

Facilitating the Development of Offshore Wind Energy in the United States

DATE: May 13, 2015

SUBJECT: Request for Information (RFI)

DESCRIPTION: The Wind and Water Power Technologies Office (WWPTO) is issuing a Request for Information (RFI) to gain public input regarding the implementation of the 2011 report, [*A National Offshore Wind Strategy: Creating an Offshore Wind Energy Industry in the United States*](#), and key challenges currently facing the offshore wind energy community in the United States. Information sought under this RFI is intended to assist the WWPTO in its strategic approach to pursuing the paths forward presented in the 2015 [*Wind Vision: A New Era for Wind Power in the United States report*](#). WWPTO seeks input from any stakeholders in the broader U.S. offshore wind energy community.

BACKGROUND: The Wind and Water Power Technologies Office (WWPTO) operates within the Department of Energy's Office of Energy Efficiency and Renewable Energy (DOE-EERE). The Office's mission is to lead the nation's efforts to research and develop innovative technologies, lower the costs, and accelerate the development of wind power. To find more information about the Wind Program within the WWPTO, please visit <http://energy.gov/eere/wind/wind-program>.

The global wind industry has experienced dramatic growth since DOE and the Department of Interior jointly released *A National Offshore Wind Strategy: Creating an Offshore Wind Energy Industry in the United States (National Offshore Wind Strategy)* report in 2011¹. In that time, the global offshore wind industry doubled in size from 4 gigawatts (GW) of installed capacity to over 8 GW at the end of 2014.² Offshore wind turbines continue to increase in size and capacity: the average nameplate capacity of wind turbines installed in 2011 was 4 MW and there are currently plans for 8 MW turbines to be installed in 2016.³ A new fleet of purpose-built vessels in European waters has enabled offshore development to move further from shore and into deeper waters.

While Statoil had already deployed its Hywind 2.3-MW demonstration by 2011, several additional floating offshore wind platforms supporting megawatt scale turbines have been installed in European waters and Japanese waters since 2011. Three prototypes supporting 2-MW turbines have been installed: Principle Power deployed a semi-submersible platform off of Portugal, and the Japanese government funded two separate demonstrations off Kabashima/Goto

¹ http://www1.eere.energy.gov/wind/pdfs/national_offshore_wind_strategy.pdf

² <http://www.ewea.org/fileadmin/files/library/publications/statistics/EWEA-European-Offshore-Statistics-2014.pdf>,

³ Navigant Consulting, Inc. Offshore Wind Market and Economic Analysis: 2014 Annual Market Assessment, p. 26. <http://energy.gov/sites/prod/files/2014/09/f18/2014%20Navigant%20Offshore%20Wind%20Market%20%26%20Economic%20Analysis.pdf>

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(spar) and Fukushima (semisubmersible). In the U.S., the University of Maine deployed a 20-kW turbine on a concrete semi-submersible platform off Castine, Maine.

The U.S. offshore wind industry is beginning to make progress toward commercial scale deployment. What is now likely to be the first offshore wind farm in U.S. waters, the Block Island Wind Farm, has secured financing of a 30-MW pilot project and plans to be in operation in 2016. Cape Wind, initiated in late 2001, missed a critical deadline at the end of 2014 and the future outlook for the project remains uncertain.

The Bureau of Ocean Energy Management (BOEM), which has jurisdiction over the outer continental shelf (OCS), has conducted five commercial lease sales for development of the BOEM Wind Energy Areas off of Rhode Island, Massachusetts, Maryland and Virginia within the last two years. In March 2015, BOEM issued their first research lease to the Commonwealth of Virginia's Department of Mines, Minerals and Energy (DMME) in support of the Virginia Offshore Wind Technology Advancement Project (VOWTAP).

The *National Offshore Wind Strategy* set two critical objectives in 2011 toward developing a world-class offshore wind industry in domestic waters: to reduce both the cost of offshore wind energy and the associated timelines for deployment. The report addressed these critical objectives by defining three focus areas: Technology Research and Development (R&D), Market Barrier Removal, and Advanced Technology Demonstrations. In the time since the report was issued, these focus areas and the activities therein have guided the WWPTO investment in offshore wind energy development.⁴ Further detail on the projects implemented under each focus area can be found in Categories 1-3 of this RFI.

DOE initiated the Offshore Wind Advanced Technology Demonstration FOA in 2012, with the goal of having multiple grid-connected demonstration projects installed and operating by the end of 2017. In May 2014, DOE completed a down-select process for the Offshore Wind Advanced Technology Demonstration projects and selected three of the original seven projects to receive federal funding over 5 years. In addition to the advanced technology that will be employed by these demonstration projects—inward battered guide structure (IBGS) and floating foundations, 4-MW+ turbines, advanced controls systems, etc.—these installations will be highly instrumented for measuring metocean conditions, structural loads, power production, and environmental data. The awardees are required to collect data for five years after completion of the project, and the data will be publicly available for the benefit of the U.S. offshore wind industry. The three demonstration projects are currently in Budget Period 2 (of five), and are working to complete 100% Front End Engineering Design; installation and O&M plans; and the permitting and NEPA processes; as well as securing the necessary power offtake agreements. In Budget Periods 3-5 the awardees will move through detailed design, financial close, procurement, fabrication, installation and commissioning of the project.

⁴ <http://energy.gov/eere/wind/downloads/offshore-wind-projects>

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Design and analysis of an offshore wind turbine necessitates the use of highly sophisticated tools and codes, and limited data are available to validate the codes in an offshore environment. It is critical for the offshore wind industry for these codes to be accurate and correct. Presently, DOE is assessing previous data campaigns and DOE investments to evaluate potential data for offshore wind code validation. In the case that data is not immediately available, DOE will look to entities that are willing to share previously collected data or will partner to collect the applicable data. Data from the demonstration projects will also be utilized for code validation in the future.

Analyses have shown that the U.S. has a significant offshore wind resource, but lack site-specific hub-height offshore wind data. DOE recently procured two AXYS WindSentinel LIDAR buoys, and deployed one buoy off of Virginia Beach in December 2014. Pending programmatic direction and funding, these buoys will be deployed in different regions of the U.S. to collect hub-height offshore wind data. The data from these deployments will be made publicly available.

The WWPTO recently released the results of a major forward-looking initiative carried out jointly with industry. *Wind Vision: A New Era for Wind Power in the United States* includes a comprehensive roadmap for realizing the significant potential of wind within the domestic energy generation portfolio by 2020, 2030 and 2050⁵. The recommended roadmap actions for industry stakeholders fall under three distinct but complementary themes for both land-based and offshore deployment: reduce wind costs, expand developable areas, and increase economic value to the nation.

PURPOSE: The purpose of this RFI is to solicit feedback from stakeholders in the offshore wind energy community on issues related to the Wind and Water Power Technology Office's strategic approach to facilitating the development of offshore wind energy in the United States. Specifically the WWPTO seeks to better understand the relative value of *Technology Advancement, Market Barrier Removal, and Crosscutting Activities* as well as a broader strategic view of the WWPTO portfolio. To maintain continuity with prior efforts, the RFI references projects carried out subsequent to the *National Offshore Wind Strategy*, as well as actions recommended in the *Wind Vision Report*. This is solely a request for information and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications.

DISCLAIMER AND IMPORTANT NOTES: This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction.

⁵ <http://energy.gov/windvision>

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Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. EERE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request. EERE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that EERE 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. Respondents are also advised that EERE is under no obligation to answer any questions submitted regarding this RFI. Responses to this RFI do not bind EERE to any further actions related to this topic.

PROPRIETARY INFORMATION: Because information received in response to this RFI may be used to structure future programs and FOAs 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.

Responses containing confidential, proprietary, or privileged information must be conspicuously marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Federal Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

If your response contains confidential, proprietary, or privileged information, you must include a cover sheet marked as follows identifying the specific pages containing confidential, proprietary, or privileged information:

Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this response may contain confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for the purposes described in this RFI DE-FOA-0001350. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.

In addition, (1) the header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: “Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure” and (2) every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

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

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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 EERE 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.

REQUEST FOR INFORMATION CATEGORIES AND QUESTIONS: The WWPTO invites comments from the offshore wind community regarding the scope and priority of activities within the offshore wind energy portfolio. Of particular interest is any information that would assist the WWPTO in targeting limited resources on future activities with the highest potential for positive impact in utilizing the country's offshore wind resource to the benefit of all stakeholders.

This section is structured into four categories of interest to the WWPTO. The first three categories of information requested correspond loosely to the focus areas of the 2011 *National Offshore Wind Strategy* report, and the fourth category is an overarching view of these focus area activities:

- Category 1: *Technology Development*
- Category 2: *Market Barrier Removal*
- Category 3: *Crosscutting*
- Category 4: *Overall Strategy and Impact*

The Office seeks feedback regarding both past and future activities in pursuit of the Office's mission of leading the nation's efforts to research and develop innovative technologies, lower the costs, and accelerate the development of wind power. Respondents are encouraged to reply only to questions for which they feel they can provide insight to the Office, and to keep in mind that the DOE does not set policy or act in a regulatory capacity with respect to wind energy.

CATEGORY 1: *Technology Development*

Please submit your responses via pages 12-14 of this RFI.

The Technology Development focus area in the 2011 *National Offshore Wind Strategy* report directed specific activities to help overcome the technological barriers for offshore wind. With the goals of reducing the cost of energy and technical risk, and increasing access to wind resources, specific technology development activities since 2011 have focused on improvements to models, design tools, components, turbines, and balance of system components. Continued efforts in technology development are recommended in the *Wind Vision Roadmap: Wind Plant Technology Advancement and Wind Power Performance, Reliability and Safety*.

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Since 2011, the WWPTO has funded multiple efforts within this focus area. The FY11 U.S. Offshore Wind: Technology Development FOA made federal funding available to 19 projects for the purpose of reducing the cost of offshore wind energy through technology innovation, testing, and risk reduction. This FOA addressed the Technology Development focus area with investments in modeling, technology innovation and research and development (R&D) to help advance offshore wind technology in achieving long term cost of energy objectives. Similarly, the FY11 Next Generation Drivetrain FOA awarded funding to six projects for the purpose of developing next-generation drivetrain technologies to reduce the cost of energy produced by wind turbines. Advances in drivetrain technologies can have a direct effect on capital costs, operation and maintenance costs, replacement costs, and/or lifetime energy production. National laboratory projects were also funded during these four years, yielding major advances in offshore wind computational tools, high-resolution modeling, and rotor development. DOE concurrently funded the construction of two world-class testing facilities, the Clemson Large Wind Turbine Drivetrain Testing Facility and the Massachusetts Large Blade Testing Facility, to provide unique capabilities for developing offshore wind technologies.

Moving forward, the *Wind Vision* Roadmap recommended actions in Wind Plant Technology Advancement and Wind Power Performance, Reliability and Safety to address the following offshore specific needs:

- Develop next-generation foundations, installation systems, and advanced support structures that can handle the U.S. specific extreme operating conditions
- Develop new turbine technology systems for floating offshore wind platforms
- Improve offshore wind standards
- Validating offshore wind design tools
- Establishing and expanding test (field and lab) facilities
- Develop turbines and systems for reliability (reduced O&M)

The WWPTO requests information from stakeholders regarding the importance of the following three activities in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy.

1. *Plant Technology Advancement*
2. *Power Performance, Reliability, and Safety*
3. *Test Facilities*

CATEGORY 2: *Removing Market Barriers*

Please submit your responses via pages 15-17 of this RFI.

The Removing Market Barriers focus area in the 2011 *National Offshore Wind Strategy report* directed specific activities to help increase the efficiency of offshore wind deployment timelines. With the goal of reducing deployment timelines, the *Strategy* focused on minimizing the costs and timelines for permitting and siting, understanding and mitigating the key market, socioeconomic, and environmental risks, and building public acceptance of offshore wind.

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Continued efforts in technology development are recommended in the *Wind Vision's* Roadmap: Supply Chain, Manufacturing and Logistics, and Wind Siting and Permitting

Since 2011, the WWPTO has funded multiple efforts within this focus area. The FY11 U.S. Offshore Wind: Removing Market Barriers FOA federal funding available to ten projects for the purpose of facilitating deployment and reducing technical challenges facing the offshore wind industry. Research topics included siting and permitting (policy and economic analysis, environmental and socioeconomic barriers, interagency dialogue, and risk management); and complementary infrastructure (domestic manufacturing and supply chain development, ports and vessels readiness, operations and maintenance facilities and technologies). National laboratory projects were funded during these four years, yielding significant progress in offshore wind planning, and environmental impacts research.

Moving forward, the *Wind Vision* Roadmap recommended actions in Supply Chain, Manufacturing and Logistics, and Siting and Permitting to address the following offshore specific needs:

- Support the assessment and development of offshore wind manufacturing and supply chain, including a network of port facilities
- Develop better understanding of and mitigation measures for offshore wind turbine interactions with national security and public safety surveillance missions such as radar and sonar
- Develop better understanding of and monitoring and mitigation measures for the environmental impacts of offshore wind facilities to facilitate permitting and environmental compliance
- Develop and disseminate accurate information to the public on community benefits and impacts of offshore wind power deployment and operations
- Promote an efficient permitting process for offshore wind, including seeking an increase in available sites for offshore wind development
- Develop methods, modeling tools, and analysis to assess, including determining risk to navigation and potential impacts of plants on other marine uses

The WWPTO requests information from stakeholders regarding the importance of the following three activities in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy.

1. *Supply Chain, Manufacturing, and Logistics*
2. *Siting and Permitting*
3. *Establishing Market Value and Power Purchase Mechanisms*

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CATEGORY 3: *Crosscutting*

Please submit your responses via pages 18-20 of this RFI.

In the 2011 *National Offshore Wind Strategy*, Advanced Technology Demonstration was the third focus area. Given the change in the offshore wind industry since 2011, DOE will rename this focus area as “Crosscutting” as it will also incorporate the *Wind Vision* Roadmap actions:

Resource Assessment and Site Characterization and Wind Electricity Delivery and Integration. The two roadmap actions, combined with Advanced Technology Demonstration, are three crosscutting topics as they address both technological hurdles and market barriers for offshore wind.

Since 2011, the WWPTO has funded multiple efforts within this focus area. The U.S. Offshore Wind: Advanced Technology Demonstration Projects FOA made federal funding available to seven installation projects for the purpose of deploying grid-connected, commercial scale offshore wind technologies on a demonstration scale by the end of 2017. The FY11 U.S. Offshore Wind: Removing Market Barriers FOA also made funding available to 12 research projects for the purpose of facilitating deployment and reducing technical challenges facing the offshore wind industry. Research topics included grid integration (national and regional offshore wind energy grid interconnection studies) and resource planning (characterization of wind resources and other external data critical to wind plant feasibility assessment, spatial planning and facility design). National laboratory projects funded during these four years included directing data collection from the demonstration projects, providing offshore wind resource characterization through LIDAR buoys and reference facility research, sediment and scour research, and grid integration studies.

Moving forward, the *Wind Vision* Roadmap recommended actions in Resource Assessment and Site Characterization and Wind Electricity Delivery and Integration to address the following offshore specific needs:

- Characterization of offshore wind resource and external design conditions and improvement of datasets for extreme events
- Development and acceptance of innovative remote measurement systems
- Development of offshore monitoring for metocean data collection
- Develop and build systems to aggregate power from multiple offshore projects
- Evaluate direct and indirect economic benefits of offshore wind on the national grid
- Advanced Technology Demonstration Projects

The WWPTO requests information from stakeholders regarding the importance of the following three activities in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy.

1. *Resource Assessment and Site Characterization*
2. *Electricity Delivery and Integration*
3. *Advanced Technology Demonstration Projects*

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CATEGORY 4: *Office Overall Strategy & Impact*

Please submit your responses via pages 21-22 of this RFI.

1. Regarding A National Offshore Wind Strategy, please rate:
 - the utility of the report to your organization
 - the value of the report to the industry as a whole
 - the sufficiency of the critical objectives of the report
2. Considering the industry development over the last four years, please comment on the critical objectives of the report (reduce the cost of energy and reduce deployment timelines). Please also briefly describe any significant gaps in the Office's critical objectives that have come to light.
3. Please comment on any of the Office's activities which were particularly valuable to advancing offshore wind energy. Conversely, please provide feedback on any activities which were not valuable to advancing offshore wind energy.
4. Please rank the following activities in order of their potential to meet the key challenges currently facing the industry over the next 5 years, again in order of decreasing impact:
 - Plant Technology Advancement
 - Power, Performance, Reliability, and Safety
 - Test Facilities (Offshore specific)
 - Supply Chain, Manufacturing, and Logistics
 - Siting and Permitting
 - Establishing Market Value and Power Purchase Mechanisms
 - Resource Assessment and Site Characterization
 - Electricity Delivery and Integration
 - Demonstration Projects
5. Please briefly comment on any additional areas of potential DOE impact you would like to bring to the attention of the WWPTO.

REQUEST FOR INFORMATION RESPONSE GUIDELINES: Responses to this RFI must be submitted electronically to OffshoreRFI1350@ee.doe.gov no later than 5:00pm (ET) on **July 02, 2015**. Responses must be provided as attachments to an email, **using the fillable fields of this document (.pdf)**. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. **Only electronic responses using the following template will be accepted.**

Please identify your answers by responding to a specific question or topic if possible. Respondents may answer as many or as few questions as they wish.

EERE will not respond to individual submissions or publish publicly a compendium of responses. A response to this RFI will not be viewed as a binding commitment to develop or pursue the project or ideas discussed.

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Respondents are requested to provide the following information on page 11 of this RFI:

- Company / institution name;
- Company / institution contact;
- Contact's address, phone number, and e-mail address;
- Role in offshore wind industry.

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Facilitating the Development of the Offshore Wind Industry in the United States

RESPONSE TEMPLATE

Company/Institution:

Address:

Contact name:

Phone Number:

Email Address:

Role in the offshore wind industry: (Click to choose role)

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1. *Plant Technology Advancement*

The WWPTO requests information from stakeholders regarding the importance of *Plant Technology Advancement* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 5-6 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Plant Technology Advancement*:

1 2 3 4 5 No Opinion

inadequate \longrightarrow excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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2. *Power Performance, Reliability, and Safety*

The WWPTO requests information from stakeholders regarding the importance of *Power Performance, Reliability, and Safety* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 5-6 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Power Performance Reliability, and Safety*:

1 2 3 4 5 No Opinion

inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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3. Test Facilities

The WWPTO requests information from stakeholders regarding the importance of *Test Facilities* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 5-6 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Test Facilities*:

1 2 3 4 5 No Opinion
inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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1. Supply Chain, Manufacturing, and Logistics

The WWPTO requests information from stakeholders regarding the importance of *Supply Chain, Manufacturing, and Logistics* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 6-7 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Supply Chain, Manufacturing, and Logistics*:

1 2 3 4 5 No Opinion

inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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2. Siting and Permitting

The WWPTO requests information from stakeholders regarding the importance of *Siting and Permitting* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 6-7 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Siting and Permitting*:

1 2 3 4 5 No Opinion

inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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3. Market Value Assessment and Power Purchase Mechanisms

The WWPTO requests information from stakeholders regarding the importance of *Market Value Assessment and Power Purchase Mechanisms* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 6-7 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Market Value Assessment and Power Purchase Mechanisms*:

1 2 3 4 5 No Opinion

inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

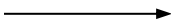
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1. Resource Assessment and Site Characterization

The WWPTO requests information from stakeholders regarding the importance of *Resource Assessment and Site Characterization* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 7-8 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Resource Assessment and Site Characterization*:

1 2 3 4 5 No Opinion

inadequate  excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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2. Electricity, Delivery, and Integration

The WWPTO requests information from stakeholders regarding the importance of *Electricity, Delivery, and Integration* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 7-8 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Electricity, Delivery, and Integration*:

1 2 3 4 5 No Opinion
inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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3. *Advanced Technology Demonstration Projects*

The WWPTO requests information from stakeholders regarding the importance of *Advanced Technology Demonstration Projects* in terms of reducing both the cost of energy and reducing the deployment timelines of offshore wind energy. Additional detail regarding this focus area can be found on pages 7-8 of the Request for Information document.

Please rate the success of the program to date in reducing the cost of energy and reducing development timelines through *Advanced Technology Demonstration Projects*:

1 2 3 4 5 No Opinion
inadequate → excellent

Please briefly explain your rating

What key challenges remain in this area?

How might the DOE address these key challenges? (Please include an estimate of the funding and time required).

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Category 4: Office Overall Strategy & Impact

1. Regarding the 2011 report, 'A National Offshore Wind Strategy', please rate:

- the utility of the report to your organization: 1 2 3 4 5 NA
 - the value of the report to the industry as a whole: 1 2 3 4 5 NA
 - the sufficiency of the critical objectives of the report: 1 2 3 4 5 NA
- inadequate \longrightarrow excellent

2. Considering the industry development over the last four years, please comment on the critical objectives of the report (to reduce both the cost of energy and deployment timelines). Please briefly describe any significant gaps in the Office's critical objectives that have come to light.

3. Please comment on any of the Office's activities which were particularly valuable in advancing offshore wind energy. Conversely, please provide feedback on any activities which were not valuable to advancing offshore wind energy.

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4. Please rank the following activities in order of their potential to meet the key challenges currently facing the industry over the next five years, (with 1 having the highest potential to meet key challenges and 10, the lowest potential):

1	2	3	4	5	6	7	8	9	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Plant Technology Advancement
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Power, Performance, Reliability, and Safety
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Test Facilities (Offshore-specific)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Supply Chain, Manufacturing, and Logistics
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Siting and Permitting
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Establishing Market Value and Power Purchase Mechanisms
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Resource Assessment and Site Characterization
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Electricity Delivery and Integration
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Demonstration Projects
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	No Opinion

5. Please briefly comment on any additional areas of potential DOE impact you would like to bring to the attention of the WWPTO

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