Department of Energy (DOE)
Office of Energy Efficiency and Renewable Energy (EERE)

Offshore Wind Energy Environmental Research and Instrumentation Validation

Funding Opportunity Announcement (FOA) Number: DE-FOA-0002237
FOA Type: Mod 005
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FOA Issue Date:	01/15/2021
Submission Deadline for Concept Papers:	03/1/2021 5:00pm ET
Submission Deadline for Full Applications:	06/04/2021 5:00pm ET
Expected Submission Deadline for Replies to Reviewer Comments:	07/20/2021 2021 5:00pm ET
Expected Date for EERE Selection Notifications:	Late September 2021
Expected Timeframe for Award Negotiations:	Late September 2021 - Late December 2021

- Applicants must submit a Concept Paper by 5:00pm ET on the due date listed above to be eligible to submit a Full Application.

- To apply to this FOA, applicants must register with and submit application materials through EERE Exchange at https://eere-Exchange.energy.gov, EERE's online application portal.

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations. If an application is selected for award negotiations, it is not a commitment to issue an award. It is imperative that the applicant/selectee be responsive during award negotiations and meet negotiation deadlines. Failure to do so may result in cancelation of further award negotiations and rescission of the selection.

Modifications

All modifications to the FOA are [HIGHLIGHTED] in the body of the FOA as shown below.

Mod. No.	Date	Description of Modification
001	1/22/2021	Delete references to EERE Program Information Center (EPIC) and replace with references to EERE Exchange.
001	1/22/2021	Update the individual award celling as shown on Page 35.
001	1/22/2021	Remove references to Executive Order 13950, Combating Race and Sex Stereotyping
001	1/22/2021	Add Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty to Section VI.B.xvii Add Table of Personnel to Section VI.B.xviii Add Budget for DOE/NNSA FFRDC to Section IV.D.xi.
002	2/24/2021	Provide clarification that Concept Papers and Full Applications for Topic Areas 1, 2 and 3--Subtopic 1 may cover more than one technology and research focus. See pages 49 and 52.
003	4/19/2021	Update the following in Table as shown on FOA Cover Page: • Submission Deadline for Full Applications; • Expected Submission Deadline for Replies to Reviewer Comments; • Expected Date for EERE Selection Notifications; and • Expected Timeframe for Award Negotiations.
004	4/23/2021	Provide clarification on where to upload 1-page letters of prospective interest in hosting research from offshore wind developers with projects in relevant geographic locations. See pages 52, 58, and 59.

005	7/14/2021	Update the number of pages allowed for Reply to Reviewer Comments in the text on page 64.

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I. Funding Opportunity Description

A. Background and Context

i. Background and Purpose

The Department of Energy's Wind Energy Technologies Office
In conjunction with the National Oceanographic Partnership Program (NOPP), and in coordination with partnering agencies, the Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), Wind Energy Technologies Office (WETO) is releasing a Funding Opportunity Announcement (FOA) to support regionally focused, coordinated research efforts to increase understanding of the environmental impacts of offshore wind development as well as to advance and validate technical readiness of tools for monitoring and minimizing impacts.

WETO plans and executes a diversified portfolio of early-stage research and development to advance technologies for offshore, land-based, and distributed wind energy, and its integration with the electric grid. This work aims to drive down the cost of wind energy through competitively selected, cost-shared projects, carried out in collaboration with industry, universities, research institutions, and other stakeholders. As part of its broad research and development (R&D) portfolio, WETO invests in research to inform environmental solutions in order to lower wind energy costs, increase capacity, accelerate reliable and safe energy production, and address environmental impacts.

National Oceanographic Partnership Program and Inter-agency Involvement
This solicitation was developed in coordination the Bureau of Ocean Energy Management (BOEM), the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA NMFS), as well as two state agencies: the California Energy Commission (CEC) and the California Ocean Protection Council (OPC). BOEM plans to provide funds to support research carried out under each Topic Area. More information regarding the specific mission of each agency as it pertains to the proposed research and the anticipated role of each agency in research execution can be found within each Topic Area description.

The National Oceanographic Partnership Program (NOPP) was established by law (10 U.S.C. §§ 8931-8933) to (1) promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean; and (2) coordinate and strengthen oceanographic efforts in support of those goals by identifying and carrying out partnerships among federal agencies, academia, industry, and other members of the oceanographic scientific community in the areas of data, resources, education, and communication.

All projects selected under this FOA will be awarded and managed by the Department of Energy. This FOA will be coordinated in conjunction with NOPP to allow for inter-agency partnership on funding and oversight of projects. Any NOPP member agency may provide funding to DOE for projects in response to this FOA. The federal agencies collaborating under the NOPP reserve the right to fund all, some, or none of the applications received under this FOA. It is the policy of the NOPP to treat all applications as sensitive competitive information and to disclose their contents only for the purposes of evaluation. Data disclosed in applications will be treated as set forth in Section VIII.D of this FOA.

Background

While the development of offshore wind energy could afford significant national economic and environmental benefits, the anticipated implementation, supporting infrastructure build-out and future operation will have environmental impacts that need to be assessed and addressed. These impacts have siting, cost, and scheduling implications for offshore wind projects, their developers, coastal communities, and industries.

In Europe, significant research on offshore wind environmental impacts has occurred and is ongoing[1]. Many significant studies have been produced through national or private-public research efforts such as Offshore Renewables Joint Industry Programme (ORJIP)[2], Win.MonBE[3], and Danish monitoring of the Horns Rev Offshore Wind Farm and the Nysted Offshore Wind Farm[4]. This research provides a broad basis for understanding potential impact of wind development in United States waters, as well as for the efficacy and challenges of different methodological approaches for measuring these impacts.

In the U.S., research efforts led by federal and state agencies, including BOEM Environmental Studies Program[5], and others, have provided a strong basis for offshore wind siting and permitting. Further efforts such as BOEM's Real-time Opportunity for Development Environmental Observations (RODEO)[6], have provided extensive data on impacts of projects constructed to date, in concert with other project monitoring efforts. Organizations within the U.S. have also led important efforts to summarize research priorities and identify potential methodological approaches for measuring impacts. Among other efforts, New York State

[1] e.g., Petersen, I.K., T.K. Christensen, J. Kahlert, M. Desholm, and A.D. Fox. 2006. *Final Results of Bird Studies at the Offshore Wind Farms at Nysted and Horns Rev, Denmark*. National Environmental Research Institute, Ministry of the Environment, Denmark; Skov, H., S. Heinänen, T. Norman, R.M. Ward, S. Méndez-Roldán, and I. Ellis. 2018. *ORJIP Bird Collision and Avoidance Study. Final Report – April 2018*. The Carbon Trust. United Kingdom; European Commission. 2016. *MaRVEN – Environmental Impacts of Sound, Vibrations and Electromagnetic Emission from Marine Renewable Energy*. RTD-KI-NA-27-738-EN-N.

[2] http://www.orjip.org.uk/

[3] https://www.naturalsciences.be/en/news/item/19116#:~:text=Offshore%20Wind%20Farms%20And%20The%20Marine%20Ecosystem%3A%2010%20Years%20of%20Monitoring,-Home%20%2F%20News%20%C2%BB%20Offshore&text=By%20the%20end%20of%202020,impact%20on%20the%20marine%20enviro

[4] https://tethys.pnnl.gov/sites/default/files/publications/Danish_Energy_Authority_2006.pdf

[5] https://www.boem.gov/environmental-studies

[6] https://www.boem.gov/sites/default/files/documents/environment/environmental-studies/Real-time%20Opportunity%20for%20Development%20Environmental%20Observations.pdf

Energy Research and Development Authority (NYSERDA) and partners have notably developed recommendations for mitigation and monitoring practices for marine mammals, birds, bats, and fish[7]. Further, efforts are underway to promote cross-sector, regional collaboration to address impacts of offshore wind on wildlife and fisheries.

This body of research and efforts focused on offshore wind impacts and means to measure it sit alongside research on the impacts of other offshore activities, such as the U.S. Navy's Living Marine Resources Program[8], and the Office of Naval Research Marine Mammal and Biology Program[9]. Additionally, it fits within broader national[10], regional[11], and state[12] ocean observing, monitoring, and science efforts that provide needed data to understand, analyze and contextualize impacts from offshore wind projects themselves.

The U.S. is poised at a unique opportunity with respect to supporting research to understand and minimize the impacts of offshore wind on wildlife and commercial species. The growing pipeline of proposed offshore wind projects in various stages of planning provides an opportunity for the development of coordinated research approaches to:

1) Minimize uncertainty with respect to impacts on wildlife and commercially fished species through coordinated research efforts, as well as develop research methodologies that provide an analytical framework for understanding those impacts in broader population, regional, and temporal contexts.
2) Demonstration, testing, validation, and improvement of environmental monitoring and mitigation technologies and methodologies, as well as validation of the costs and effectiveness of same.
3) Research to prepare for future development of offshore wind off the West Coast of the U.S.

Research funded under this solicitation should be developed with reference to the body of existing research in this space, in coordination or partnership with ongoing offshore wind focused and ocean science efforts, and with an intent to place research within a broader regional context.

[7] https://nyfisheriestwg.ene.com/Content/files/MMP%20Tool%20User%20Manual.pdf, https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Renewable-Energy/A-Framework-for-Studying-the-Effects.pdf, https://www.nyetwg.com/bird-bat-research-framework
[8] https://www.navfac.navy.mil/navfac_worldwide/specialty_centers/exwc/products_and_services/ev/lmr.html
[9] https://www.onr.navy.mil/en/Science-Technology/Departments/Code-32/all-programs/marine-mammals-biology
[10] e.g., https://ioos.noaa.gov/
[11] e.g., https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/atlantic-marine-assessment-program-protected, https://www.northeastoceancouncil.org/, https://www.midatlanticocean.org/, https://westcoastoceanalliance.org/
[12] e.g., https://www.dec.ny.gov/lands/111178.html, https://wildlife.ca.gov/Conservation/Marine/MPAs/management/monitoring

B. Topic Areas

Topic Area 1: Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Wildlife in U.S. Atlantic Waters

This Topic Area will provide funding to develop methodological frameworks and conduct and coordinate multi-focus research efforts to evaluate the impacts of offshore wind energy development on wildlife species in U.S. Atlantic Ocean waters from Maine to North Carolina. Under Topic Area 1 the recipient will work with DOE, in partnership with NOAA NMFS, BOEM, and USFWS in designing and executing the research under this award. The research is expected to address a national need to improve understanding of the impacts that offshore wind development may have on wildlife in U.S. waters, improve understanding of mechanisms for those potential impacts, develop and validate methodologies and tools for assessing impacts, and develop a methodological framework for assessing impacts at both individual wind farms and aggregated impacts of regional wind farm development in the context of broader ecosystem changes.

Research funded under this Topic Area will focus on filling knowledge gaps, and on developing and validating methodologies and tools for evaluating the impacts of offshore wind energy development. Areas of research focus will include: (1) assessing impacts of offshore wind energy development construction noise on protected or vulnerable species and validating tools to minimize impacts; (2) assessing impacts of offshore wind energy development on marine habitats and subsequent trophic changes, including changes in abundance and use patterns by protected or vulnerable species; and (3) measuring the risk of turbine collision for bird and bat species and validating tools for measuring these impacts. Research should focus on species considered potentially vulnerable to offshore wind impacts and protected species, including but not limited to: marine mammal, seabird, and bat species that meet such criteria. Topic Area 1 is expected to support one recipient for a project of up to five years in length.

Offshore wind is set to rapidly expand in the U.S. Atlantic in the coming decade. However, given the current nascent status of offshore wind development in U.S. waters, questions remain regarding potential impacts on wildlife species and surrounding habitats, as well as the mechanisms of impacts and their associated spatial and temporal scales. The ultimate goal of this Topic Area is to support a better understanding of impacts of offshore wind on wildlife species in order to enable sustainable future offshore wind development. It is intended to inform the development of siting and to identify solutions to minimize impacts as needed.

<u>Research Objectives</u>

The broad objectives of this Topic Area are to fund a project that, with reference to the specific research areas below and in coordination with U.S. DOE, BOEM, NOAA NMFS, and USFWS, will:

- Design methodologies and frameworks for evaluating impacts of offshore wind energy development on wildlife and habitats, across a range of spatial and temporal scales.

These frameworks should address turbine/wind farm level effects and how to integrate local scale information with existing regional and ecosystem level scientific surveys.

- Carry out a research program to evaluate impacts of offshore wind development on wildlife and habitat in offshore environments based on developed methodologies, with a particular aim at informing understanding of potential impacts on protected species and species most likely to be impacted by offshore wind development (based on research conducted to date at offshore wind farms and in reference to existing risk analyses).
- Evaluate the efficacy and cost effectiveness of methodologies and technologies to monitor and/or mitigate impacts.
- Use data collected from the research program to update or inform existing datasets and tools currently used to assess potential impacts of future offshore wind development while ensuring open and robust data access, storage, and standardization.
- Publish and disseminate results that contribute to the understanding of the state of the science regarding both impacts and research methodology effectiveness to help coordinate, inform, and improve ongoing monitoring and management activities.

Areas of Research Focus

Applicants are encouraged to scope proposals that cover as many of the research areas below as practicable given funding availability. Strong justification should be provided for the proposed research scope.

1) Research to assess or mitigate impacts of construction noise on marine species, including:
    a. Where significant knowledge gaps exist, evaluate impacts on protected species and assess the likelihood of potential direct and population impacts to individuals. For example, research might focus on parameters such as spatial and temporal scale of displacement and other behavioral changes that might affect fitness, as well as analysis of those data in the context of models and frameworks for evaluating their potential population level consequences. Assessment of impacts of species distribution may include techniques such as animal tagging, passive acoustics, aerial surveys, focal follows, and other approaches. Specific measures of health and fitness may also be considered, for example through hormone stress levels and diet composition.
    b. Development and validation of impact mitigation or risk minimization technologies. For example, tools to improve monitoring of marine mammal exclusion zones around construction activities or further development and validation of noise minimizing technologies such as bubble curtains, where a

strong justification for improved performance exists or additional validation needs are demonstrated.

2) Changes in habitat and changes in marine species' use of habitat in offshore wind lease areas and surrounding areas, including:
    a. Using the best available science, develop methodologies for assessing impacts on habitats and species' use patterns that allow for continuity in efforts both in reference to historic data sets and in reference to before and after construction comparisons at wind farms. After data collection is complete, evaluate the efficacy and cost-effectiveness of those methodologies.[13]
    b. Establish an analytical framework for data analysis which includes approaches for assessing site-specific, local, regional, and ecosystem patterns and determining the extent to which wind farm development is contributing to biological changes at each of these scales. This may include modeled and observed data and model validation. Evaluate the effectiveness of that framework in light of the successes and challenges of the empirical data collection efforts executed as part of this award.[14]
    c. Conduct research in accordance with the developed methodologies and frameworks described above, to evaluate changes in, and potential effects of, species distribution and habitat-use, including factors that define pelagic habitat such as physical and biological oceanographic drivers of prey distribution. Additionally, research may include a focus evaluating avoidance and attraction responses of key species, whether they are linked to habitat changes or are a direct behavioral response to the wind farm infrastructure or associated human activities at the site.
    d. Projects may also test and evaluate the efficacy of novel instrumentation for monitoring changes to habitats and species use of habitats, for example, drones, gliders, AUVs, eDNA, and additional techniques including as yet undeveloped technologies.

3) Research to assess collision risk for birds and/or bats, including:
    a. Efforts to develop methodologies and empirically measure species-specific risks to birds, through quantification of: avoidance behavior and rates at offshore wind turbines (macro, meso, and micro scale), passage rates and flight altitudes at lease areas, diurnal versus nocturnal flight activity, variation in offshore movements and flight altitudes relative to atmospheric

[13] Topic Area 1 awardees will be asked to coordinate these efforts with Topic Area 2 awardees to ensure consistency to the greatest extent practicable.
[14] Topic Area 1 awardees will be asked to coordinate these efforts with Topic Area 2 awardees to ensure consistency to the greatest extent practicable

conditions, and/or quantification of direct collisions. Ideally data would be collected under a range of light and weather conditions, and across a range of spatial and temporal scales relevant to offshore wind energy development within and among lease areas in the U.S. Atlantic from the pre-construction phase through operation. Research should be proposed with sample size in mind; prior to the inception of research, teams will need to demonstrate that research proposed is likely to have sufficient statistical power to derive meaningful conclusions with respect to collision risk. Applicants are encouraged to reference the ORJIP Bird Collision and Avoidance Study[15] and related research on collision risk when considering approaches to this research area.

b. Efforts to evaluate potential post-construction risk to bats through efforts such as measurements of acoustic activity or passage rates of radio-tagged individuals tracked using coordinated automated radio telemetry in relationship to wind speed and other environmental variables.
c. Validation of tools to measure collision risk. Proposals are especially encouraged to consider cross-validation of systems as part of this effort.

4) Additional or alternate areas of focus will be considered, but a strong justification will need to be made for prioritization of those research areas based on either potential role in project siting and permitting or potential magnitude of impact on species of concern.

DOE Partners Supporting this Topic Area

This Topic Area was developed in coordination with BOEM, NOAA, NMFS, and USFWS. Each organization will be invited to play a role in technical review of and oversight over selected projects. These agencies will also be invited to provide project advice and guidance to align research scope to the greatest degree practicable with their mission and information needs. As a funding partner, BOEM will play a further role in project management as described below. The offshore wind stewardship responsibilities of each agency and their anticipated roles in the work funded through this solicitation are described below. For selected projects, the actual roles of each agency in project execution will be finalized during project negotiation and during the first Budget Period of the award (for additional information see Statement of Project Objectives (SOPO) section below). **Applicants should not contact these partners directly for assistance in preparing their application.** Note: This restriction is not meant to discourage links to or integration with ongoing research efforts supported by these entities. Where appropriate applicants may include proposed integration or coordination with such efforts, with the expectation that scope and roles will be finalized during project negotiation and during the first Budget Period, as referenced above. Clarifying questions regarding this should be sent to OSWENVFOA@ee.doe.gov.

[15] https://tethys.pnnl.gov/publications/orjip-bird-collision-avoidance-study

BOEM is the bureau within the U.S. Department of the Interior that has been delegated the Department's congressionally granted authority to grant leases, easements, and rights-of-way on the Outer Continental Shelf (OCS) for the purpose of conventional and renewable energy development. The mission of BOEM is to manage development of U.S. OCS energy and mineral resources in an environmentally and economically responsible way. BOEM is committed to using the best available science in bureau decision making. To fill critical gaps in the information needed to inform the wide range of decisions within the bureau, BOEM facilitates world-class research by talented scientists in many disciplines. As a collaborating funding partner under this Topic Area, BOEM will play an active role in technical management and oversight of the funded work during both project negotiation and execution, in partnership with DOE. BOEM also anticipates serving on the Steering Committee of the selected project. Additionally, BOEM can help selected recipients identify offshore wind projects that have been approved and facilitate discussion with lessees in regard to research coordination. Attribution of BOEM funding support will be expected for all project products and communications.

NOAA NMFS is responsible for the stewardship of the nation's ocean resources and their habitat. NOAA NMFS is charged with stewardship of protected marine life affected by offshore wind development. Building, operating, and decommissioning offshore wind farms may affect a number of NOAA NMFS key mission areas, including: fisheries, protected animals (such as sea turtles and whales), seabirds, and marine habitats. NOAA NMFS works with the Bureau of Ocean Energy Management, and other Federal agencies, stakeholders, and offshore wind developers to ensure the protection of and to determine how offshore wind projects affect protected species, fisheries, marine habitats, and fishing communities. For all research efforts that involve resources over which NOAA NMFS has a stewardship responsibility, NOAA will be invited to provide technical oversight and input during methodology review, Go/No Go decisions, and during review of project deliverables. NOAA NMFS will be invited to sit on the Steering Committee of the selected project. Determination of a potential further role for NOAA NMFS in research development and execution will be made during project negotiation and during the first Budget Period of the award based on proposed project scope (for additional information see Statement of Project Objectives (SOPO) section below).

USFWS, within the U.S. Department of the Interior, is dedicated to the management of fish, wildlife, and natural habitats. The mission of the agency is to work “with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.” For all research efforts that involve resources over which USFWS has a stewardship responsibility, USFWS will be invited to provide technical oversight and input during methodology review, Go/No-Go decisions, and during review of project deliverables. USFWS will be invited to sit on the Steering Committee of the selected project. Determination of a potential further role for USFWS in research development and execution will be made during project negotiation and during the first Budget Period of the award based on proposed project scope (for additional information see Statement of Project Objectives (SOPO) section below).

Project Team

- Applications should include multi-sectoral project teams and discuss how the project team composition will enable the successful achievement of research objectives. In addition to the aforementioned DOE pre-selected project partners, the proposed team may include wind farm developers or owner/operators, biologists, marine mammal scientists, oceanographers, bioacousticians, statisticians, academia, non-profit research institutions, such as aquariums, federal, state, or local government, or others. Each of the participants should be able to bring added value to the research agenda or coordination needs of the project.

- Additionally, project teams should be structured in such a way that mechanisms for input from other key stakeholders not included in the study team are included and clearly defined, including a steering committee that includes members of the wind industry, federal, state and other key stakeholder groups.

- Applications should include indications of potential willingness of offshore wind farms to host this research, but final commitments will not be required until the Budget Period 1 Go/No-Go Decision.

- The recipient team is expected to bring various demonstrated capabilities and expertise to this project, including: (1) complex project management experience and expertise, and formal project planning; (2) marine biological, marine mammal, avian, bat, oceanographic, and acoustic expertise; (3) marine biological, oceanographic, acoustic, and bird and bat study design and statistical expertise; (4) marine logistics and permitting expertise to deploy instrumentation and conduct research in an offshore environment; (5) the ability to partner with key entities including relevant Non-government Organizations (NGOs) and state entities; and, any necessary cooperation from wind farm developers within a proposed offshore wind development area.

- Applicants should propose a project that can flexibly and effectively incorporate federally provided resources and parties but can also stand on its own merits within the funding available through this Topic Area.

Regions of Interest

WETO is interested in supporting research in Atlantic offshore regions from Maine to North Carolina, where offshore wind development activities are currently happening. Applicants should propose an approach for conducting research at multiple sites, including current or prospective offshore wind project locations, as well as relevant reference sites or geographic scales necessary for contextualization of impacts in light of broader regional changes. Justification should be based on: 1) Probability of wind farm construction and operation to occur over the course of the award (see more detail regarding project timeline below); 2) the ability to collect pre- and post- construction data or demonstration of a robust pre-construction

dataset to serve as the basis for post-construction comparisons; 3) geographic representativeness; and 4) focal species of concern.

Study Methodology Expectations

- As stated above, proposals should seek to develop and implement methodologies for measuring impacts of offshore wind that ensures complementarity and scalability of studies and reduces duplication of effort. Ultimately, once developed the research framework should, to the greatest extent practicable:
  - Identify key research goals and questions to be addressed;
  - Identify biological and physical indices to be measured;
  - Involve coordination and consideration of regional efforts;
  - Establish a statistical sampling methodology;
  - Establish an analytical framework for data analysis which includes approaches for assessing site-specific, local, regional, and ecosystem patterns and determining the extent to which wind farm development is contributing to biological changes at each of these scales;
  - Identify performance measures to be assessed regularly to evaluate whether the framework is attaining intended goals and answering intended questions; and
  - Undergo rigorous peer-review.

TOPIC AREA 1 SPECIFIC APPLICATION REQUIREMENTS

1) Clearly describe proposed research areas of focus and research objectives. Provide a robust justification of their importance.

2) Demonstrate a comprehensive understanding of existing data on species of concern relevant to offshore wind deployment and demonstrate that proposed tasks will fill these gaps and that proposed studies are necessary for the siting, permitting, and development of future commercial offshore wind projects in the study area.

3) Provide a high-level description of the proposed methodological approach that will be used to meet each research objective. The application should also detail the process by which methodologies will be further developed and refined.

4) Demonstrate that proposed tasks actively incorporate the input of, and buy-in from, specific federal and/or state regulatory and resource management agencies (except those federal partners involved in the development and execution of this solicitation, as listed above), offshore wind project developers, NGOs, and/or any other stakeholders whose participation will be critical to the effective execution of those tasks.

5) For any proposed validation of novel technologies, hardware, software or both, describe the following:

- How they are anticipated to advance the state of the art with respect to baseline data collection, including the current gaps, challenges, or limitations in existing technology or techniques they seek fill;
- Current and anticipated final Technology Readiness Levels (TRLs) of proposed technology (Appendix D);
- Current and anticipated target performance levels (e.g., detection and classification abilities including rates of false positives and negatives);
- A high-level description of the methodology by which performance will be validated;
- Current cost of technology and proposed cost reductions that will be achieved through the proposed scope; and
- Discussion of potential risks or known technical weaknesses.

Budget Periods

The proposed project performance period should be 60 months and will consist of three Budget Periods. *Note: the total of the maximum Budget Period lengths below exceeds 60 months in duration to allow flexibility to applicants to tailor Budget Period length to suit their proposed project; however, the total length of the combined Budget Periods should not exceed 60 months.*

Applicants must submit a Statement of Project Objectives (SOPO) and budget for the entire project period. However, only the first Budget Period will be negotiated in detail. The SOPO and budget will be further refined and negotiated for each subsequent Budget Period following the Go/No-Go discussions and decision.

In Budget Period 1 (BP1; up to 18 months), the recipient will develop a plan of collaboration with the federal agencies involved in this FOA. Federal funding for efforts in Budget Period 1 may not exceed $500,000. Continuation into BP2 will be evaluated based on the successful execution of these activities. Specific planning during this period will include the following:

1) Development of an overall integrated project management plan, including definition of leadership roles and responsibilities.
2) Completion of partnership arrangements with key partners including potential wind farm developers, federal resource agencies, state and local leadership, etc. and demonstration of buy-in from key stakeholder groups on the proposed areas of focus and approach. SOPO should include a relevant milestone around month nine.
3) Finalization of areas of focus and development of methodology for data collection to evaluate impacts.

4) Development of a methodological framework for analyzing impacts at offshore wind lease areas with broader spatial and temporal patterns of change.

5) Input from the funding entities, project partners, steering committee, external peer reviewers, and external stakeholders as needed, on the proposed study design, including the successful completion of a peer review of developed methodologies and methodological frameworks. Finalization and approval of revised documents that reflect this input.

6) Initiation of necessary permits and leasing arrangements.

7) Initiation of necessary National Environmental Policy Act (NEPA) determinations.

8) Completion of a detailed project management plan and a risk management plan for work to be executed by the recipient.

9) Finalize SOPO and budget for Budget Period 2.

During Budget Period 2 (up to 24 months), the recipient will collect pre-construction baseline data and data during construction activities in line with developed research methodologies. During this period, the applicant may also conduct post-construction data collection, if they have demonstrated that suitable pre-construction data exist to allow for project research objectives to be met. The recipient will also finalize SOPO and budget for Budget Period 3. In order to proceed to Budget Period 3, recipients will need to demonstrate the ability to collect wind farm post-construction data planned for Budget Period 3 based on partner wind farm development timeframes.

During Budget Period 3 (up to 30 months), the recipient will collect post-construction data and manage coordinated data analysis. This phase will include analyzing data from the field campaign, identifying strengths and weaknesses of methodological approaches, and disseminating projects results.

Specific Deliverables:

- Quarterly reports and presentations to DOE and agency partners outlining progress made on all awarded tasks;
- Annual technical reports for multi-year awards;
- A fully vetted, peer-reviewed research and monitoring framework;
- A peer-reviewed, publicly available, final report that includes a detailed technical summary of all tasks, results of performance testing, and cost analysis;

- Participation in WETO Program Peer Review activities occurring during or within 1-2 years following the completion of the project;
- Submission of a manuscript(s) on project methodology and results for publication in a peer-reviewed journal; and
- Teams will be encouraged to make applicable data available to the public, government agencies, and other researchers, preferably through established platforms.

Funding Available

Proposals for Topic Area 1 may seek up to $7,500,000 in federal funds under this FOA.

Topic Area 2: Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Ecology of Commercially Fished Species

Topic Area 2 will support the collection of empirical data to fill gaps in our understanding of impacts of offshore wind in U.S. waters on commercial fisheries[16], develop methodological frameworks to evaluate the effects of offshore wind development on populations of commercially important fish species in U.S. waters, and validate tools and methods for assessing those impacts. Under Topic Area 2 the recipient will work with DOE, BOEM, NOAA NMFS, and USFWS in designing and executing the research under this award. This research is expected to address a national need to improve understanding of the impacts of offshore wind development on commercial fish stocks in U.S. waters, improve understanding of mechanisms of those potential impacts, and develop methodologies for assessing fish stocks before and after wind farm construction that allows for continuity in data collection efforts. Further, this research should develop methodologies for assessing fish populations before and after wind farm construction that allow for continuity in both public and private data collection efforts at a scale that is commensurate with the anticipated effects, with a focus on planned and constructed offshore projects from Maine to North Carolina.

Given the nascent status of offshore wind development in U.S. waters, questions remain regarding potential impacts on commercial fish abundance and distribution, the mechanisms of impact and their associated scale, such as trophic changes resulting in changes in prey and predator dynamics, noise, introduction of new structures, and changes in hydrodynamic or sediment movement and deposition patterns as well as the survey methodologies to detect and assess these potential effects. Impacts may vary in scale and type across life stages.
The ultimate goal of Topic Area 2 is to support a better understanding of the impacts of offshore wind development on fisheries in order to enable successful coexistence of these

[16] For the purposes of this FOA, commercially fished species refers to all aquatic species harvested for commercial harvest, including both fish and other commercially harvested species such as marine invertebrates harvested for food (e.g., scallops, lobsters) and other purposes (e.g., horseshoe crabs).

industries moving forward, including the development of siting or impact minimization solutions as needed. Topic Area 2 is expected to support one recipient for a project of up to five years in length.

Research Objectives

The objectives of this Topic Area are to fund a project that, in collaboration with DOE, NOAA NMFS, BOEM, and USFWS partners, will:

- Develop a methodological framework for research and monitoring that ensures complementarity and scalability of studies and reduces duplication of effort. Survey methodology should allow for continuity in data collection efforts both in reference to historic data sets and in reference to direct before and after construction comparisons at wind farms. This framework should address turbine/wind farm level effects and how to integrate this local scale information with existing regional and ecosystem level scientific surveys. [17]

- Carry out a research program to evaluate the impacts of offshore wind development on selected commercial fish species over multiple seasons and multiple years within and around proposed and/or operational offshore wind facilities based on developed methodologies, at the scale where effects to these resources might be detected. After data collection is complete, evaluate the efficacy and cost-effectiveness of those methodologies.

- Improve the understanding of the mechanisms associated with changes in fish distribution and abundance patterns within, and adjacent to, wind farms.

- Use data collected from the research program to update or inform existing datasets and tools currently used to assess potential impacts of future offshore wind development while ensuring efficient data access, storage, and standardization.

- Publish and disseminate results that contribute to the understanding of the state of the science regarding both impacts and research methodologies to help coordinate, inform, and improve ongoing monitoring and management activities.

- Projects may also propose to test and evaluate the efficacy of novel instrumentation for monitoring impacts on fish at offshore wind farms under the scope of this award.

DOE Partners Supporting this Topic Area

This Topic Area was developed in coordination with BOEM and NOAA NMFS. Each organization will be invited to play a role in technical review of and oversight over selected projects. These

[17] Topic Area 1 awardees will be asked to coordinate these efforts with Topic Area 2 awardees to ensure consistency to the greatest extent practicable.

agencies will also be invited to provide project advice and guidance in order to align research scope to the greatest degree practicable with their mission and information needs. As a funding partner, BOEM will play a further role in project management as described below. The offshore wind stewardship responsibilities of each agency and their anticipated roles in the work funded through this solicitation are described below. For selected projects, final roles of each agency in project execution will be finalized during project negotiation and during the first Budget Period of the award (for additional information see Statement of Project Objectives (SOPO) section below). **Applicants should not contact these partners directly for assistance in preparing their application**. Note: This restriction is not meant to discourage links to or integration with ongoing research efforts supported by these entities. Where appropriate Applicants may include proposed integration or coordination with such efforts, with the expectation that scope and roles will be finalized during project negotiation and during the first Budget Period, as referenced above. Clarifying questions regarding this should be sent to OSWENVFOA@ee.doe.gov.

BOEM is the bureau within the U.S. Department of the Interior that has been delegated the Department's congressionally granted authority to grant leases, easements, and rights-of-way on the Outer Continental Shelf (OCS) for the purpose of conventional and renewable energy development. The mission of BOEM is to manage development of U.S. OCS energy and mineral resources in an environmentally and economically responsible way. BOEM is committed to using the best available science in bureau decision making. To fill critical gaps in the information needed to inform the wide range of decisions within the bureau, BOEM facilitates world-class research by talented scientists in many disciplines. As a collaborating funding partner under this Topic Area, BOEM will play an active role in technical management and oversight of the funded work during both project negotiation and execution, in partnership with DOE. BOEM also anticipates serving on the Steering Committee of the selected project. Additionally, BOEM can help selected recipients identify offshore wind projects that have been approved and facilitate discussion with lessees in regard to research coordination. Attribution of BOEM funding support will be expected for all project products and communications.

NOAA NMFS is responsible for the stewardship of the nation's ocean resources and their habitat. NOAA NMFS is charged with stewardship of protected marine life affected by offshore wind development. Building, operating, and decommissioning offshore wind farms may affect a number of NOAA NMFS key mission areas, including fisheries, protected animals, and marine habitats. NOAA NMFS works with the Bureau of Ocean Energy Management, and other Federal agencies, stakeholders, and offshore wind developers to ensure the protection of and to determine how offshore wind projects affect protected species, fisheries, marine habitats, and fishing communities. For all research efforts that involve resources over which it has a stewardship responsibility, NOAA will be invited to provide technical oversight and input during methodology review, Go/No-Go decisions, and during review of project deliverables. NOAA NMFS will be invited to sit on the Steering Committee of the selected project. Determination of the potential further role for NOAA NMFS in research development and execution will be made during project negotiation and during the first Budget Period of the award based on proposed

project scope (for additional information see Statement of Project Objectives (SOPO) section below).

Project Team

- Applications should include multi-sectoral project teams and discuss how the project team composition will enable the successful achievement of research objectives. In addition to the aforementioned DOE pre-selected project partners, the proposed team should include members of the commercial fishing industry or groups representing the industry, wind plant operators/owners, biologists, and statisticians, and are encouraged to include regional academia, nonprofit research institutions, federal, state, or local government, or other entities, as appropriate. Each of the proposed project partners should bring added value to the research agenda or coordination needs of the project.

- Additionally, project teams should be structured in such a way that mechanisms for input from other key external stakeholders not included in the study team are included and clearly defined, including a steering committee that includes members of the wind industry, the commercial fishing industry, federal and state agencies, and other key stakeholder groups.

- Applications should include indications of potential willingness of offshore wind farms to host this research, but final commitments will not be required until the Budget Period 1 Go/No-Go Decision.

- The recipient is expected to bring various demonstrated capabilities and expertise to this project, including: (1) complex project management experience and expertise, including formal project planning; (2) fisheries science and marine biological expertise; (3) marine biological study design and statistical expertise; (4) marine logistics and permitting expertise to deploy instrumentation and conduct research in an offshore environment; (5) the ability to partner with the fishing industry, as well as other key entities including relevant Non-Government Organizations (NGOs) and state entities; and (6) any necessary cooperation from wind plant developers within a proposed offshore wind development area.

- Applicants should propose a project that can flexibly and effectively incorporate federally provided resources and parties but can also stand on its own merits within the funding available through this Topic Area.

Regions and Fisheries of Interest

WETO is interested in supporting research in Atlantic offshore regions from Maine to North Carolina, where offshore wind development activities are currently occurring. Applicants should propose an approach for developing a research and monitoring framework and implementation

of research in line with that framework for multiple sites, including current or prospective offshore wind project locations, as well as relevant reference sites or geographic scales necessary for contextualization of impacts in light of broader regional changes. Justification for locations of focus should be made based on: 1) Probability of wind farm construction and operation to occur over the course of the award (see more detail regarding project timeline below); 2) the ability to collect pre- and post- construction data or demonstration of a robust pre-construction dataset to serve as the basis for post-construction comparisons; 3) geographic representativeness; and 4) focal species of concern.

Study Methodology Expectations

- As stated above, proposals should seek to develop and implement an overarching methodological framework for research and monitoring that ensures complementarity and scalability of studies and reduces duplication of effort. Ultimately, once developed, this framework should, to the greatest extent practicable:
    - Identify key research goals and questions to be addressed;
    - Identify biological and physical indices to be measured;
    - Involve coordination and consideration of regional efforts, using consistent methods (field and analytical) within and across lease areas and calibrating those sampling methods used by regional scientific surveys to the greatest extent practicable in light of specific research objectives;
    - Establish a statistical sampling methodology;
    - Establish standardized sampling gears that can be calibrated with sampling gears of regional scientific surveys;
    - Establish sampling methodologies for assessing changes in habitat (biological, physical, and oceanographic variables), community structure, abundance, biomass, distribution, and vital rates. This may include the application of innovative technologies and instrumentation but should leverage and be fully integrated with ongoing federal and state scientific surveys;
    - Establish an analytical framework for data analysis which includes approaches for assessing site-specific, local, regional, and ecosystem patterns and determining the extent to which wind farm development is contributing to biological changes at each of these scales;
    - Identify performance measures to be assessed regularly to evaluate whether the framework is attaining intended goals and answering intended questions; and
    - Undergo rigorous peer-review.

Coordination with Ongoing Efforts

Studies should build upon, and to the greatest extent possible, integrate and collaborate with, similar efforts already underway or recently completed, including but not limited to regional,

agency-funded studies and industry-funded monitoring efforts at individual lease areas. Applicants should design their approach with special consideration of the compatibility of their study protocols, data collected, and derived products with other efforts. Selected applicants will be expected to coordinate their activities with similar efforts on an ongoing basis, with assistance from DOE and partnering agencies as needed. Applicants should therefore budget for coordination activities in their applications.

TOPIC AREA 2 SPECIFIC APPLICATION REQUIREMENTS

1) Clearly describe proposed research objectives, research questions, and proposed fisheries of focus. Provide a robust justification of their importance.
2) Demonstrate a comprehensive understanding of existing data on species of concern relevant to offshore wind deployment and demonstrate that proposed tasks will fill these gaps and that proposed studies are necessary for the development of future commercial offshore wind projects in the study area, either for regulatory or public acceptance reasons.
3) Provide a high-level description of the proposed methodological approach that will be used to meet each research objective. The application should also detail the process by which methodologies will be further developed and refined.
4) Demonstrate that proposed tasks actively incorporate the input of, and buy-in from, specific federal and/or state regulatory and resource management agencies (except those federal partners involved in the development and execution of this solicitation, as

listed above), offshore wind project developers, NGOs, and/or any other stakeholders whose participation will be critical to the effective execution of those tasks.

5) For proposed validation of novel technologies, hardware, software or both, describe the following:

- How they are anticipated to advance the state of the art with respect to baseline data collection, including the current gaps, challenges, or limitations in existing technology or techniques they seek fill;
- Current and anticipated final Technology Readiness Levels (TRLs) of proposed technology (Appendix D);
- Current and anticipated target performance levels (e.g., detection and classification abilities including rates of false positives and negatives);
- A high-level description of the methodology by which performance will be validated;
- Current cost of technology and proposed cost reductions that will be achieved through the proposed scope; and
- Discussion of potential risks or known technical weaknesses.

Budget Periods

The proposed project performance period should be 60 months and will consist of three Budget Periods. *Note: the total of the maximum Budget Period lengths below exceeds 60 months in duration to allow flexibility to applicants to tailor Budget Period length to suit their proposed project; however, the total length of the combined Budget Periods should not exceed 60 months.*

Applicants should propose an approach that can flexibly and effectively incorporate federal partners but can also stand on its own merits within the funding available through this Topic Area. Applicants must submit a Statement of Project Objectives (SOPO) and budget for the entire project period. However, only the first Budget Period will be negotiated in detail. The SOPO and budget will be further refined and negotiated for each subsequent Budget Period following the Go/No-Go discussions and decision.

In Budget Period 1 (up to 18 months), the recipient will develop a plan of collaboration with the federal agencies involved in this FOA. Federal funding for efforts in Budget Period 1 may not exceed $500,000. Continuation into Budget Period 2 will be evaluated based on the successful execution of these activities. Specific planning during this period will include the following:

1) Development of an overall integrated project management plan, including definition of leadership roles and responsibilities.

2) Completion of partnership arrangements with key partners including potential wind farm developers, federal resource agencies, state and local leadership, etc. and

demonstration of buy-in from key stakeholder groups on the proposed areas of focus and approach. SOPO should include a relevant milestone around month nine.

3) Development of methodologies for data collection to evaluate impacts at offshore wind lease areas.

4) Development of a methodological framework for analyzing impacts at offshore wind farms with broader spatial and temporal patterns of change.

5) Input from the funding entities, project partners, steering committee, external peer reviewers, and other stakeholders as needed, on the proposed study design, including the successful completion of a peer review of developed methodologies and methodological frameworks. Finalization and approval of revised documents that reflect this input.

6) Input from the steering committee and external peer reviewers on the proposed study design.

7) Initiation of necessary permits and leasing arrangements.

8) Initiation of necessary National Environmental Policy Act (NEPA) determinations.

9) Completion of a detailed project management plan and a risk management plan for work to be executed by the recipient.

10) Finalize SOPO and budget for Budget Period 2.

During Budget Period 2 (up to 30 months), the recipient will collect pre-construction baseline data in line with developed research methodologies, with an aim to collect data needed to establish a comparison for post-construction impacts. During this period, the applicant may also conduct post-construction data collection, if they have demonstrated that suitable pre-construction data exist to allow for project research objectives to be met. The recipient will also finalize SOPO and budget for Budget Period 3. In order to proceed to Budget Period 3, recipients will need to demonstrate the ability to collect wind farm post-construction data planned for Budget Period 3 based on partner wind farm development timeframes.

During Budget Period 3 (up to 30 months), the recipient will collect post-construction data and manage coordinated data analysis. This phase will include analysis of data from the field research, identification of strengths and weaknesses of methodological approaches, and dissemination of project results.

Specific Deliverables

- Quarterly reports and presentations to DOE and agency partners outlining progress made on all awarded tasks;

- Annual technical reports for multi-year awards;
- A fully vetted, peer-reviewed research and monitoring framework;
- A peer-reviewed, publicly available, final report that includes a detailed technical summary of all tasks, results of performance testing, and cost analysis;
- Participation in WETO Program Peer Review activities occurring during or within 1-2 years following the completion of the project;
- Submission of a manuscript(s) on project methodology and results for publication in a peer-reviewed journal; and
- Teams will be encouraged to make applicable data available to the public, government agencies, and other researchers, preferably through established platforms.

Funding Available

Proposals for Topic Area 2 may seek up to $3,500,000 in federal funds under this FOA.

Topic Area 3: Environmental Baseline Data Collection and Monitoring Tool Development and Validation for Evaluating Impacts of Offshore Wind Energy Development on Wildlife in U.S. Waters off of the West Coast

As interest in development of floating offshore wind off the U.S. West Coast grows, and states work with BOEM on active processes for identifying areas for leasing, there is a need to invest in the research that can inform and potentially enable future development of wind energy in this region. Topic Area 3 will support work in two distinct Subtopics: 1) Multi-year baseline wildlife studies to fill knowledge gaps in distribution, abundance, and habitat-use data necessary to inform the effective and efficient permitting of offshore wind facilities in waters along the West Coast of the U.S. This work will include validation of novel instruments for collection of baseline data on wildlife species. 2) Development and validation of technologies to monitor the environmental impacts of offshore wind development at future floating offshore wind installations off the West Coast of the U.S., including advancements in both hardware and software.

Specifically, the West Coast Topic Area, Topic Area 3, will support:

Topic Area 3 Subtopic 1: Research that fills key gaps in environmental baseline data and validates novel instrumentation for baseline data collection

Applications to perform multi-year baseline wildlife studies to fill knowledge gaps in distribution, abundance, and habitat-use data necessary to inform the effective and efficient permitting of offshore wind facilities in waters along the West Coast of the U.S.

Research Objectives

1) Design methodologies and collect field survey data to fill data gaps in distribution, abundance, and habitat-use data patterns of key species important to the siting and permitting of offshore wind. There is particular interest in proposals that seek to fill seasonal gaps in distribution, movement, and behavior patterns of cetaceans on the West Coast of the U.S., but additional or alternative species of focus may be proposed with sufficient justification with respect to data gaps and offshore wind siting information needs. This effort should include species that are federally or state listed as Threatened or Endangered, as well as any other species of concern. (Note: research focused on commercially fished species is not requested through Topic Area 3 of this solicitation. DOE and partnering organizations recognize the importance of this data for offshore wind planning purposes, but such data collection efforts are likely to be the focus of future research calls and thus are not of focus here.)

2) Validate the efficacy and cost-effectiveness of novel instrumentation and/or methodologies for collecting baseline data. There is a preference for solutions that can fill current gaps or limitations in existing data collection capabilities, lower costs, and preferably be able to be deployed in both a pre- and post-construction context to evaluate impacts of wind energy development, such as evaluating changes in abundance or behavior. Funds may also be used to address known or demonstrated areas of need for performance improvement in both instrument hardware or software.

3) Based on data collected and analyzed, compile comprehensive datasets for inclusion on MarineCadastre.gov and other data-sharing platforms.

4) Develop a final report summarizing findings from the above tasks and actively disseminate study findings and data to relevant parties.

5) Publish findings, including efficacy of novel technology, in peer-reviewed publication(s).

DOE Partners Supporting this Subtopic

This Subtopic was developed in coordination with BOEM and NOAA NMFS. Each organization will be invited to play a role in technical review of and oversight over selected projects. These agencies will also be invited to provide project advice and guidance to align research scope to the greatest degree practicable with their mission and information needs. As a funding partner, BOEM will play a further role in project management as described below. The California Energy Commission and the California Ocean Protection Council also provided input to this Topic Area and may be invited to provide technical review of projects.

The offshore wind stewardship responsibilities of each federal agency and their anticipated roles in the work funded through this solicitation are described below. For selected projects, final roles of each agency in project execution will be finalized during project negotiation

and during the first Budget Period of the award (for additional information see Statement of Project Objectives (SOPO) section below). **Applicants should not contact these federal partners directly for assistance in preparing their application.** Note: This restriction is not meant to discourage links to or integration with ongoing research efforts supported by these entities. Where appropriate Applicants may include proposed integration or coordination with such efforts, with the expectation that scope and roles will be finalized during project negotiation and during the first Budget Period, as referenced above.

Clarifying questions regarding this should be sent to OSWENVFOA@ee.doe.gov.

BOEM is the bureau within the U.S. Department of the Interior that has been delegated the Department's congressionally granted authority to grant leases, easements, and rights-of-way on the Outer Continental Shelf (OCS) for the purpose of conventional and renewable energy development. The mission of BOEM is to manage development of U.S. OCS energy and mineral resources in an environmentally and economically responsible way. BOEM is committed to using the best available science in bureau decision making. To fill critical gaps in the information needed to inform the wide range of decisions within the bureau, BOEM facilitates world-class research by talented scientists in many disciplines. As a collaborating funding partner under this Topic Area, BOEM will play an active role in technical management and oversight of the funded work during both project negotiation and execution, in partnership with DOE. Attribution of BOEM funding support will be expected for all project products and communications.

NOAA NMFS is responsible for the stewardship of the nation's ocean resources and their habitat. NOAA NMFS is charged with stewardship of protected marine life affected by offshore wind development. Building, operating, and decommissioning offshore wind farms may affect a number of NOAA NMFS key mission areas, including fisheries, protected animals, and marine habitats. NOAA NMFS works with the Bureau of Ocean Energy Management, and other Federal agencies, stakeholders, and offshore wind developers to ensure the protection of and to determine how offshore wind projects affect endangered or threatened species, marine mammals, fisheries, marine habitats, and fishing communities. For all research efforts that involve resources over which it has a stewardship responsibility, NOAA will be invited to provide technical oversight and input during methodology review, Go/No-Go decisions, and during review of project deliverables. Determination of the potential further role for NOAA NMFS in research development and execution will be made during project negotiation and during the first part of the award based on proposed project scope (for additional information see Statement of Project Objectives (SOPO) section below).

Project Team

- In addition to the aforementioned federal and state project partners, the proposed team may include biologists, statisticians, academia, nonprofit research institutions, offshore wind farm developers or owner/operators, federal, state, or local

government, or others. Each of the participants should be able to bring added value to the research agenda or coordination needs of the project.

- The application should include a process for garnering expert peer review of methodologies and project results.

Regions of Interest

In geographic scope, generally speaking, studies may include ocean waters from Point Conception, California to northern Oregon, along the Outer Continental Shelf and Slope. The surveys should focus on species and other biological resources of particular relevance in the context of permitting and environmental review of offshore wind development by federal and state environmental resource agencies with an aim to significantly increase the temporal and spatial resolution of data on the presence, abundance, and habitat-use in areas under consideration for offshore wind development. The general survey design should span at least two years of observation, with sampling at intervals sufficient to capture seasonal variations in species density and abundance. Specific geographic scopes and sampling frequencies are expected to be proposed in the application and should include a strong justification based on offshore wind siting data needs and information gaps. State financial contributions may be used to increase the scope or intensity of sampling frequency within the waters off the coast of the contributing states.

TOPIC AREA 3, SUBTOPIC 1, SPECIFIC APPLICATION REQUIREMENTS

In order to be considered, applicants must describe the relevance and value of the information that will be collected, both to the study area and to the advancement of the offshore wind industry as a whole. In both their concept paper and final applications, applicants must address all of the following points:

1) Demonstrate a comprehensive understanding of existing data on species of concern relevant to offshore wind deployment in the study area, and identify key gaps in the data, such as weaknesses with regard to observations of particular species, or insufficient temporal or spatial resolution.

2) Demonstrate that proposed tasks will fill these gaps and that proposed studies are necessary for the development of future commercial offshore wind projects in the study area, either for regulatory or public acceptance reasons.

3) Demonstrate that proposed tasks actively incorporate the input of, and buy-in from, specific federal and/or state regulatory and resource management agencies (except those federal partners involved in the development and execution of this solicitation, as listed above), offshore wind project developers, and/or any other

stakeholders whose participation will be critical to the effective execution of those tasks.

4) Describe how the data collected will be integrated into existing data sets and data portals.

5) Describe proposed methodological approach to data collection.

6) For proposed novel technologies, including advancements to hardware and/or software, describe the following:

   - How they are anticipated to advance the state of the art with respect to baseline data collection, including the current gaps, challenges, or limitations in existing technology or techniques they seek to fill;
   - Current and anticipated final Technology Readiness Levels (TRLs) of proposed technology (see: Appendix D);
   - Current and anticipated target performance levels (e.g., detection and classification abilities including rates of false positives and negatives);
   - Methodology by which performance will be validated;
   - Current cost of technology and proposed cost reductions that will be achieved through the proposed scope; and
   - Discussion of potential risks or known technical weaknesses.

7) Submit a quality assurance work plan and budget for quality assurance activities, in order to ensure that field and model input and output data meet appropriate standards for data and metadata (such as a Federal Geographic Data Committee-approved standard) to ensure maximum compatibility with ongoing efforts.

Coordination with Ongoing Efforts

Studies should build upon rather than duplicate similar efforts already underway or recently completed. Applicants should design their approach with special consideration of the compatibility of their study protocols, data collected, and derived products with other efforts. Selected applicants will be expected to coordinate their activities with similar efforts on an ongoing basis, with assistance from DOE as needed. Applicants should therefore budget for coordination activities in their applications.

Statement of Project Objectives (SOPO)

Applicants must submit a SOPO and budget for the entire project period. Projects under Subtopic 1 are not required to include a Go/No-Go decision in their SOPOs. The proposed project performance period should be no longer than 60 months. During the first 6 months of the project, the recipient will finalize their research planning collaboration with the federal agencies involved in this FOA including detailing the activities of all participants.

Specific planning during this period will include the following:

1) A detailed scope of work for the remainder of the project developed in consultation with relevant federal and state environmental resource agencies;

2) Finalization of areas of methodology for data collection and successful peer review of methodology;

3) Initiation of necessary permits and leasing arrangements;

4) Initiation of necessary National Environmental Policy Act (NEPA) determinations;

5) Completion of partnership arrangements with key partners including federal resource agencies, state and local leadership, etc.; and

6) Completion of a detailed project management plan and a risk management plan for work to be executed by the recipient.

Following successful completion of the activities described above, projects will collect data, validate technology, and conduct analyses. This phase should include analyzing data from the field campaign, identifying strengths and weaknesses of methodological approaches and technologies employed, and disseminating projects results. While there is a preference for advancing novel technologies that can be used to collect species data before and after construction, given the lack of offshore wind farms on the West Coast, only pre-construction validation is required at this time.

Specific Deliverables:

- Quarterly reports and presentations to DOE and partner agencies outlining progress made on all awarded tasks.
- Annual technical reports for multi-year awards.
- A fully vetted and peer-reviewed research methodology.
- A peer-reviewed, publicly available, final report that includes a detailed technical summary of all tasks, results of performance testing, and cost analysis. DOE will coordinate an expert review of the draft final report and recipients will be asked to revise accordingly.
- Summary report, shapefiles, and raw data collected in field surveys
- Submission of project data to the Multipurpose Marine Cadastre and other databases as appropriate.
- Participation in WETO Program Peer Review activities occurring during or within 1-2 years following the completion of the project.

- Submission of a manuscript on project methodology and results for publication in a peer-reviewed journal for any effectiveness testing.

All data, shapefiles and other geospatial products produced should be vetted through a rigorous quality assurance/quality control (QA/QC) process (see below) and meet appropriate data and metadata standards to ensure quality and compatibility with existing efforts. All baseline data collected over the course of the award will be required to be made publicly accessible on an existing web-based platform.

Funding Available

Proposals for this Subtopic may seek up to $2,000,000 in federal funds under this FOA.

Topic Area 3 Subtopic 2: Environmental impact monitoring technology development and validation

This Subtopic seeks to support the development and validation of technologies to monitor the environmental impacts of offshore wind development at future floating offshore wind installations on the West Coast of the U.S., including advancements in both hardware and software.

Research Objectives

This Subtopic seeks to advance offshore wind impact monitoring technologies to address one or more of the following objectives:

1) Designing tools to address novel impacts of floating offshore wind technologies compared with fixed-bottom technologies.

2) Ensuring that existing tools and tools under development for monitoring offshore wind impacts are modified for optimal performance with respect to West Coast species and environmental differences, e.g., deeper water. Examples include activities such as training of algorithms of collision monitoring systems to recognize West Coast avian species or tools for real-time monitoring of West Coast marine mammal species around offshore wind energy construction activities.

3) Filling gaps in our broader ability to measure environmental impacts of offshore wind.

Project funds can be used to further develop and/or validate technologies. Given the lack of offshore wind projects on the West Coast available for final validation at an operational wind farm, validation efforts are expected to span from TRL 4-7 (Appendix D).

DOE Partners Supporting this Subtopic

This Subtopic was developed in coordination with BOEM, NOAA NMFS, the California Energy Commission, and the California Ocean Protection Council. Each organization will be invited

to play a role in technical review of and oversight over selected projects. These agencies will also be invited to provide project advice and guidance to align research scope to the greatest degree practicable with their mission and information needs.

Project Team

- In addition to the aforementioned DOE pre-selected project partners, the proposed team may include technology developers, biologists, statisticians, academia, nonprofit research institutions, wind plant developers or owner/operators, federal, state, or local government, or others. Each of the participants should be able to bring added value to the research agenda or coordination needs of the project.

- For any proposed large field validation, teams should include independent biologists or other experts, not affiliated with the technology development company, capable of conducting the validation tests. Teams should include individuals with statistical expertise. Those independent experts should be charged with establishing methodologies and conducting effectiveness trials in an independent fashion to ensure neutrality of results.

Regions of Interest

In geographic scope, technologies should be relevant for potential application on the OCS off California to northern Oregon, focusing on species and other biological resources of particular relevance in the context of permitting and environmental review of offshore wind development by federal and state environmental resource agencies.

TOPIC AREA 3, SUBTOPIC 2, SPECIFIC APPLICATION REQUIREMENTS

1) Demonstrate that proposed studies will provide results that will substantially reduce regulatory and environmental risks, or uncertainty, related to future offshore wind projects by filling key gaps, challenges, or limitations in existing monitoring capabilities for high priority issues.

2) Applications should clearly define the current capabilities of their technologies, end-of-project technical performance targets, and current and anticipated final Technology Readiness Levels (TRLs) (Appendix D).
    i. Applications should include detail on current and proposed functionality in a range of weather and visibility conditions.
    ii. Applications should detail current data processing capabilities and proposed advancements in those capabilities.
    iii. Where relevant, current species detection, classification, and tracking capabilities should be detailed, including rates of false positives and negatives for detection and classification and current estimates of tracking precision.

3) Clearly describe the end-of-project cost targets, as well as proposed cost reduction pathways.

4) Applications should describe proposed system configuration, including intended mounting location for the device or proposed intended platform and associated considerations, such as power source, accessibility, and discussion on potential impacts to turbine warrantees. Applications should describe data storage and transfer techniques, as well as plans to mitigate any issues associated with data loss or processing.
    a. For proposed blade-mounted systems, challenges associated with blade mounting, ranging from but not limited to impact on aerodynamics, blade integrity, and lightning strike vulnerability, and proposed solutions to those challenges should be addressed. Additionally, to the extent possible please provide any evidence or indication of a turbine manufacturer's willingness to integrate such blade-mounted solutions.
    b. For proposed deployment on floating systems, applications should include anticipated system functionality in a range of anticipated sea states, as well as discussion of proposed motion compensation techniques (both hardware and software) and anticipated performance.

5) Detail the methodological approach that will be taken to reach proposed cost and performance targets. For field testing under these awards, applications should provide a detailed description of plans for field testing, including proposed methodological approach, and the proposed field study site. It should be noted, however, that during award negotiation DOE and partnering organizations will review the methodology and will ask recipients to develop a final agreed-upon methodology before beginning research. DOE and partnering organizations will facilitate an independent peer review prior to inception of any large field validation research activities.

6) Data on, or plans to ensure, component and system survivability/ruggedness in the field should be detailed. Data storage and transmission strategies should also be detailed.

7) Discussion of potential risks or known technical weaknesses.

Statement of Project Objectives (SOPO)

Applicants must submit a Statement of Project Objectives (SOPO) and budget for the entire project period. However, only the first Budget Period will be negotiated in detail. The SOPO and budget will be further refined and negotiated for each subsequent Budget Period following the Go/No-Go discussions and decision.

The proposed project performance period should be no longer than 60 months. Awards under this Subtopic will be divided into two distinct funding phases, with a formal Go/No-Go decision between each phase. Funding for future phases will depend on the results of these Go/No-Go decisions, which will be based in part on the accomplishment of technical milestones during the previous phase as well as the likelihood of success in achieving the objectives of the next phase. Specific criteria for these Go/No-Go decisions will be determined prior to award. See Section VI.B for more information on Go/No-Go decisions.

Specific deliverables will include, but are not limited to:

1) Quarterly reports and presentations to DOE and partner agencies outlining progress made on all awarded tasks.
2) Annual technical reports for multi-year awards.
3) A peer-reviewed, publicly available, final report that includes a detailed technical summary of all tasks, results of performance testing, and cost analysis. DOE will coordinate an expert review of the draft final report and recipients will be asked to revise accordingly.
4) Participation in WETO Program Peer Review activities occurring during or within 1-2 years following the completion of the project.
5) Submission of a manuscript on project methodology and results for publication in a peer-reviewed journal for any effectiveness testing.

Funding Available

Proposals for this Subtopic may seek up to $750,000 in federal funds under this FOA.

All work under EERE funding agreements must be performed in the United States. See Section IV.J.iii. and Appendix B.

C. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Section III.D. of the FOA):

- Applications that fall outside the technical parameters specified in Section I.A. and I.B. of the FOA.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- As noted above, applications to Topic Area 3, Subtopic 1 focused on commercial fish species are not of interest.

D. Authorizing Statutes

The programmatic authorizing statute is the Energy Policy Act of 2005 (EPACT 2005), Public Law 109-58 (Aug. 5, 2005), Title IX Research and Development, Section 931(a)(1)(F). This provision is found in the United States Code at 42 U.S.C. § 16231(a)(1)(F).

Awards made under this announcement will fall under the purview of 2 Code of Federal Regulation (CFR) Part 200 as amended by 2 CFR Part 910.

II. Award Information

A. Award Overview

i. Estimated Funding

EERE expects to make a total of approximately $13,000,000 of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. BOEM expects to make a total of approximately $1,500,000 of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. EERE anticipates making approximately 5 to 6 awards under this FOA. EERE may issue one, multiple, or no awards. Individual awards may vary between $250,000 and $7,500,000.

EERE may issue awards in one, multiple, or none of the following topic areas:

Topic Area Number	Topic Area Title	Anticipated Number of Awards	Anticipated Minimum Award Size for Any One Individual Award (Fed Share)	Anticipated Maximum Award Size for Any One Individual Award (Fed Share)	Approximate Total Federal Funding Available for All Awards
1	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Wildlife in U.S. Atlantic Waters	1	$7,000,000	$7,500,000	$7,500,000
2	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Ecology of Commercially Fished Species	1	$3,000,000	$3,500,000	$3,500,000
3	Environmental Baseline Data	3-4	Subtopic 1: $1,000,000	Subtopic 1: $2,000,000	$3,500,000

	Collection and Monitoring Tool Development and Validation for Evaluating Impacts of Offshore Wind Energy Development on Wildlife in U.S. Waters off of the West Coast		Subtopic 2: $250,000	Subtopic 2: $750,000	

EERE may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed.

ii. Period of Performance

EERE anticipates making awards that will run from 36 months up to 60 months in length, comprised of one or more budget periods. Project continuation will be contingent upon several elements, including satisfactory performance and Go/No-Go decision review. For a complete list, see Section VI.B.xiv. At the Go/No-Go decision points, EERE will evaluate project performance, project schedule adherence, the extent milestone objectives are met, compliance with reporting requirements, and overall contribution to the program goals and objectives. As a result of this evaluation, EERE may, at its discretion, authorize the following actions: (1) continue to fund the project, contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority; (2) recommend redirection of work under the project; (3) place a hold on federal funding for the project, pending further supporting data or funding; or (4) discontinue funding the project because of insufficient progress, change in strategic direction, or lack of funding.

Topic Area Number	Topic Area Title	Estimated Duration of Award (months)	Number of Budget Periods and Duration
1	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Wildlife in U.S. Atlantic Waters	48-60	3 Budget Periods • Budget Period 1 - Maximum duration 18 months • Budget Period 2 – Maximum duration 24 months

			• Budget period 3 – Maximum duration 30 months
2	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Ecology of Commercially Fished Species	48-60	3 Budget Periods • Budget Period 1 - Maximum duration 18 months • Budget Period 2 – Maximum duration 24 months • Budget period 3 – Maximum duration 30 months
3	Baseline Data Collection and Monitoring Tool Development and Validation for Evaluating Impacts of Offshore Wind Energy Development on Wildlife in U.S. Waters off of the West Coast	36-60	Sub-Topic 1 – 1 Budget Period Sub-Topic 2 – 2 Budget Periods • Budget Period 1 – Maximum duration 30 months • Budget Period 2 – Maximum duration 30 months

iii. New Applications Only

EERE will accept only new applications under this FOA. EERE will not consider applications for renewals of existing EERE-funded awards through this FOA.

B. EERE Funding Agreements

Through cooperative agreements and other similar agreements, EERE provides financial and other support to projects that have the potential to realize the FOA objectives. EERE does not use such agreements to acquire property or services for the direct benefit or use of the United States government.

i. Cooperative Agreements

EERE generally uses cooperative agreements to provide financial and other support to prime recipients.

Through cooperative agreements, EERE provides financial or other support to accomplish a public purpose of support or stimulation authorized by federal statute. Under cooperative agreements, the government and prime recipients share responsibility for the direction of projects.

EERE has substantial involvement in all projects funded via cooperative agreement. See Section VI.B.ix of the FOA for more information on what substantial involvement may involve.

ii. Funding Agreements with Federally Funded Research and Development Center (FFRDCs)

In most cases, FFRDCs are funded independently of the remainder of the project team. The FFRDC then executes an agreement with any non-FFRDC project team members to arrange work structure, project execution, and any other matters. Regardless of these arrangements, the entity that applied as the prime recipient for the project will remain the prime recipient for the project.

III. Eligibility Information

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these eligibility requirements, it will be considered ineligible and removed from further evaluation.

A. Eligible Applicants

i. Individuals

U.S. citizens and lawful permanent residents are eligible to apply for funding as a prime recipient or subrecipient.

ii. Domestic Entities

For-profit entities, educational institutions, and nonprofits that are incorporated (or otherwise formed) under the laws of a particular state or territory of the United States and have a physical location for business operations in the United States are eligible to apply for funding as a prime recipient or subrecipient. Nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995 are not eligible to apply for funding.

State, local, and tribal government entities are eligible to apply for funding as a prime recipient or subrecipient.

DOE/NNSA FFRDCs are eligible to apply for funding as a prime recipient or subrecipient.

Non-DOE/NNSA FFRDCs are eligible to apply for funding as a subrecipient, but are not eligible to apply as a prime recipient.

Federal agencies and instrumentalities, other than USFWS, BOEM, and NOAA, are eligible to apply for funding as a subrecipient, but are not eligible to apply as a prime recipient. USFWS, BOEM, and NOAA are ineligible to apply for funding as either a prime recipient or subrecipient due to the role these agencies played in developing this solicitation.

iii. Foreign Entities

Foreign entities, whether for-profit or otherwise, are eligible to apply for funding under this FOA. Other than as provided in the "Individuals" or "Domestic Entities" sections above, all prime recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States and have a physical location for business operations in the United States. If a foreign entity applies for funding as a prime recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a state or territory of the United States to be the prime recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the prime recipient in the Full Application (i.e., a foreign entity may request that it remains the prime recipient on an award). To do so, the applicant must submit an explicit written waiver request in the Full Application. Appendix B lists the necessary information that must be included in a request to waive this requirement. The applicant does not have the right to appeal EERE's decision concerning a waiver request.

In the waiver request, the applicant must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the prime recipient. EERE may require additional information before considering the waiver request.

A foreign entity may receive funding as a subrecipient.

iv. Incorporated Consortia

Incorporated consortia, which may include domestic and/or foreign entities, are eligible to apply for funding as a prime recipient or subrecipient. For consortia incorporated (or otherwise formed) under the laws of a state or territory of the United States, please refer to "Domestic Entities" above. For consortia incorporated in foreign countries, please refer to the requirements in "Foreign Entities" above.

Each incorporated consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium must provide a written description of its internal governance structure and its internal rules to the EERE Contracting Officer.

v. Unincorporated Consortia

Unincorporated Consortia, which may include domestic and foreign entities, must designate one member of the consortium to serve as the prime recipient/consortium representative. The prime recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a state or territory of the United States. The eligibility of the consortium will be determined by the eligibility of the prime recipient/consortium representative under Section III.A. of the FOA.

Upon request, unincorporated consortia must provide the EERE Contracting Officer with a collaboration agreement, commonly referred to as the articles of collaboration, which sets out the rights and responsibilities of each consortium member. This agreement binds the individual consortium members together and should discuss, among other things, the consortium's:

- Management structure;
- Method of making payments to consortium members;
- Means of ensuring and overseeing members' efforts on the project;
- Provisions for members' cost sharing contributions; and
- Provisions for ownership and rights in intellectual property developed previously or under the agreement.

B. Cost Sharing

Topic Areas 1 and 2: The cost share must be at least 30% of the total allowable costs for research and development projects (i.e., the sum of the government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-federal sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.)

Topic Area 3: The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., the sum of the government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-federal

sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.)

Topic Area Number	Topic Area Title	Cost Share Requirement
1	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Wildlife in U.S. Atlantic Waters	30%
2	Environmental Research, Validation of Tools and Methods, and Multi-Year Evaluation of Impacts of Offshore Wind Energy Development on Ecology of Commercially Fished Species	30%
3	Baseline Data Collection and Monitoring Tool Development and Validation for Evaluating Impacts of Offshore Wind Energy Development on Wildlife in U.S. Waters off of the West Coast	20%

To assist applicants in calculating proper cost share amounts, EERE has included a cost share information sheet and sample cost share calculation as Appendix A to this FOA.

i. Legal Responsibility

Although the cost share requirement applies to the project as a whole, including work performed by members of the project team other than the prime recipient, the prime recipient is legally responsible for paying the entire cost share. If the funding agreement is terminated prior to the end of the project period, the prime recipient is required to contribute at least the cost share percentage of total expenditures incurred through the date of termination.

The prime recipient is solely responsible for managing cost share contributions by the project team and enforcing cost share obligations assumed by project team members in subawards or related agreements.

ii. Cost Share Allocation

Each project team is free to determine how best to allocate the cost share requirement among the team members. The amount contributed by individual

project team members may vary, as long as the cost share requirement for the project as a whole is met.

iii. Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable federal cost principles, as described in Section IV.J.i. of the FOA. In addition, cost share must be verifiable upon submission of the Full Application.

Project teams may provide cost share in the form of cash or in-kind contributions. Cost share may be provided by the prime recipient, subrecipients, or third parties (entities that do not have a role in performing the scope of work). Vendors/contractors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.

Cash contributions include, but are not limited to: personnel costs, fringe costs, supply and equipment costs, indirect costs and other direct costs.

In-kind contributions are those where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. Allowable in-kind contributions include, but are not limited to: the donation of volunteer time or the donation of space or use of equipment.

Project teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the funding was not provided to the state or local government by the federal government.

The prime recipient may not use the following sources to meet its cost share obligations including, but not limited to:

- Revenues or royalties from the prospective operation of an activity beyond the project period;
- Proceeds from the prospective sale of an asset of an activity;
- Federal funding or property (e.g., federal grants, equipment owned by the federal government); or
- Expenditures that were reimbursed under a separate federal program.

Project teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program.

Cost share contributions must be specified in the project budget, verifiable from the prime recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are

considered part of total project cost, the cost share dollars will be scrutinized under the same federal regulations as federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred.

Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 for additional cost sharing requirements.

iv. Cost Share Contributions by FFRDCs

Because FFRDCs are funded by the federal government, costs incurred by FFRDCs generally may not be used to meet the cost share requirement. FFRDCs may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-federal source.

v. Cost Share Verification

Applicants are required to provide written assurance of their proposed cost share contributions in their Full Applications.

Upon selection for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions. Please refer to Appendix A of the FOA.

vi. Cost Share Payment

EERE requires prime recipients to contribute the cost share amount incrementally over the life of the award. Specifically, the prime recipient's cost share for each billing period must always reflect the overall cost share ratio negotiated by the parties (i.e., the total amount of cost sharing on each invoice when considered cumulatively with previous invoices must reflect, at a minimum, the cost sharing percentage negotiated). As FFRDC funding will be provided directly to the FFRDC(s) by DOE, prime recipients will be required to provide project cost share at a percentage commensurate with the FFRDC costs, on a budget period basis, resulting in a higher interim invoicing cost share ratio than the total award ratio.

In limited circumstances, and where it is in the government's interest, the EERE Contracting Officer may approve a request by the prime recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. Regardless of the interval requested, the prime recipient must be up-to-date on cost share at each interval. Such requests must be sent to the Contracting Officer during award negotiations and include the following information: (1) a detailed justification for the request; (2) a proposed schedule of payments, including

amounts and dates; (3) a written commitment to meet that schedule; and (4) such evidence as necessary to demonstrate that the prime recipient has complied with its cost share obligations to date. The Contracting Officer must approve all such requests before they go into effect.

C. Compliance Criteria

Concept Papers, Full Applications, and Replies to Reviewer Comments must meet all compliance criteria listed below or they will be considered noncompliant. EERE will not review or consider noncompliant submissions, including Concept Papers, Full Applications, and Replies to Reviewer Comments that were: submitted through means other than EERE Exchange; submitted after the applicable deadline; and/or submitted incomplete. EERE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

i. Compliance Criteria

1. *Concept Papers*
   Concept Papers are deemed compliant if:
   - The Concept Paper complies with the content and form requirements in Section IV.C. of the FOA; and
   - The applicant successfully uploaded all required documents and clicked the "Submit" button in EERE Exchange by the deadline stated in this FOA.

2. *Full Applications*
   Full Applications are deemed compliant if:
   - The applicant submitted a compliant Concept Paper.
   - The Full Application complies with the content and form requirements in Section IV.D. of the FOA; and
   - The applicant successfully uploaded all required documents and clicked the "Submit" button in EERE Exchange by the deadline stated in the FOA.

3. *Replies to Reviewer Comments*
   Replies to Reviewer Comments are deemed compliant if:
   - The Reply to Reviewer Comments complies with the content and form requirements in Section IV.E. of the FOA; and
   - The applicant successfully uploaded all required documents to EERE Exchange by the deadline stated in the FOA.

D. Responsiveness Criteria

All "Applications Specifically Not of Interest," as described in Section I.C. of the FOA, are deemed nonresponsive and are not reviewed or considered.

E. Other Eligibility Requirements

i. Requirements for DOE/National Nuclear Security Agency (NNSA) Federally Funded Research and Development Centers (FFRDC) Listed as the applicant

A DOE/NNSA FFRDC is eligible to apply for funding under this FOA if its cognizant Contracting Officer provides written authorization and this authorization is submitted with the application.

The following wording is acceptable for the authorization:

> Authorization is granted for the Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory, and will not adversely impact execution of the DOE assigned programs at the laboratory.
> (end of acceptable authorization)

If a DOE/NNSA FFRDC is selected for award negotiation, the proposed work will be authorized under the DOE work authorization process and performed under the laboratory's Management and Operating (M&O) contract.

ii. Requirements for DOE/NNSA and non-DOE/NNSA Federally Funded Research and Development Centers Included as a Subrecipient

DOE/NNSA and non-DOE/NNSA FFRDCs may be proposed as a subrecipient on another entity's application subject to the following guidelines:

1. *Authorization for non-DOE/NNSA FFRDCs*
   The federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with its authority under its award.

2. *Authorization for DOE/NNSA FFRDCs*
   The cognizant Contracting Officer for the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be

submitted with the application. The following wording is acceptable for this authorization:

Authorization is granted for the Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory, and will not adversely impact execution of the DOE assigned programs at the laboratory.

3. *Value/Funding*
   The value of and funding for the FFRDC portion of the work will not normally be included in the award to a successful applicant. Usually, DOE will fund a DOE/NNSA FFRDC contractor through the DOE field work Proposal (FWP) system and non-DOE/NNSA FFRDC through an interagency agreement with the sponsoring agency.

4. *Cost Share*
   Although the FFRDC portion of the work is usually excluded from the award to a successful applicant, the applicant's cost share requirement will be based on the total cost of the project, including the applicant's, the subrecipient's, and the FFRDC's portions of the project.

5. *Responsibility*
   The prime recipient will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues including, but not limited to disputes and claims arising out of any agreement between the prime recipient and the FFRDC contractor.

F. Limitation on Number of Concept Papers and Full Applications Eligible for Review

An entity may submit more than one Concept Paper and Full Application to this FOA, provided that each application describes a unique, scientifically distinct project and provided that an eligible Concept Paper was submitted for each Full Application.

G. Questions Regarding Eligibility

EERE will not make eligibility determinations for potential applicants prior to the date on which applications to this FOA must be submitted. The decision whether to submit an application in response to this FOA lies solely with the applicant.

IV. Application and Submission Information

A. Application Process

The application process will include two phases: a Concept Paper phase and a Full Application phase. **Only applicants who have submitted an eligible Concept Paper will be eligible to submit a Full Application**.

At each phase, EERE performs an initial eligibility review of the applicant submissions to determine whether they meet the eligibility requirements of Section III of the FOA. EERE will not review or consider submissions that do not meet the eligibility requirements of Section III. All submissions must conform to the following form and content requirements, including maximum page lengths (described below) and must be submitted via EERE Exchange at https://eere-exchange.energy.gov, unless specifically stated otherwise. **EERE will not review or consider submissions submitted through means other than EERE Exchange, submissions submitted after the applicable deadline, or incomplete submissions**. EERE will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion.

A **Control Number** will be issued when an applicant begins the EERE Exchange application process. This control number must be included with all application documents, as described below.

The Concept Paper, Full Application, and Reply to Reviewer Comments must conform to the following requirements:

- Each must be submitted in Adobe PDF format unless stated otherwise;
- Each must be written in English;
- All pages must be formatted to fit on 8.5 x 11 inch paper with margins not less than one inch on every side. Use Calibri typeface, a black font color, and a font size of 12 point or larger (except in figures or tables, which may be 10 point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies. References must be included as footnotes or endnotes in a font size of 10 or larger. Footnotes and endnotes are counted toward the maximum page requirement;
- The Control Number must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page; and

- Each submission must not exceed the specified maximum page limit, including cover page, charts, graphs, maps, and photographs when printed using the formatting requirements set forth above and single spaced. If applicants exceed the maximum page lengths indicated below, EERE will review only the authorized number of pages and disregard any additional pages.

Applicants are responsible for meeting each submission deadline. **Applicants are strongly encouraged to submit their Concept Papers, Full Applications, and Replies to Reviewer Comments at least 48 hours in advance of the submission deadline**. Under normal conditions (i.e., at least 48 hours in advance of the submission deadline), applicants should allow at least 1 hour to submit a Concept Paper, Full Application, or Reply to Reviewer Comments. Once the Concept Paper, Full Application, or Reply to Reviewer Comments is submitted in EERE Exchange, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit the Concept Paper, Full Application, or Reply to Reviewer Comments before the applicable deadline.

EERE urges applicants to carefully review their Concept Papers, Full Applications, and Replies to Reviewer Comments to allow sufficient time for the submission of required information and documents. All Full Applications that pass the initial eligibility review will undergo comprehensive technical merit review according to the criteria identified in Section V.A.ii. of the FOA.

i. Additional Information on EERE Exchange

EERE Exchange is designed to enforce the deadlines specified in this FOA. The "Apply" and "Submit" buttons will automatically disable at the defined submission deadlines. Should applicants experience problems with EERE Exchange, the following information may be helpful.

Applicants that experience issues with submission PRIOR to the FOA deadline: In the event that an applicant experiences technical difficulties with a submission, the applicant should contact the EERE Exchange helpdesk for assistance at *EERE-ExchangeSupport@hq.doe.gov.* The EERE Exchange helpdesk and/or the EERE Exchange system administrators will assist applicants in resolving issues.

B. Application Forms

The application forms and instructions are available on EERE Exchange. To access these materials, go to https://eere-exchange.energy.gov and select the appropriate funding opportunity number.

Note: The maximum file size that can be uploaded to the EERE Exchange website is 50MB. Files in excess of 50MB cannot be uploaded, and hence cannot be submitted for review. If a file exceeds 50MB but is still within the maximum page limit specified in the FOA, it must be broken into parts and denoted to that effect. For example:
TechnicalVolume_Part_1
TechnicalVolume_Part_2

C. Content and Form of the Concept Paper

To be eligible to submit a Full Application, applicants must submit a Concept Paper by the specified due date and time.

i. Concept Paper Content Requirements

EERE will not review or consider ineligible Concept Papers (see Section III of the FOA).

For Topic Areas 1, 2 and 3--Subtopic 1 a single Concept Paper may include multiple technologies or research areas as long as the multiple technologies and/or research areas are covered within the Topic Area which the concept paper will be submitted under.

For Topic Area 3--Subtopic 2 each Concept Paper must be limited to a single technology or instrumentation package.

The Concept Paper must conform to the following content requirements:

Section	Page Limit	Description
Cover Page Section	1 page maximum	The cover page should only include the project title, the specific announcement Topic Area being addressed (if applicable), both the technical and business points of contact, names of all team member organizations, and any statements regarding confidentiality.
Research Description	5 pages maximum	Applicants are required to describe succinctly: **Topic Areas 1 and 2** • The proposed research focuses and objectives, including how the proposed work will advance the state of knowledge, address the research objectives set forth in the FOA, and help address future offshore wind development challenges; • A short description of the methodological approach to achieving each research objective; • Where applicable, description of proposed technology validation efforts, including how the proposed work will advance the state of the art; and

		• The impact that Federal funding would have on the proposed project. **Topic Area 3 Subtopic 1** • The proposed baseline research focus and geographic area and a description of how that data will fill key information gaps relevant to offshore wind siting and permitting; • A short description of the proposed methodological approach; • A description of proposed technology validation efforts, including how the proposed work will advance the state of the art; and • The impact that Federal funding would have on the proposed project. **Topic Area 3 Subtopic 2 Proposals:** • The proposed technology, including how the work is unique and innovative, will advance the state of knowledge, and help address future offshore wind development challenges; • The proposed technology's target level of performance (applicants should provide technical data or other support to show how the proposed target could be met); • The current state-of-the-art in the relevant field and application, including key shortcomings, limitations, and challenges; • How the proposed technology will overcome the shortcomings, limitations, and challenges in the relevant field and application; • The potential impact that the proposed project would have on the relevant field and application; • The key technical risks/issues associated with the proposed technology development plan; and • The impact that Federal funding would have on the proposed project.
Addendum	2 pages maximum	Applicants are required to describe succinctly the qualifications, experience, and capabilities of the proposed Project Team, including: • Whether the Principal Investigator (PI) and Project Team have the skill and expertise needed to successfully execute the project plan; • Whether the applicant has prior experience which demonstrates an ability to perform tasks of similar risk and complexity; • Whether the applicant has worked together with its teaming partners on prior projects or programs;

		• Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how it intends to obtain access to the necessary equipment and facilities; and • Applicants may provide graphs, charts, or other data to supplement their Research Description in the Addendum. Such items may also be included in the Research Description.

EERE makes an independent assessment of each Concept Paper based on the criteria in Section V.A.i. of the FOA. EERE will encourage a subset of applicants to submit Full Applications. Other applicants will be discouraged from submitting a Full Application. An applicant who receives a "discouraged" notification may still submit a Full Application. EERE will review all eligible Full Applications. However, by discouraging the submission of a Full Application, EERE intends to convey its lack of programmatic interest in the proposed project in an effort to save the applicant the time and expense of preparing an application that is unlikely to be selected for award negotiations.

EERE may include general comments provided from reviewers on an applicant's Concept Paper in the encourage/discourage notification posted on EERE Exchange at the close of that phase.

D. Content and Form of the Full Application

Applicants must submit a Full Application by the specified due date and time to be considered for funding under this FOA. Applicants must complete the following application forms found on the EERE Exchange website at https://eere-exchange.energy.gov, in accordance with the instructions.

Applicants will have approximately 30 days from receipt of the Concept Paper Encourage/Discourage notification on EERE Exchange to prepare and submit a Full Application. Regardless of the date the applicant receives the Encourage/Discourage notification, the submission deadline for the Full Application remains the date and time stated on the FOA cover page.

All Full Application documents must be marked with the Control Number issued to the applicant. Applicants will receive a control number upon clicking the "Create Concept Paper" button in EERE Exchange, and should include that control number in the file name of their Full Application submission (i.e., *Control number_Applicant Name_Full Application*).

i. Full Application Content Requirements

EERE will not review or consider ineligible Full Applications (see Section III. of the FOA).

For Topic Areas 1, 2 and 3--Subtopic 1 a single Full Application may include multiple technologies or research areas as long as the multiple technologies and/or research areas are covered within the Topic Area which the concept paper was submitted under.

For Topic Area 3--Subtopic 2 each Full Application must be limited to a single technology or instrumentation package.

Full Applications must conform to the following requirements:

Component	File Format	Page Limit
Technical Volume	PDF	25
Resumes	PDF	1 per individual
Letters of Commitment	PDF	1 per entity
Statement of Project Objectives	MS Word	10
SF-424	PDF	NA
Budget Justification Workbook	Excel	NA
Summary/Abstract for Public Release	PDF	1
Summary Slide	MS Powerpoint	1
Subrecipient Budget Justification, if applicable	Excel	NA
DOE Field Work Proposal for FFRDC, if applicable (see DOE O 412.1A, Attachment 3)	PDF	NA
Authorization from cognizant Contracting Officer for FFRDC, if applicable	PDF	NA
SF-LLL Disclosure of Lobbying Activities	PDF	NA
Foreign Entities and Foreign Work	PDF	NA
Data Management Plan	MS Word	NA
U.S. Manufacturing Plan	PDF	NA

Note: The maximum file size that can be uploaded to the EERE Exchange website is 50MB. Files in excess of 50MB cannot be uploaded, and hence cannot be submitted for review. If a file exceeds 50MB but is still within the maximum page limit specified in the FOA it must be broken into parts and denoted to that effect. For example:

TechnicalVolume_Part_1
TechnicalVolume_Part_2

EERE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 50MB.

EERE provides detailed guidance on the content and form of each component below.

ii. Technical Volume

The Technical Volume must be submitted in PDF format. The Technical Volume must conform to the following content and form requirements, including maximum page lengths. If applicants exceed the maximum page lengths indicated below, EERE will review only the authorized number of pages and disregard any additional pages. This volume must address the Merit Review Criteria as discussed in Section V.A.ii. of the FOA. Save the Technical Volume in a single PDF file.

Applicants must provide sufficient citations and references to the primary research literature to justify the claims and approaches made in the Technical Volume. However, EERE and reviewers are under no obligation to review cited sources.

The Technical Volume to the Full Application may not be more than 25 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all of the information in the table below. The applicant should consider the weighting of each of the evaluation criteria (see Section V.A.ii of the FOA) when preparing the Technical Volume.

The Technical Volume should clearly describe and expand upon information provided in the Concept Paper. The Technical Volume must conform to the following content requirements:

SECTION/PAGE LIMIT	DESCRIPTION
Cover Page	The cover page should include the project title, the specific FOA Topic Area being addressed, both the technical and business points of contact, names of all team member organizations, and any statements regarding confidentiality.

Project Overview (Approximately 10% of the Technical Volume)	The Project Overview should contain the following information: • Background: The applicant should discuss the background of their organization, including the history, successes, and current research and development status (i.e., the technical baseline) relevant to the technical topic being addressed in the Full Application. • Project Goal: The applicant should explicitly identify the targeted improvements to the current state of the knowledge and/or baseline technology and the critical success factors in achieving that goal. • Federal Funding Impact: The applicant should discuss the impact that DOE funding would have on the proposed project. Applicants should specifically explain how federal funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives.
Technical Description, Innovation, and Impact (Approximately 30% of the Technical Volume)	The Technical Description should contain the following information: **Topic Areas 1 and 2 Proposals:** • Relevance and Outcomes: The applicant should provide a detailed description of the proposed research focuses and objectives including how the proposed work will advance the state of knowledge, address the research objectives set forth in the FOA, and help address future offshore wind development challenges. The applicant should clearly specify the expected outcomes of the project. Where applicable, the applicant should provide a description of the technology validation efforts, including the technical and cost goals these efforts and how the tools will help address wind energy development challenges. • Feasibility: The applicant should demonstrate the feasibility of the proposed research and validation efforts capability of achieving the anticipated goals and performance targets, including a description of previous work done and prior results. • Innovation and Impacts: The applicant should describe the current state-of-the-art in the applicable field and the specific value of the proposed research. Where applicable, the applicant should describe the advantages of technologies proposed for validation over current and emerging technologies, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful. **Topic Area 3 Subtopic 1 Proposals:** • Relevance and Outcomes: The Applicant should describe the proposed baseline research focus and geographic area and provide a description of how that data will fill key information gaps relevant to offshore wind siting and permitting. The applicant should clearly specify the expected outcomes of the project. The applicant should provide a description of the technology validation

	efforts, including the technical goals of these efforts and how the tools will help address wind energy development challenges. • Feasibility: The applicant should demonstrate the feasibility of the proposed research and validation efforts capability of achieving the anticipated performance targets, including a description of previous work done and prior results. • Innovation and Impacts: The applicant should describe the current state-of-the-art in the applicable field, the specific innovation of the proposed research; where applicable, the advantages of proposed technology over current and emerging technologies, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful. **Topic Area 3 Subtopic 2 Proposals:** • Relevance and Outcomes: The applicant should provide a detailed description of the technology, including the scientific and other principles and objectives that will be pursued during the project. This section should describe the relevance of the proposed project to the goals and objectives of the FOA. The applicant should clearly specify the expected outcomes of the project. • Feasibility: The applicant should demonstrate the technical feasibility of the proposed technology and capability of achieving the anticipated performance targets, including a description of previous work done and prior results. • Innovation and Impacts: The applicant should describe the current state-of-the-art in the applicable field, the specific innovation of the proposed technology, the advantages of proposed technology over current and emerging technologies, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful.
Workplan and Market Transformation Plan (Approximately 40% of the Technical Volume)	The Workplan should include a summary of the Project Objectives, Technical Scope, Work Breakdown Structure (WBS), Milestones, Go/No-Go Decision Points, and Project Schedule. A detailed SOPO is separately requested. The Workplan should contain the following information: • Project Objectives: The applicant should provide a clear and concise (high-level) statement of the goals and objectives of the project as well as the expected outcomes. • Research Methodology: The applicant should provide description of the proposed methodological approach to achieving each research objective. • Technical Scope Summary: The applicant should provide a summary description of the overall work scope and approach to achieve the objective(s). Where applicable, the overall work scope is to be divided by performance periods that are separated by discrete, approximately annual decision points (see below for more

	information on Go/No-Go decision points). The applicant should describe the specific expected end result of each performance period. • WBS and Task Description Summary: The Workplan should describe the work to be accomplished and how the applicant will achieve the milestones, will accomplish the final project goal(s), and will produce all deliverables. The Workplan is to be structured with a hierarchy of performance period (approximately annual), task and subtasks, which is typical of a standard WBS for any project. The Workplan shall contain a concise description of the specific activities to be conducted over the life of the project. The description shall be a full explanation and disclosure of the project being proposed (i.e., a statement such as "we will then complete a proprietary process" is unacceptable). It is the applicant's responsibility to prepare an adequately detailed task plan to describe the proposed project and the plan for addressing the objectives of this FOA. The summary provided should be consistent with the SOPO. The SOPO will contain a more detailed description of the WBS and tasks. • Milestone Summary: The applicant should provide a summary of appropriate milestones throughout the project to demonstrate success. A milestone may be either a progress measure (which can be activity based) or a SMART technical milestone. SMART milestones should be Specific, Measurable, Achievable, Relevant, and Timely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the FOA, the minimum requirement is that each project must have at least one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). The applicant should also provide the means by which the milestone will be verified. The summary provided should be consistent with the Milestone Summary Table in the SOPO. • Go/No-Go Decision Points: Where applicable, the applicant should provide a summary of project-wide Go/No-Go decision points at appropriate points in the Workplan. A Go/No-Go decision point is a risk management tool and a project management best practice to ensure that, for the current phase or period of performance, technical success is definitively achieved and potential for success in future phases or periods of performance is evaluated, prior to actually beginning the execution of future phases. At a minimum, each project must have at least one project-wide Go/No-Go decision point for each budget period (12 to 18-month period or as otherwise described in the FOA Topic Area) of the project. See Section VI.B.xiv. The applicant should also provide the specific technical criteria to be used to evaluate the project at the Go/No-Go decision point. The summary provided should be consistent

	with the SOPO. Go/No-Go decision points are considered "SMART" and can fulfill the requirement for an annual SMART milestone. Note: Proposals under Topic Area 3 Subtopic 1 will note be required to have a Go/No-Go decision.
	• End of Project Goal: The applicant should provide a summary of the end of project goal(s). At a minimum, each project must have one SMART end of project goal. The summary provided should be consistent with the SOPO.
	• Project Schedule (Gantt Chart or similar): The applicant should provide a schedule for the entire project, including task and subtask durations, milestones, and Go/No-Go decision points.
	• Project Management: The applicant should discuss the team's proposed management plan, including the following:
	  ○ The overall approach to and organization for managing the work
	  ○ The roles of each project team member
	  ○ Any critical handoffs/interdependencies among project team members
	  ○ The technical and management aspects of the management plan, including systems and practices, such as financial and project management practices
	  ○ The approach to project risk management
	  ○ A description of how project changes will be handled
	  ○ If applicable, the approach to Quality Assurance/Control
	  ○ How communications will be maintained among project team members
	• Market Transformation Plan: For proposals that include a technology development component, the applicant should provide a market transformation plan, including the following:
	  ○ Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including a mitigation plan
	  ○ Identification of a product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, data dissemination, and product distribution. Applicants should also submit a U.S. Manufacturing Plan.

Technical Qualifications and Resources	The Technical Qualifications and Resources should contain the following information:

(Approximately 20% of the Technical Volume)	• Describe the project team's unique qualifications and expertise, including those of key subrecipients. Describe how the team's qualifications and composition align with the research goals and for Topic Areas 1 and 2, the specific recommendations for team composition laid out in the Topic Areas.
	• Describe the project team's existing equipment and facilities that will facilitate the successful completion of the proposed project; include a justification of any new equipment or facilities requested as part of the project.
	• This section should also include relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives.
	• Describe the time commitment of the key team members to support the project.
	• For Topic Areas 1 and 2, in Section IV.D.iv. include 1-page letters of prospective interest in hosting research from offshore wind developers with projects in relevant geographic locations.
	• Describe the technical services to be provided by DOE/NNSA FFRDCs, if applicable.
	• For multi-organizational or multi-investigator projects, describe succinctly:
	  ○ The roles and the work to be performed by each PI and Key Participant;
	  ○ Business agreements between the applicant and each PI and Key Participant;
	  ○ How the various efforts will be integrated and managed;
	  ○ Process for making decisions on scientific/technical direction;
	  ○ Publication arrangements;
	  ○ Intellectual Property issues; and
	  ○ Communication plans

iii. Resumes (required)

Applicants are required to submit 1-page resumes for key participating team members. Multi-page resumes are not allowed. Save the resumes in a single PDF file.

iv. Letters of Commitment (required)

Submit letters of commitment from all subrecipient and third party cost share providers. If applicable, also include any letters of commitment from partners/end users (1-page maximum per letter). Save the letters of commitment in a single PDF file. This section should also include 1-page letters of prospective interest in hosting research from offshore wind developers with projects in relevant geographic locations.

v. Statement of Project Objectives (SOPO) (required)

Applicants are required to complete a SOPO. A SOPO template is available on EERE Exchange at https://eere-exchange.energy.gov. Applicants can choose to complete the SOPO using the EERE template in the EERE Exchange system, or it can be completed off-line and uploaded to the EERE Exchange system.

The SOPO, including the Milestone Table, must not exceed 10 pages. The SOPO must not exceed the page limit when printed using standard 8.5 x 11 paper with 1" margins (top, bottom, left, and right) with font not smaller than 12 point. Save the SOPO in a single MS Word file.

vi. SF-424: Application for Federal Assistance (required)

Complete all required fields in the EERE Exchange system in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at http://energy.gov/management/office-management/operational-management/financial-assistance/finanial-assistance-forms, under Certifications and Assurances. Note: The dates and dollar amount on the SF-424 are for the complete project period and not just the first project year, first phase or another subset of the project period.

vii. Budget Justification Workbook (required)

Applicants are required to complete the Budget Justification Workbook. This form is available on EERE Exchange at https://eere-exchange.energy.gov. Prime recipients must complete each tab of the Budget Justification Workbook for the project as a whole, including all work to be performed by the prime recipient and its subrecipients and contractors. Applicants should include costs associated with required annual audits and incurred cost proposals in their proposed budget documents. The "Instructions and Summary" included with the Budget Justification Workbook will auto-populate as the applicant enters information into the Workbook. Applicants must carefully read the "Instructions and Summary" tab provided within the Budget Justification Workbook. Save the Budget Justification Workbook in a single Microsoft Excel file.

viii. Summary/Abstract for Public Release (required)

Applicants are required to submit a one-page summary/abstract of their project. The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (e.g., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as DOE may make it available to the public after selections are made. The project summary must not exceed 1 page when printed using standard 8.5 x 11 paper with 1" margins (top, bottom, left, and right) with font not smaller than 12 point. Save the Summary for Public Release in a single PDF file.

ix. Summary Slide (required)

Applicants are required to provide a single MS Powerpoint slide summarizing the proposed project. This slide is used during the evaluation process.

The Summary Slide template requires the following information:

- A technology summary;
- A description of the technology's impact;
- Proposed project goals;
- Any key graphics (illustrations, charts and/or tables);
- The project's key idea/takeaway;
- Project title, prime recipient, Principal Investigator, and Key Participant information; and
- Requested EERE funds and proposed applicant cost share.

x. Subrecipient Budget Justification (if applicable)

Applicants must provide a separate budget justification for each subrecipient that is expected to perform work estimated to be more than $250,000 or 25 percent of the total work effort (whichever is less). The budget justification must include the same justification information described in the "Budget Justification" section above.

xi. Budget for DOE/NNSA FFRDC (if applicable)

If a DOE/NNSA FFRDC contractor is to perform a portion of the work, the applicant must provide a DOE WP in accordance with the requirements in DOE Order 412.1A, Work Authorization System, Attachment 3, available at: https://www.directives.doe.gov/directives-documents/400-series/0412.1-

BOrder-a-chg1-AdmChg Save the WP in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_WP".

xii. Authorization for non-DOE/NNSA or DOE/NNSA FFRDCs (if applicable)

The federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with the contractor's authority under its award. Save the Authorization in a single PDF file.

xiii. SF-LLL: Disclosure of Lobbying Activities (required)

Prime recipients and subrecipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters.

Prime recipients and subrecipients are required to complete and submit SF-LLL, "Disclosure of Lobbying Activities" (https://www.grants.gov/web/grants/forms/sf-424-individual-family.html) to ensure that non-federal funds have not been paid and will not be paid to any person for influencing or attempting to influence any of the following in connection with the application:

- An officer or employee of any federal agency;
- A Member of Congress;
- An officer or employee of Congress; or
- An employee of a Member of Congress.

Save the SF-LLL in a single PDF file.

xiv. Waiver Requests: Foreign Entities and Foreign Work (if applicable)

1. **Foreign Entity Participation:**
   As set forth in Section III.A.iii., all prime recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. To request a waiver of this requirement, the applicant must submit an explicit waiver request in the Full Application. Appendix B lists the necessary information that must be included in a request to waive this requirement.

2. **Performance of Work in the United States (Foreign Work Waiver)**

As set forth in Section IV.J.iii., all work under EERE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the prime recipient should make every effort to purchase supplies and equipment within the United States. Appendix B lists the necessary information that must be included in a foreign work waiver request.

Save the Waivers in a single PDF file.

xv. U.S. Manufacturing Commitments (required)

Pursuant to the DOE Determination of Exceptional Circumstances (DEC) dated September 9, 2013, each applicant is required to submit a U.S. Manufacturing Plan as part of its application. The U.S. Manufacturing Plan represents the applicant's measurable commitment to support U.S. manufacturing as a result of its award.

Each U.S. Manufacturing Plan must include a commitment that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the United States, unless the applicant can show to the satisfaction of DOE that it is not commercially feasible to do so (referred to hereinafter as "the U.S. Competitiveness Provision"). The applicant further agrees to make the U.S. Competitiveness Provision binding on any subrecipient and any assignee or licensee or any entity otherwise acquiring rights to any subject invention, including subsequent assignees or licensees. A subject invention is any invention conceived of or first actually reduced to practice under an award.

Due to the lower technology readiness levels of this FOA, DOE does not expect the U.S. Manufacturing Plans to be tied to a specific product or technology. However, in lieu of the U.S. Competitiveness Provision, an applicant may propose a U.S. Manufacturing Plan with more specific commitments that would be beneficial to the U.S. economy and competitiveness. For example, an applicant may commit specific products to be manufactured in the U.S., commit to a specific investment in a new or existing U.S. manufacturing facility, keep certain activities based in the U.S. or support a certain number of jobs in the U.S. related to the technology. An applicant which is likely to license the technology to others, especially universities for which licensing may be the exclusive means of commercialization the technology, the U.S. Manufacturing Plan may indicate the applicant's plan and commitment to use a specific licensing strategy that would likely support U.S. manufacturing.

If DOE determines, at its sole discretion, that the more specific commitments would provide a sufficient benefit to the U.S. economy and industrial competitiveness, the specific commitments will be part of the terms and conditions of the award. For all other awards, the U.S. Competitiveness Provision shall be incorporated as part of the terms and conditions of the award as the U.S. Manufacturing Plan for that award.

The U.S. Competitiveness Provision is also a requirement for the Class Patent Waiver that applies to domestic large business under this FOA (see Section VIII.K. Title to Subject Inventions).

Save the U.S. Manufacturing Plan in a single PDF file.

xvi. Data Management Plan (DMP) (required)

Note: All research and development (R&D) awards must submit a Data Management Plan (DMP) according to the timeline selected in the approved FRD.

Applicants are required to submit a DMP with their Full Application.

An applicant may select one of the template Data Management Plans (DMP) listed below. Alternatively, instead of selecting one of the template DMPs below, an applicant may submit another DMP provided that the DMP, at a minimum, (1) describes how data sharing and preservation will enable validation of the results from the proposed work, how the results could be validated if data are not shared or preserved and (2) has a plan for making all research data displayed in publications resulting from the proposed work digitally accessible at the time of publications. DOE Public Access Plan dated July 24, 2014 provides additional guidance and information on DMPs.

Option 1 (when protected data is allowed): For the deliverables under the award, the recipient does not plan on making the underlying research data supporting the findings in the deliverables publicly-available for up to five (5) years after the data were first produced because such data will be considered protected under the award. The results from the DOE deliverables can be validated by DOE who will have access, upon request, to the research data. Other than providing deliverables as specified in the award, the recipient does not intend to publish the results from the project. However, in an instance where a publication includes results of the project, the underlying research data will be made available according to the policies of the publishing media. Where no such policy exists, the recipient must indicate on the publication a means for requesting and digitally obtaining the underlying research data. This includes the research data

necessary to validate any results, conclusions, charts, figures, images in the publications.

Option 2: For any publication that includes results of the project, the underlying research data will be made available according to the policies of the publishing media. Where no such policy exists, the recipient must indicate on the publication a means for requesting and digitally obtaining the underlying research data. This includes the research data necessary to validate any results, conclusions, charts, figures, images in the publications.

Save the DMP in a single Microsoft Word file.

E. Content and Form of Replies to Reviewer Comments

If replies to reviewer comments are applicable, EERE will provide applicants with reviewer comments following the evaluation of all eligible Full Applications. Applicants will have a brief opportunity to review the comments and to prepare a short Reply to Reviewer Comments responding to the comments however they desire or supplementing their Full Application. The Reply to Reviewer Comments is an optional submission; applicants are not required to submit a Reply to Reviewer Comments. EERE will post the Reviewer Comments in EERE Exchange. The expected submission deadline is on the cover page of the FOA; however, it is the applicant's responsibility to monitor EERE Exchange in the event that the expected date changes. The deadline will not be extended for applicants who are unable to timely submit their reply due to failure to check EERE Exchange or relying on the expected date alone. Applicants should anticipate having approximately three (3) business days to submit Replies to Reviewer Comments.

EERE will not review or consider ineligible Replies to Reviewer Comments (see Section III of the FOA). EERE will review and consider each eligible Full Application, even if no Reply is submitted or if the Reply is found to be ineligible.

Replies to Reviewer Comments must conform to the following content and form requirements, including maximum page lengths, described below. If a Reply to Reviewer Comments is more than five (5) pages in length, EERE will review only the first five (5) pages and disregard any additional pages.

SECTION	PAGE LIMIT	DESCRIPTION
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application. Content may include text, graphs, charts, or other data.

Optional	3 pages max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

F. Post Selection Information Requests

If selected for award, EERE reserves the right to request additional or clarifying information regarding the following (non-exhaustive list):

- Indirect cost information;
- Other budget information;
- Commitment Letters from Third Parties Contributing to Cost Share, if applicable;
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5);
- Representation of Limited Rights Data and Restricted Software, if applicable; and
- Environmental Questionnaire.

G. Dun and Bradstreet Universal Numbering System (DUNS) Number and System for Award Management (SAM)

Each applicant (unless the applicant is an individual or federal awarding agency that is excepted from those requirements under 2 CFR §25.110(b) or (c), or has an exception approved by the federal awarding agency under 2 CFR §25.110(d)) is required to: (1) Be registered in the SAM at https://www.sam.gov before submitting its application; (2) provide a valid DUNS number in its application; and (3) continue to maintain an active SAM registration with current information at all times during which it has an active federal award or an application or plan under consideration by a federal awarding agency. DOE may not make a federal award to an applicant until the applicant has complied with all applicable DUNS and SAM requirements and, if an applicant has not fully complied with the requirements by the time DOE is ready to make a federal award, the DOE will determine that the applicant is not qualified to receive a federal award and use that determination as a basis for making a federal award to another applicant.

H. Submission Dates and Times

All required submissions must be submitted in EERE Exchange no later than 5 p.m. Eastern Time on the dates provided on the cover page of this FOA.

I. Intergovernmental Review

This FOA is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

J. Funding Restrictions

i. Allowable Costs

All expenditures must be allowable, allocable, and reasonable in accordance with the applicable federal cost principles.

Refer to the following applicable federal cost principles for more information:

- Federal Acquisition Regulation (FAR) Part 31 for For-Profit entities; and
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

ii. Pre-Award Costs

Selectees must request prior written approval to charge pre-award costs. Pre-award costs are those incurred prior to the effective date of the federal award directly pursuant to the negotiation and in anticipation of the federal award where such costs are necessary for efficient and timely performance of the scope of work. Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the federal award and **only** with the written approval of the federal awarding agency, through the Contracting Officer assigned to the award.

Pre-award costs cannot be incurred prior to the Selection Official signing the Selection Statement and Analysis.

Pre-award expenditures are made at the selectee's risk. EERE is not obligated to reimburse costs: (1) in the absence of appropriations; (2) if an award is not made; or (3) if an award is made for a lesser amount than the selectee anticipated.

1. **National Environmental Policy Act (NEPA) Requirements Related to Pre-Award Costs**
   EERE's decision whether and how to distribute federal funds under this FOA is subject to NEPA. Applicants should carefully consider and should seek legal counsel or other expert advice before taking any action related to the proposed project that would have an adverse effect on the environment or limit the choice of reasonable alternatives prior to EERE completing the NEPA review process.

EERE does not guarantee or assume any obligation to reimburse pre-award costs incurred prior to receiving written authorization from the Contracting Officer. If the applicant elects to undertake activities that DOE determines may have an adverse effect on the environment or limit the choice of reasonable alternatives prior to receiving such written authorization from the Contracting Officer, the applicant is doing so at risk of not receiving federal funding for their project and such costs may not be recognized as allowable cost share. Nothing contained in the pre-award cost reimbursement regulations or any pre-award costs approval letter from the Contracting Officer override these NEPA requirements to obtain the written authorization from the Contracting Officer prior to taking any action that may have an adverse effect on the environment or limit the choice of reasonable alternatives. Likewise, if an application is selected for negotiation of award, and the prime recipient elects to undertake activities that are not authorized for federal funding by the Contracting Officer in advance of EERE completing a NEPA review, the prime recipient is doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

iii. Performance of Work in the United States (Foreign Work Waiver)

1. Requirement

All work performed under EERE awards must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment; however, the prime recipient should make every effort to purchase supplies and equipment within the United States. The prime recipient must flow down this requirement to its subrecipients.

2. Failure to Comply

If the prime recipient fails to comply with the Performance of Work in the United States requirement, EERE may deny reimbursement for the work conducted outside the United States and such costs may not be recognized as allowable recipient cost share. The prime recipient is responsible should any work under this award be performed outside the United States, absent a waiver, regardless of whether the work is performed by the prime recipient, subrecipients, contractors or other project partners.

3. Waiver

There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a foreign work waiver, the applicant must submit a written waiver request to EERE. Appendix B lists the necessary information that must be included in a request for a foreign work waiver.

The applicant must demonstrate to the satisfaction of EERE that a waiver would further the purposes of the FOA and is in the economic interests of the United States. EERE may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file. The applicant does not have the right to appeal EERE's decision concerning a waiver request.

iv. Construction

Recipients are required to obtain written authorization from the Contracting Officer before incurring any major construction costs.

v. Foreign Travel

If international travel is proposed for your project, please note that your organization must comply with the International Air Transportation Fair Competitive Practices Act of 1974 (49 USC 40118), commonly referred to as the "Fly America Act," and implementing regulations at 41 CFR 301-10.131 through 301-10.143. The law and regulations require air transport of people or property to, from, between, or within a country other than the United States, the cost of which is supported under this award, to be performed by or under a cost-sharing arrangement with a U.S. flag carrier, if service is available. Foreign travel costs are allowable only with the written prior approval of the Contracting Officer assigned to the award.

vi. Equipment and Supplies

To the greatest extent practicable, all equipment and products purchased with funds made available under this FOA should be American-made. This requirement does not apply to used or leased equipment.

Property disposition will be required at the end of a project if the current fair market value of property exceeds $5,000. For-profit entity disposition requirements are set forth at 2 CFR 910.360. Property disposition requirements for other non-federal entities are set forth in 2 CFR 200.310 – 200.316.

vii. Domestic Preference – Infrastructure Projects

As appropriate and to the extent consistent with law, Applicants shall ensure that, to the greatest extent practicable, iron and aluminum as well as steel, cement, and other manufactured products (items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber) used in the proposed project shall be produced in the United States. This requirement shall flow down to all

sub-awards including all contracts, subcontracts and purchase orders for work performed under the proposed project.

viii. Lobbying

Recipients and subrecipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters.

Recipients and subrecipients are required to complete and submit SF-LLL, "Disclosure of Lobbying Activities" (https://www.grants.gov/web/grants/forms/sf-424-individual-family.html) to ensure that non-federal funds have not been paid and will not be paid to any person for influencing or attempting to influence any of the following in connection with the application:

- An officer or employee of any federal agency;
- A Member of Congress;
- An officer or employee of Congress; or
- An employee of a Member of Congress.

ix. Risk Assessment

Prior to making a federal award, the DOE is required by 31 U.S.C. 3321 and 41 U.S.C. 2313 to review information available through any Office of Management and Budget (OMB)-designated repositories of government-wide eligibility qualification or financial integrity information, such as SAM Exclusions and "Do Not Pay."

In addition, DOE evaluates the risk(s) posed by applicants before they receive federal awards. This evaluation may consider: results of the evaluation of the applicant's eligibility; the quality of the application; financial stability; quality of management systems and ability to meet the management standards prescribed in this part; history of performance; reports and findings from audits; and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-federal entities.
In addition to this review, DOE must comply with the guidelines on government-wide suspension and debarment in 2 CFR 180, and must require non-federal entities to comply with these provisions. These provisions restrict federal awards, subawards and contracts with certain parties that are debarred, suspended or otherwise excluded from or ineligible for participation in federal programs or activities.

x. Invoice Review and Approval

DOE employs a risk-based approach to determine the level of supporting documentation required for approving invoice payments. Recipients may be required to provide some or all of the following items with their requests for reimbursement:

- Summary of costs by cost categories;
- Timesheets or personnel hours report;
- Invoices/receipts for all travel, equipment, supplies, contractual, and other costs;
- UCC filing proof for equipment acquired with project funds by for-profit recipients and subrecipients;
- Explanation of cost share for invoicing period;
- Analogous information for some subrecipients; and
- Other items as required by DOE.

V. Application Review Information

A. Technical Review Criteria

i. Concept Papers

Concept Papers are evaluated based on consideration the following factors. All sub-criteria are of equal weight.

Concept Paper Criterion: Overall FOA Responsiveness and Viability of the Project (Weight: 100%)

This criterion involves consideration of the following factors:

Topic Areas 1 and 2:

- The applicant clearly describes the proposed research, including how the proposed work will advance the state of knowledge, address the research objectives of the FOA, and help address high priority future offshore wind development challenges;
- The applicant clearly lays out sound methodological approaches;
- Where applicable, the applicant's proposed technology validation efforts are likely to advance the state of the art and address key existing challenges and limitations with respect to offshore wind impact monitoring or mitigation;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA.

Topic Area 3 Subtopic 1:

- The applicant clearly describes the proposed research, including how the proposed work will advance the state of knowledge and address key information gaps relevant to offshore wind siting and permitting;
- The applicant clearly lays out a sound methodological approach to their proposed baseline data collection efforts;
- The applicant's proposed technology validation efforts are likely to advance the state of the art and address existing challenges and limitations with respect to baseline environmental data collection;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA.

Topic Area 3 Subtopic 2:

- The applicant clearly describes the proposed research and/or technology, describes how the technology is unique and innovative, and how the technology will advance the current state-of-the-art;
- The applicant's proposed technology validation efforts are likely to address high priority challenges and limitations with respect to offshore wind impact monitoring or mitigation;
- The applicant has identified risks and challenges, including possible mitigation strategies, and has shown the impact that EERE funding and the proposed project would have on the relevant field and application;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA.

ii. Full Applications

Topic Areas 1 & 2

Criterion 1: Technical Merit, Innovation, and Impact (40%)
This criterion involves consideration of the following factors:
Technical Merit and Innovation

- The extent to which the proposed research will advance the state of knowledge and help address key offshore wind development challenges, including the extent to which proposes research objectives and research focuses, have been justified in this context. Where applicable, the extent to which the applicant's proposed technology validation efforts are likely to advance the state of the art and address key existing challenges and limitations with respect to offshore wind impact monitoring or mitigation.

- The degree to which the current state of the science and the proposed advancements are clearly described; and
- Sufficiency of detail in the application to assess whether the proposed work is scientifically meritorious, including relevant data and discussion of prior work in the literature that support the viability of the proposed work.

Impact of Technology Advancement

- How the project supports the topic area objectives; and
- The potential impact of the project on advancing the state-of-the-art

Criterion 2: Project Research Plan (30%)

This criterion involves consideration of the following factors:

Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered, including the process by which detailed methodology and research frameworks will be developed;
- Degree to which the proposed methodological approaches are scientifically sound and likely to address the objectives of the solicitation;
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals; and
- Degree to which the proposal includes a clear data dissemination plan, and process for long-term public access to these data, and data products, that goes beyond scientific publications and or submission to National Centers for Environmental Information (https://www.ncei.noaa.gov/).

Identification of Risks

- Discussion and demonstrated understanding of the key risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the metrics, milestones, and a mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Criterion 3: Team and Resources (30%)

This criterion involves consideration of the following factors:

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;

- The degree to which the team includes members of key stakeholder groups as laid out in the Topic Area and proposes a process and structure to garner input from key stakeholders throughout the course of the project;
- The degree to which support of key stakeholder groups, as laid out in the Topic Area, are evidenced in the proposal;
- The likelihood of successful collection of post-construction impact data over the course of the project, as evidenced data to support the likelihood of offshore wind farm development there within the project timeframe at proposed research locations and initial support of relevant offshore wind developers to host that research.
- The sufficiency of the facilities to support the work;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan, including letters of prospective interest in hosting research from offshore wind developers; and
- The reasonableness of the budget and spend plan for the proposed project and objectives**.**

Topic Area 3 Subtopic 1

Criterion 1: Technical Merit, Innovation, and Impact (50%)

This criterion involves consideration of the following factors:

Technical Merit and Innovation

- The extent to which the proposed research proposed research, including how the proposed work will advance the state of knowledge and address key information gaps relevant to offshore wind siting and permitting;
- The extent to which the applicant's proposed technology validation efforts are likely to advance the state of the art and address existing challenges and limitations with respect to baseline environmental data collection;
- Where applicable, the degree to which the current state of the technology and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state-of-the-art; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious, including relevant data, and discussion of prior work in the literature that support the viability of the proposed work.

Impact of Technology Advancement

- How the project supports the topic area objectives; and the potential impact of the project on advancing the state-of-the-art.

Criterion 2: Project Research Plan (30%)

This criterion involves consideration of the following factors:

Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered, including the process by which detailed methodology and research frameworks will be developed;
- Degree to which the proposed methodological approaches are scientifically sound and likely to address the objectives of the solicitation;
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals; and
- Degree to which the proposal includes a clear data dissemination plan, and process for long-term public access to these data, and data products, that goes beyond scientific publications and or submission to National Centers for Environmental Information (https://www.ncei.noaa.gov/).

Identification of Risks

- Discussion and demonstrated understanding of the key risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the metrics, milestones, and a mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Criterion 3: Team and Resources (20%)

This criterion involves consideration of the following factors:

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- The degree to which the team includes members of key stakeholder groups as laid out in the Topic Area and proposes a process;
- The degree to which support of key stakeholder groups, as laid out in the Topic Area, are evidenced in the proposal;
- The sufficiency of the facilities to support the work;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
- The reasonableness of the budget and spend plan for the proposed project and objectives.

Topic Area 3 Subtopic 2

Criterion 1: Technical Merit, Innovation, and Impact (50%)

This criterion involves consideration of the following factors:
Technical Merit and Innovation

- The extent to which the proposed technology will fill a key gap in current capabilities in offshore wind impact monitoring;
- Degree to which the current state of the technology and the proposed advancement are clearly described, including providing specific details requested in the Topic Area;
- The extent to which end of project cost targets are described and technology is deemed to be an affordable solution to offshore wind monitoring challenges;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state-of-the-art to the proposed advancement;
- The feasibility of the technology from an offshore wind deployment perspective, including the degree to which marinization, mounting, data storage, data transfer, power requirements, and where relevant, motion compensation challenges have been addressed; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work.

Impact of Technology Advancement

- How the project supports the topic area objectives and target specifications and metrics; and
- The potential impact of the project on advancing the state-of-the-art.

Criterion 2: Project Research and Market Transformation Plan (30%)
This criterion involves consideration of the following factors:
Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered;
- Where field validation is proposed, the robustness of the proposed methodological approach; and
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

- Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the quantifiable metrics, milestones, and a mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Market Transformation Plan

- Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
- Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, Data Management Plan, U.S. manufacturing plan etc., and product distribution.

Criterion 3: Team and Resources (20%)

This criterion involves consideration of the following factors:

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team, including where field validation is proposed, expertise and team structure in line with requirements laid out in the Topic Area;
- The sufficiency of the facilities to support the work;
- The degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
- The reasonableness of the budget and spend plan for the proposed project and objectives.

Applications will be evaluated against the merit review criteria shown above. All sub-criteria are of equal weight.

iii. Criteria for Replies to Reviewer Comments

EERE has not established separate criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the Full Application.

B. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this FOA, by the standards set forth in EERE's Notice of Objective Merit Review Procedure (76 Fed. Reg. 17846, March 31, 2011) and the guidance provided in the "DOE Merit Review Guide for Financial Assistance," effective April 14, 2017, which is available at: https://energy.gov/management/downloads/merit-review-guide-financial-assistance-and-unsolicited-proposals-current.

C. Other Selection Factors

i. Program Policy Factors

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which Full Applications to select for award negotiations:

- The degree to which the proposed project exhibits diversity when compared to the existing DOE or BOEM project portfolios and other projects selected from the subject FOA;
- The degree to which the proposed project optimizes the use of available funding to achieve programmatic objectives;
- The level of industry involvement and demonstrated ability to accelerate commercialization and overcome key market barriers;
- The degree to which the project will help meet the missions of Federal agencies involved in offshore wind regulation, leasing, and permitting;
- The degree to which the proposed project is likely to lead to increased employment and manufacturing in the United States;
- The degree to which the proposed project will accelerate transformational advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty; and
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications).
- The degree to which the proposed project collectively represents diverse types and sizes of applicant organizations; and
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications).

D. Evaluation and Selection Process

i. Overview

The evaluation process consists of multiple phases; each includes an initial eligibility review and a thorough technical review. Rigorous technical reviews of eligible submissions are conducted by reviewers that are experts in the subject matter of the FOA. Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, in determining which applications to select.

ii. Pre-Selection Clarification

EERE may determine that pre-selection clarifications are necessary from one or more applicants. Pre-selection clarifications are distinct from and less formal than pre-selection interviews. These pre-selection clarifications will solely be for the purposes of clarifying the application and will be limited to information already provided in the application documentation. The pre-selection clarifications may occur before, during or after the merit review evaluation process. Information provided by an applicant that is not necessary to address the pre-selection clarification question will not be reviewed or considered. Typically, a pre-selection clarification will be carried out through either written responses to EERE's written clarification questions or video or conference calls with EERE representatives.

The information provided by applicants to EERE through pre-selection clarifications is incorporated in their applications and contributes to the merit review evaluation and EERE's selection decisions. If EERE contacts an applicant for pre-selection clarification purposes, it does not signify that the applicant has been selected for negotiation of award or that the applicant is among the top ranked applications.

EERE will not reimburse applicants for expenses relating to the pre-selection clarifications, nor will these costs be eligible for reimbursement as pre-award costs.

iii. Recipient Integrity and Performance Matters

DOE, prior to making a federal award with a total amount of federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313).

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM.

DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under federal awards when completing the review of risk posed by applicants as described in 2 C.F.R. § 200.205.

iv. Selection

The Selection Official may consider the technical merit, the Federal Consensus Board's recommendations, program policy factors, and the amount of funds available in arriving at selections for this FOA.

E. Anticipated Notice of Selection and Award Negotiation Dates

EERE anticipates notifying applicants selected for negotiation of award and negotiating awards by the dates provided on the cover page of this FOA.

VI. Award Administration Information

A. Award Notices

i. Ineligible Submissions

Ineligible Concept Papers and Full Applications will not be further reviewed or considered for award. The Contracting Officer will send a notification letter by email to the technical and administrative points of contact designated by the applicant in EERE Exchange . The notification letter will state the basis upon which the Concept Paper or the Full Application is ineligible and not considered for further review.

ii. Concept Paper Notifications

EERE will notify applicants of its determination to encourage or discourage the submission of a Full Application. EERE will post these notifications to EERE Exchange.

Applicants may submit a Full Application even if they receive a notification discouraging them from doing so. By discouraging the submission of a Full Application, EERE intends to convey its lack of programmatic interest in the proposed project. Such assessments do not necessarily reflect judgments on the merits of the proposed project. The purpose of the Concept Paper phase is to save applicants the considerable time and expense of preparing a Full Application that is unlikely to be selected for award negotiations.

A notification encouraging the submission of a Full Application does not authorize the applicant to commence performance of the project. Please refer to Section IV.J.ii. of the FOA for guidance on pre-award costs.

iii. Full Application Notifications

EERE will notify applicants of its determination via a notification letter by email to the technical and administrative points of contact designated by the applicant in EERE Exchange. The notification letter will inform the applicant whether or not its Full Application was selected for award negotiations. Alternatively, EERE may notify one or more applicants that a final selection determination on particular Full Applications will be made at a later date, subject to the availability of funds or other factors.

iv. Successful Applicants

Receipt of a notification letter selecting a Full Application for award negotiations does not authorize the applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by EERE to issue an award. Applicants do not receive an award until award negotiations are complete and the Contracting Officer executes the funding agreement, accessible by the prime recipient in FedConnect.

The award negotiation process will take approximately 60 days. Applicants must designate a primary and a backup point-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations. The applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, EERE will cancel the award negotiations and rescind the Selection. EERE reserves the right to terminate award negotiations at any time for any reason.

Please refer to Section IV.J.ii. of the FOA for guidance on pre-award costs.

v. Alternate Selection Determinations

In some instances, an applicant may receive a notification that its application was not selected for award and EERE designated the application to be an alternate. As an alternate, EERE may consider the Full Application for federal funding in the future. A notification letter stating the Full Application is designated as an alternate does not authorize the applicant to commence performance of the project. EERE may ultimately determine to select or not select the Full Application for award negotiations.

vi. Unsuccessful Applicants

EERE shall promptly notify in writing each applicant whose application has not been selected for award or whose application cannot be funded because of the unavailability of appropriated funds.

B. Administrative and National Policy Requirements

i. Registration Requirements

There are several one-time actions before submitting an application in response to this FOA, and 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, or to meet the negotiation deadlines and receive an award if the application is selected. These requirements are as follows:

1. **EERE Exchange**
   Register and create an account on EERE Exchange at https://eere-exchange.energy.gov.
   This account will then 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. Applicants should also designate backup points of contact so they may be easily contacted if deemed necessary. **This step is required to apply to this FOA.**

   The EERE Exchange registration does not have a delay; however, **the remaining registration requirements below could take several weeks to**

process and are necessary for a potential applicant to receive an award under this FOA.

2. **DUNS Number**
   Obtain a DUNS number (including the plus 4 extension, if applicable) at http://fedgov.dnb.com/webform.

3. **System for Award Management**
   Register with the SAM at https://www.sam.gov. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called a Marketing Partner ID Number (MPIN) are important steps in SAM registration. Please update your SAM registration annually.

4. **FedConnect**
   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.

5. **Grants.gov**
   Register in Grants.gov (http://www.grants.gov) to receive automatic updates when Amendments to this FOA are posted. However, please note that Concept Papers and Full Applications will not be accepted through Grants.gov.

6. **Electronic Authorization of Applications and Award Documents**
   Submission of an application and supplemental information under this FOA through electronic systems used by the DOE, including EERE Exchange and FedConnect.net, constitutes the authorized representative's approval and electronic signature.

ii. Award Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR Part 200 as amended by 2 CFR Part 910.

iii. Foreign National Access

All applicants selected for an award under this FOA may be required to provide information to DOE in order to satisfy requirements for foreign nationals' access to DOE sites, information, technologies, equipment, programs or personnel. A foreign national is defined as any person who is not a U.S. citizen by birth or naturalization. If a selected applicant (including any of its subrecipients,

contractors or vendors) anticipates involving foreign nationals in the performance of its award, the selected applicant may be required to provide DOE with specific information about each foreign national to ensure compliance with the requirements for access approval. National laboratory personnel already cleared for site access may be excluded.

iv. Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR Part 170. Prime recipients must register with the new FFATA Subaward Reporting System database and report the required data on their first tier subrecipients. Prime recipients must report the executive compensation for their own executives as part of their registration profile in SAM.

v. National Policy Requirements

The National Policy Assurances that are incorporated as a term and condition of award are located at: http://www.nsf.gov/awards/managing/rtc.jsp.

vi. Environmental Review in Accordance with National Environmental Policy Act (NEPA)

EERE's decision whether and how to distribute federal funds under this FOA is subject to NEPA (42 U.S.C. 4321, *et seq.*). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, please see DOE's NEPA website, at https://www.energy.gov/nepa.

While NEPA compliance is a federal agency responsibility and the ultimate decisions remain with the federal agency, all recipients selected for an award will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to their proposed project. If DOE determines certain records must be prepared to complete the NEPA review process (e.g., biological evaluations or environmental assessments), the recipient may be required to prepare the records and the costs to prepare the necessary records may be included as part of the project costs.

vii. Applicant Representations and Certifications

1. Lobbying Restrictions

By accepting funds under this award, the prime recipient agrees that none of the funds obligated on the award shall be expended, directly or indirectly, to

influence Congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. §1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

2. **Corporate Felony Conviction and Federal Tax Liability Representations**
In submitting an application in response to this FOA, the applicant represents that:

   a. It is **not** a corporation that has been convicted of a felony criminal violation under any federal law within the preceding 24 months; and

   b. It is **not** a corporation that has any unpaid federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

   For purposes of these representations the following definitions apply:

   A Corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and non-profit organizations.

3. **Nondisclosure and Confidentiality Agreements Representations**
In submitting an application in response to this FOA the applicant represents that:

   a. It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contactors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.

   b. It **does not and will not** use any federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:

      (1) *''These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive order relating to (1) classified*

information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive orders and statutory provisions are incorporated into this agreement and are controlling."

(2) The limitation above shall not contravene requirements applicable to Standard Form 312 Classified Information Nondisclosure Agreement (https://fas.org/sgp/othergov/sf312.pdf), Form 4414 Sensitive Compartmented Information Disclosure Agreement (https://fas.org/sgp/othergov/intel/sf4414.pdf), or any other form issued by a federal department or agency governing the nondisclosure of classified information.

(3) Notwithstanding the provision listed in paragraph (a), a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other than an employee or officer of the United States government, may contain provisions appropriate to the particular activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received in the course of such activity unless specifically authorized to do so by the United States government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

viii. Statement of Federal Stewardship

EERE will exercise normal federal stewardship in overseeing the project activities performed under EERE awards. Stewardship Activities include, but are not limited to, conducting site visits; reviewing performance and financial reports; providing assistance and/or temporary intervention in unusual circumstances to correct deficiencies that develop during the project; assuring compliance with terms and conditions; and reviewing technical performance after project completion to ensure that the project objectives have been accomplished.

ix. Statement of Substantial Involvement

EERE has substantial involvement in work performed under awards made as a result of this FOA. EERE does not limit its involvement to the administrative requirements of the award. Instead, EERE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

1. EERE shares responsibility with the recipient for the management, control, direction, and performance of the project.

2. EERE may intervene in the conduct or performance of work under this award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.

3. EERE may redirect or discontinue funding the project based on the outcome of EERE's evaluation of the project at the Go/No-Go decision point(s).

4. EERE participates in major project decision-making processes.

x. Intellectual Property Management Plan (IPMP)

As a quarter 1 milestone if selected for award, applicants must submit an executed IPMP between the members of the consortia or team if required by the Contracting Officer.

The award will set forth the treatment of and obligations related to intellectual property rights between EERE and the individual members. The IPMP should describe how the members will handle intellectual property rights and issues between themselves while ensuring compliance with federal intellectual property laws, regulations, and policies (see Sections VIII.K.-VIII.N. of this FOA for more details on applicable federal intellectual property laws and regulations). Guidance regarding the contents of IPMP is available from EERE upon request.

The following is a non-exhaustive list of examples of items that the IPMP may cover:

- The treatment of confidential information between members (e.g., the use of NDAs);
- The treatment of background intellectual property (e.g., any requirements for identifying it or making it available);
- The treatment of inventions made under the award (e.g., any requirements for disclosing to the other members on an application, filing patent applications, paying for patent prosecution, and cross-licensing or other licensing arrangements between the members);

- The treatment of data produced, including software, under the award (e.g., any publication process or other dissemination strategies, copyrighting strategy or arrangement between members);
- Any technology transfer and commercialization requirements or arrangements between the members;
- The treatment of any intellectual property issues that may arise due to a change in membership of the consortia or team; and
- The handling of disputes related to intellectual property between the members.

xi. Subject Invention Utilization Reporting

In order to ensure that prime recipients and subrecipients holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, EERE may require that each prime recipient holding title to a subject invention submit annual reports for ten (10) years from the date the subject invention was disclosed to EERE on the utilization of the subject invention and efforts made by prime recipient or their licensees or assignees to stimulate such utilization. The reports must include information regarding the status of development, date of first commercial sale or use, gross royalties received by the prime recipient, and such other data and information as EERE may specify.

xii. Intellectual Property Provisions

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards.

xiii. Reporting

Reporting requirements are identified on the Federal Assistance Reporting Checklist, attached to the award agreement. This helpful EERE checklist can be accessed at https://www.energy.gov/eere/funding/eere-funding-application-and-management-forms. See Attachment 2 Federal Assistance Reporting Checklist, after clicking on “Model Cooperative Agreement" under the Award Package section.

xiv. Go/No-Go Review

Each project selected under this FOA will be subject to a periodic project evaluation referred to as a Go/No-Go Review, with the exception of projects funded under Topic Area 3 Sub-Topic 1. At the Go/No-Go decision points, EERE will evaluate project performance, project schedule adherence, meeting milestone objectives, compliance with reporting requirements, and overall contribution to the EERE program goals and objectives. Federal funding beyond the Go/No-Go decision point (continuation funding) is contingent upon (1)

availability of federal funds appropriated by Congress for the purpose of this program; (2) the availability of future-year budget authority; (3) recipient's technical progress compared to the Milestone Summary Table stated in Attachment 1 of the award; (4) recipient's submittal of required reports; (5) recipient's compliance with the terms and conditions of the award; (6) EERE's Go/No-Go decision; (7) the recipient's submission of a continuation application; and (8) written approval of the continuation application by the Contracting Officer.

As a result of the Go/No-Go Review, DOE may, at its discretion, authorize the following actions: (1) continue to fund the project, contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority; (2) recommend redirection of work under the project; (3) place a hold on federal funding for the project, pending further supporting data or funding; or (4) discontinue funding the project because of insufficient progress, change in strategic direction, or lack of funding.

The Go/No-Go decision is distinct from a non-compliance determination. In the event a recipient fails to comply with the requirements of an award, EERE may take appropriate action, including but not limited to, redirecting, suspending or terminating the award.

xv. Conference Spending

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded that would defray the cost to the United States government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the United States government would otherwise exceed $20,000, thereby circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

xvi. Uniform Commercial Code (UCC) Financing Statements

Per 2 CFR 910.360 (Real Property and Equipment) when a piece of equipment is purchased by a for-profit recipient or subrecipient with federal funds, and when the federal share of the financial assistance agreement is more than $1,000,000, the recipient or subrecipient must:

Properly record, and consent to the Department's ability to properly record if the recipient fails to do so, UCC financing statement(s) for all equipment in excess of

$5,000 purchased with project funds. These financing statement(s) must be approved in writing by the Contracting Officer prior to the recording, and they shall provide notice that the recipient's title to all equipment (not real property) purchased with federal funds under the financial assistance agreement is conditional pursuant to the terms of this section, and that the government retains an undivided reversionary interest in the equipment. The UCC financing statement(s) must be filed before the Contracting Officer may reimburse the recipient for the federal share of the equipment unless otherwise provided for in the relevant financial assistance agreement. The recipient shall further make any amendments to the financing statements or additional recordings, including appropriate continuation statements, as necessary or as the Contracting Officer may direct.

xvii. Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty

States, local governments, or other public entities may not condition sub-awards in a manner that would discriminate, or disadvantage sub-recipients based on their religious character.

xviii. Table of Personnel

If selected for award negotiations, the selected applicant must submit a list of personnel who are proposed to work on the project, both at the recipient and subrecipient level. The table should include the individuals' names, job titles, role in the project and their organization. Recipients will have an ongoing responsibility to notify DOE of changes to the personnel and submit an updated list during the life of the life of the award as there are changes to the personnel working on the project.

VII. Questions/Agency Contacts

Upon the issuance of a FOA, EERE personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the FOA except through the established question and answer process as described below. Specifically, questions regarding the content of this FOA must be submitted to OSWENVFOA@ee.doe.gov. Questions must be submitted not later than 3 business days prior to the application due date and time. Please note, feedback on individual concepts will not be provided through Q&A.

All questions and answers related to this FOA will be posted on EERE Exchange at: https://eere-exchange.energy.gov. **Please note that you must first select this specific FOA Number in order to view the questions and answers specific to this FOA**. EERE will attempt to respond to a question within 3 business days, unless a similar question and answer has already been posted on the website.

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

VIII. Other Information

A. FOA Modifications

Amendments to this FOA will be posted on the EERE Exchange website and the Grants.gov system. However, you will only receive an email when an amendment or a FOA is posted on these sites if you register for email notifications for this FOA in Grants.gov. EERE recommends that you register as soon after the release of the FOA as possible to ensure you receive timely notice of any amendments or other FOAs.

B. Government Right to Reject or Negotiate

EERE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

C. Commitment of Public Funds

The Contracting Officer is the only individual who can make awards or commit the government to the expenditure of public funds. A commitment by anyone other than the Contracting Officer, either express or implied, is invalid.

D. Treatment of Application Information

Applicants should not include trade secrets or commercial or financial information that is privileged or confidential in their application unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the FOA. Applicants are advised to not include any critically sensitive proprietary detail.

If an application includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the Government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the application. Such information will be withheld from public disclosure to the extent permitted by law, including the

Freedom of Information Act. Without assuming any liability for inadvertent disclosure, EERE will seek to limit disclosure of such information to its employees and to outside reviewers when necessary for merit review of the application or as otherwise authorized by law. This restriction does not limit the Government's right to use the information if it is obtained from another source.

Concept Papers, Full Applications, Replies to Reviewer Comments, and other submissions containing confidential, proprietary, or privileged information must be 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. Government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

The cover sheet of the Concept Paper, Full Application, Reply to Reviewer Comments, and other submission must be marked as follows and identify the specific pages containing trade secrets, confidential, proprietary, or privileged information:

> **Notice of Restriction on Disclosure and Use of Data:**
> Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the Government. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. [End of Notice]

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: "Contains Trade Secrets, Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure." In addition, each line or paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

E. Evaluation and Administration by Non-Federal Personnel

In conducting the merit review evaluation, the Go/No-Go Reviews and Peer Reviews, the government may seek the advice of qualified non-federal personnel as reviewers. The government may also use non-federal personnel to conduct routine, nondiscretionary administrative activities, including EERE contractors. The applicant, by submitting its application, consents to the use of non-federal reviewers/administrators. Non-federal reviewers must sign conflict of interest

(COI) and non-disclosure acknowledgements (NDA) prior to reviewing an application. Non-federal personnel conducting administrative activities must sign an NDA.

F. Notice Regarding Eligible/Ineligible Activities

Eligible activities under this FOA include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

G. Notice of Right to Conduct a Review of Financial Capability

EERE reserves the right to conduct an independent third party review of financial capability for applicants that are selected for negotiation of award (including personal credit information of principal(s) of a small business if there is insufficient information to determine financial capability of the organization).

H. Requirement for Full and Complete Disclosure

Applicants are required to make a full and complete disclosure of all information requested. Any failure to make a full and complete disclosure of the requested information may result in:

- The termination of award negotiations;
- The modification, suspension, and/or termination of a funding agreement;
- The initiation of debarment proceedings, debarment, and/or a declaration of ineligibility for receipt of federal contracts, subcontracts, and financial assistance and benefits; and
- Civil and/or criminal penalties.

I. Retention of Submissions

EERE expects to retain copies of all Concept Papers, Full Applications, and Replies to Reviewer Comments and other submissions. No submissions will be returned. By applying to EERE for funding, applicants consent to EERE's retention of their submissions.

J. Title to Subject Inventions

Ownership of subject inventions is governed pursuant to the authorities listed below:

- Domestic Small Businesses, Educational Institutions, and Nonprofits: Under the Bayh-Dole Act (35 U.S.C. § 200 et seq.), domestic small businesses,

educational institutions, and nonprofits may elect to retain title to their subject inventions.

- All other parties: The federal Non-Nuclear Energy Act of 1974, 42. U.S.C. 5908, provides that the government obtains title to new inventions unless a waiver is granted (see below).

- Class Patent Waiver: DOE has issued a class waiver that applies to this FOA. Under this class waiver, domestic large businesses may elect title to their subject inventions similar to the right provided to the domestic small businesses, educational institutions, and nonprofits by law. In order to avail itself of the class waiver, a domestic large business must agree that any products embodying or produced through the use of a subject invention first created or reduced to practice under this program will be substantially manufactured in the United States, unless DOE agrees that the commitments proposed in the U.S. Manufacturing Plan are sufficient.

- Advance and Identified Waivers: Applicants may request a patent waiver that will cover subject inventions that may be invented under the award, in advance of or within 30 days after the effective date of the award. Even if an advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver for identified inventions, i.e., individual subject inventions that are disclosed to EERE within the timeframes set forth in the award's intellectual property terms and conditions. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784; and

- DEC: Each applicant is required to submit a U.S. Manufacturing Plan as part of its application. If selected, the U.S. Manufacturing Plan shall be incorporated into the award terms and conditions for domestic small businesses and nonprofit organizations. DOE has determined that exceptional circumstances exist that warrants the modification of the standard patent rights clause for small businesses and non-profit recipients under Bayh-Dole to the extent necessary to implement and enforce the U.S. Manufacturing Plan. Any Bayh-Dole entity (domestic small business or nonprofit organization) affected by this DEC has the right to appeal it.

K. Government Rights in Subject Inventions

Where prime recipients and subrecipients retain title to subject inventions, the U.S. government retains certain rights.

1. **Government Use License**

   The U.S. government retains a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world. This license extends to contractors doing work on behalf of the government.

2. **March-In Rights**

   The U.S. government retains march-in rights with respect to all subject inventions. Through "march-in rights," the government may require a prime recipient or subrecipient who has elected to retain title to a subject invention (or their assignees or exclusive licensees), to grant a license for use of the invention to a third party. In addition, the government may grant licenses for use of the subject invention when a prime recipient, subrecipient, or their assignees and exclusive licensees refuse to do so.

   DOE may exercise its march-in rights only if it determines that such action is necessary under any of the four following conditions:

   - The owner or licensee has not taken or is not expected to take effective steps to achieve practical application of the invention within a reasonable time;
   - The owner or licensee has not taken action to alleviate health or safety needs in a reasonably satisfied manner;
   - The owner has not met public use requirements specified by federal statutes in a reasonably satisfied manner; or
   - The U.S. manufacturing requirement has not been met.

   Any determination that march-in rights are warranted must follow a fact-finding process in which the recipient has certain rights to present evidence and witnesses, confront witnesses and appear with counsel and appeal any adverse decision. To date, DOE has never exercised its march-in rights to any subject inventions.

L. Rights in Technical Data

Data rights differ based on whether data is first produced under an award or instead was developed at private expense outside the award.

"Limited Rights Data": The U.S. government will not normally require delivery of confidential or trade secret-type technical data developed solely at private expense prior to issuance of an award, except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Government Rights in Technical Data Produced Under Awards: The U.S. government normally retains unlimited rights in technical data produced under government financial assistance awards, including the right to distribute to the public. However, pursuant to special statutory authority, certain categories of data generated under EERE awards may be protected from public disclosure for up to five years after the data is generated ("Protected Data"). For awards permitting Protected Data, the protected data must be marked as set forth in the awards intellectual property terms and conditions and a listing of unlimited rights data (i.e., non-protected data) must be inserted into the data clause in the award. In addition, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

M. Copyright

The prime recipient and subrecipients may assert copyright in copyrightable works, such as software, first produced under the award without EERE approval. When copyright is asserted, the government retains a paid-up nonexclusive, irrevocable worldwide license to reproduce, prepare derivative works, distribute copies to the public, and to perform publicly and display publicly the copyrighted work. This license extends to contractors and others doing work on behalf of the government.

N. Export Control

The U.S. government regulates the transfer of information, commodities, technology, and software considered to be strategically important to the U.S. to protect national security, foreign policy, and economic interests without imposing undue regulatory burdens on legitimate international trade. There is a network of federal agencies and regulations that govern exports that are collectively referred to as "Export Controls". To ensure compliance with Export Controls, it is the prime recipient's responsibility to determine when its project activities trigger Export Controls and to ensure compliance.

Export Controls may apply to individual projects, depending on the nature of the tasks. When Export Controls apply, the recipient must take the appropriate steps to obtain any required governmental licenses, monitor and control access to restricted information, and safeguard all controlled materials. Under no circumstances may foreign entities (organizations, companies or persons) receive access to export controlled information unless proper export procedures have been satisfied and such access is authorized pursuant to law or regulation.

O. Personally Identifiable Information (PII)

All information provided by the applicant must to the greatest extent possible exclude PII. The term "PII" refers to information which can be used to distinguish or trace an individual's identity, such as their name, social security number, biometric records, alone, or when combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother's maiden name. (See OMB Memorandum M-07-16 dated May 22, 2007, found at: https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2007/m07-16.pdf

By way of example, applicants must screen resumes to ensure that they do not contain PII such as personal addresses, personal landline/cell phone numbers, and personal emails. **Under no circumstances should Social Security Numbers (SSNs) be included in the application**. Federal agencies are prohibited from the collecting, using, and displaying unnecessary SSNs. (See, the Federal Information Security Modernization Act of 2014 (Pub. L. No. 113-283, Dec 18, 2014; 44 U.S.C. §3551).

P. Annual Independent Audits

If a for-profit entity is a prime recipient and has expended $750,000 or more of DOE awards during the entity's fiscal year, an annual compliance audit performed by an independent auditor is required. For additional information, please refer to 2 C.F.R. § 910.501 and Subpart F.

If an educational institution, non-profit organization, or state/local government is a prime recipient or subrecipient and has expended $750,000 or more of federal awards during the non-federal entity's fiscal year, then a Single or Program-Specific Audit is required. For additional information, please refer to 2 C.F.R. § 200.501 and Subpart F.

Applicants and subrecipients (if applicable) should propose sufficient costs in the project budget to cover the costs associated with the audit. EERE will share in the cost of the audit at its applicable cost share ratio.

APPENDIX A – COST SHARE INFORMATION

Cost Sharing or Cost Matching

The terms "cost sharing" and "cost matching" are often used synonymously. Even the DOE Financial Assistance Regulations, 2 CFR 200.306, use both of the terms in the titles specific to regulations applicable to cost sharing. EERE almost always uses the term "cost sharing," as it conveys the concept that non-federal share is calculated as a percentage of the Total Project Cost. An exception is the State Energy Program Regulation, 10 CFR 420.12, State Matching Contribution. Here "cost matching" for the non-federal share is calculated as a percentage of the federal funds only, rather than the Total Project Cost.

How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. FFRDC costs must be included in Total Project Costs. The following is an example of how to calculate cost sharing amounts for a project with $1,000,000 in federal funds with a minimum 20% non-federal cost sharing requirement:

- Formula: Federal share ($) divided by federal share (%) = Total Project Cost
  Example: $1,000,000 divided by 80% = $1,250,000

- Formula: Total Project Cost ($) minus federal share ($) = Non-federal share ($)
  Example: $1,250,000 minus $1,000,000 = $250,000

- Formula: Non-federal share ($) divided by Total Project Cost ($) = Non-federal share (%)
  Example: $250,000 divided by $1,250,000 = 20%

What Qualifies For Cost Sharing

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under an EERE grant or cooperative agreement, then it is allowable as cost share. Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the federal government under another award unless authorized by federal statute to be used for cost sharing.

The rules associated with what is allowable as cost share are specific to the type of organization that is receiving funds under the grant or cooperative agreement, though are generally the same for all types of entities. The specific rules applicable to:

- FAR Part 31 for For-Profit entities, (48 CFR Part 31); and
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

In addition to the regulations referenced above, other factors may also come into play such as timing of donations and length of the project period. For example, the value of ten years of donated maintenance on a project that has a project period of five years would not be fully allowable as cost share. Only the value for the five years of donated maintenance that corresponds to the project period is allowable and may be counted as cost share.

Additionally, EERE generally does not allow pre-award costs for either cost share or reimbursement when these costs precede the signing of the appropriation bill that funds the award. In the case of a competitive award, EERE generally does not allow pre-award costs prior to the signing of the Selection Statement by the EERE Selection Official.

General Cost Sharing Rules on a DOE Award

1. Cash Cost Share – encompasses all contributions to the project made by the recipient or subrecipient(s), for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project.

2. In-Kind Cost Share – encompasses all contributions to the project made by the recipient or subrecipient(s) that do not involve a payment or reimbursement and represent donated items or services. In-Kind cost share items include volunteer personnel hours, donated existing equipment, donated existing supplies. The cash value and calculations thereof for all In-Kind cost share items must be justified and explained in the Cost Share section of the project Budget Justification. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out the In-Kind cost share section of the Budget Justification.

3. Funds from other federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC subrecipients. Non-federal sources include any source not originally derived from federal funds. Cost sharing commitment letters from subrecipients must be provided with the original application.

4. Fee or profit, including foregone fee or profit, are not allowable as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

As stated above, the rules associated with what is allowable cost share are generally the same for all types of organizations. Following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

(A) Acceptable contributions. All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the prime recipient's cost sharing if such contributions meet all of the following criteria:

(1) They are verifiable from the recipient's records.

(2) They are not included as contributions for any other federally-assisted project or program.

(3) They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.

(4) They are allowable under the cost principles applicable to the type of entity incurring the cost as follows:

a. For-profit organizations. Allowability of costs incurred by for-profit organizations and those nonprofit organizations listed in Attachment C to OMB Circular A–122 is determined in accordance with the for-profit cost principles in 48 CFR Part 31 in the FAR, except that patent prosecution costs are not allowable unless specifically authorized in the award document. (v) Commercial Organizations. FAR Subpart 31.2—Contracts with Commercial Organizations; and

b. Other types of organizations. For all other non-federal entities, allowability of costs is determined in accordance with 2 CFR Part 200 Subpart E.

(5) They are not paid by the federal government under another award unless authorized by federal statute to be used for cost sharing or matching.

(6) They are provided for in the approved budget.

(B) Valuing and documenting contributions

(1) Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item

will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value must be the lesser or the following:

a. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or

b. The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.

(2) Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.

(3) Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.

(4) Valuing property donated by third parties.

a. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.

b. Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:

i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.

ii. The value of loaned equipment must not exceed its fair rental value.

(5) Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:

a. Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.

b. The basis for determining the valuation for personal services and property must be documented.

APPENDIX B – WAIVER REQUESTS AND APPROVAL PROCESSES: 1. FOREIGN ENTITY PARTICIPATION AS THE PRIME RECIPIENT; AND 2. PERFORMANCE OF WORK IN THE UNITED STATES (FOREIGN WORK WAIVER)

1. Waiver for Foreign Entity Participation as the Prime Recipient

As set forth in Section III.A.iii., all prime recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States and have a physical location for business operations in the United States. To request a waiver of this requirement, an applicant must submit an explicit waiver request in the Full Application.

Overall, the applicant must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the prime recipient. A request to waive the *Foreign Entity Participation as the prime recipient* requirement must include the following:

- Entity name;
- The rationale for proposing a foreign entity to serve as the prime recipient;
- Country of incorporation and the extent, if any, the entity is state owned or controlled;
- A description of the project's anticipated contributions to the U.S. economy;
- How the project will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
- How the project will promote domestic American manufacturing of products and/or services;
- A description of how the foreign entity's participation as the prime recipient is essential to the project;
- A description of the likelihood of Intellectual Property (IP) being created from the work and the treatment of any such IP; and
- Countries where the work will be performed (Note: if any work is proposed to be conducted outside the U.S., the applicant must also complete a separate request for waiver of the Performance of Work in the United States requirement).

EERE may require additional information before considering the waiver request.

The applicant does not have the right to appeal EERE's decision concerning a waiver request.

2. Waiver for Performance of Work in the United States (Foreign Work Waiver)

As set forth in Section IV.J.iii., all work under EERE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the prime recipient should make every effort to purchase supplies and equipment within the United States. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit an explicit waiver request in the Full Application. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

Overall, a waiver request must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to perform work outside of the United States. A request to waive the *Performance of Work in the United States* requirement must include the following:

- The rationale for performing the work outside the U.S. ("foreign work");
- A description of the work proposed to be performed outside the U.S.;
- An explanation as to how the foreign work is essential to the project;
- A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the U.S. economy;
- The associated benefits to be realized and the contribution to the project from the foreign work;
- How the foreign work will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
- How the foreign work will promote domestic American manufacturing of products and/or services;
- A description of the likelihood of Intellectual Property (IP) being created from the foreign work and the treatment of any such IP;
- The total estimated cost (DOE and recipient cost share) of the proposed foreign work;
- The countries in which the foreign work is proposed to be performed; and
- The name of the entity that would perform the foreign work.

EERE may require additional information before considering the waiver request.

The applicant does not have the right to appeal EERE's decision concerning a waiver request.

APPENDIX C – GLOSSARY

Applicant – The lead organization submitting an application under the FOA.

Continuation application – A non-competitive application for an additional budget period within a previously approved project period. At least ninety (90) days before the end of each budget period, the Recipient must submit to EERE its continuation application, which includes the following information:

i. A report on the Recipient's progress towards meeting the objectives of the project, including any significant findings, conclusions, or developments, and an estimate of any unobligated balances remaining at the end of the budget period. If the remaining unobligated balance is estimated to exceed 20 percent of the funds available for the budget period, explain why the excess funds have not been obligated and how they will be used in the next budget period.

ii. A detailed budget and supporting justification if there are changes to the negotiated budget, or a budget for the upcoming budget period was not approved at the time of award.

iii. A description of any planned changes from the negotiated Statement of Project Objectives and/or Milestone Summary Table.

Cooperative Research and Development Agreement (CRADA) – a contractual agreement between a national laboratory contractor and a private company or university to work together on research and development. For more information, see https://www.energy.gov/gc/downloads/doe-cooperative-research-and-development-agreements

Federally Funded Research and Development Centers (FFRDC) - FFRDCs are public-private partnerships which conduct research for the United States government. A listing of FFRDCs can be found at http://www.nsf.gov/statistics/ffrdclist/.

Go/No-Go Decision Points: – A decision point at the end of a budget period that defines the overall objectives, milestones and deliverables to be achieved by the recipient in that budget period. As of a result of EERE's review, EERE may take one of the following actions: 1) authorize federal funding for the next budget period; 2) recommend redirection of work; 3) discontinue providing federal funding beyond the current budget period; or 4) place a hold on federal funding pending further supporting data.

Project – The entire scope of the cooperative agreement which is contained in the recipient's Statement of Project Objectives.

Recipient or "Prime Recipient" – A non-federal entity that receives a federal award directly from a federal awarding agency to carry out an activity under a federal program. The term recipient does not include subrecipients.

Subrecipient – A non-federal entity that receives a subaward from a pass-through entity to carry out part of a federal program; but does not include an individual that is a beneficiary of such program. A subrecipient may also be a recipient of other federal awards directly from a federal awarding agency. Also, a DOE/NNSA and non-DOE/NNSA FFRDC may be proposed as a subrecipient on another entity's application. See section III.E.ii.

APPENDIX D – DEFINITION OF TECHNOLOGY READINESS LEVELS

TRL 1:	Basic principles observed and reported
TRL 2:	Technology concept and/or application formulated
TRL 3:	Analytical and experimental critical function and/or characteristic proof of concept
TRL 4:	Component and/or breadboard validation in a laboratory environment
TRL 5:	Component and/or breadboard validation in a relevant environment
TRL 6:	System/subsystem model or prototype demonstration in a relevant environment
TRL 7:	System prototype demonstration in an operational environment
TRL 8:	Actual system completed and qualified through test and demonstrated
TRL 9:	Actual system proven through successful mission operations

APPENDIX E – LIST OF ACRONYMS

BOEM	Bureau of Ocean Energy Management
CEC	California Energy Commission
COI	Conflict of Interest
DEC	Determination of Exceptional Circumstances
DMP	Data Management Plan
DOE	Department of Energy
DOI	Digital Object Identifier
EERE	Energy Efficiency and Renewable Energy
FAR	Federal Acquisition Regulation
FFATA	Federal Funding and Transparency Act of 2006
FOA	Funding Opportunity Announcement
FOIA	Freedom of Information Act
FFRDC	Federally Funded Research and Development Center
FWP	Field Work Proposal
GAAP	Generally Accepted Accounting Principles
IPMP	Intellectual Property Management Plan
M&O	Management and Operating
MPIN	Marketing Partner ID Number
MYPP	Multi-Year Program Plan
NDA	Non-Disclosure Acknowledgement
NEPA	National Environmental Policy Act
NGOs	Non-government Organizations
NNSA	National Nuclear Security Agency
NOAA NMFS	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NOPP	National Oceanographic Partnership Program
NYSERDA	New York State Energy Research and Development Authority
OMB	Office of Management and Budget
OCS	Outer Continental Shelf
OPC	California Ocean Protection Council
ORJIP	Offshore Renewables Joint Industry Programme
OSTI	Office of Scientific and Technical Information
PII	Personal Identifiable Information
R&D	Research and Development
RFI	Request for Information
RFP	Request for Proposal
RODEO	Real-time Opportunity for Development Environmental Observations
SAM	System for Award Management

SOPO	Statement of Project Objectives
SPOC	Single Point of Contact
TIA	Technology Investment Agreement
TRL	Technology Readiness Level
UCC	Uniform Commercial Code
USFWS	U.S. Fish and Wildlife Service
WBS	Work Breakdown Structure
WETO	Wind Energy Technologies Office