines), what environmental questions do you think can be answered in a statistically robust fashion at this scale? Are there any questions that cannot be adequately addressed?
- e. Should monitoring technology testing and evaluation be a component of this research? If so, which technologies and issues are of highest priority for testing and why? What methods would you suggest for evaluating technologies?
- f. Are there novel or alternate methodologies for investigating impacts that could be evaluated or compared? If so, which methodologies, and how might that comparison occur?
- g. Given the diversity in potential future project location and design, what environmental research topics will result in data that will be transferable across projects? What sorts of meta-analyses would you recommend for these topics? How can data transferability be optimized?

Questions for respondents, by sector:

1. As an offshore wind project developer:
  - a. What environmental questions do you anticipate will have the highest impact to your siting, leasing and permitting processes?
  - b. What types of environmental research could be most beneficial to you/the industry as a whole? Answers may include specific research projects (e.g. acoustic measurements during pile driving), methodology and technology evaluation (e.g. effectiveness of various instrumentation types at detecting bird and bat interactions with devices), or meta-analyses (e.g. synthesizing and analyzing trends and differences in reefing effects at each of the demonstration projects).
  - c. Are there concerns regarding how such research might affect site assessment and/or construction and operation plans that we should be aware of?
2. As an offshore wind energy regulator or environmental agency:
  - a. What specific project-related research activities would be most helpful in informing your decision making process for future projects?

3. As an environmental researcher:

- a. What is the magnitude of investment that is required to meet your suggested research efforts?