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(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: NYSERDA **STATE:** NY

PROJECT TITLE: National Offshore Wind Research and Development Consortium

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001767	DE-EE0008390	GFO-0008390-035	GO8390

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B5.15 Small-scale renewable energy research and development and pilot projects	Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the New York State Energy Research and Development Authority (NYSERDA) to form a not-for-profit 501(c)(3) entity, the "National Offshore Wind Research and Development Consortium" which would be led by NYSERDA, along with key industry stakeholders and research institutions. The Consortium would finance research initiatives seeking to address the technical barriers faced by offshore wind developers, original equipment manufacturers (OEMs) and supply chain partners, with the goal of reducing the Levelized Cost of Electricity (LCOE) for U.S. offshore wind plants and increasing opportunities for U.S. manufacturing.

The proposed project is divided into four (4) Budget Periods (BPs). DOE previously completed NEPA reviews for BP1, 2 and 3 (GFO-0009380-001 CX A1, A9 and A13, 10/09/2018; GFO-0009380-002 CX A1, A9 and A13, 01/13/2020; GFO-0009380-019 CX A1, A9 and A13, 12/02/2020). In addition DOE completed NEPA reviews for 16 subawards made by the consortium under Task 19 (GFO-0009380-003 to 018, various CX determinations and dates) as well as awards under an Annual Operating Plan to the National Renewable Energy Laboratory. This NEPA review is for a sub award proposed to be made under Task 27 to GE Renewable Energy (GE).

Task 27 in BP3 involves reviewing applications received in response to the solicitation released in Task 26, and then choosing specific projects which would receive a sub award. While NYSERDA is allowed under the previous NEPA determination to proceed with choosing projects under Task 27, all projects chosen for sub award are subject to additional NEPA analysis prior to NYSERDA contracting for the sub award and prior to any work being completed on the sub award.

Under the proposed sub award GE would develop and test a wind turbine installation technology. Specifically, an existing technology, the Single Blade Installation (SBI) tool suite, would be modified to incorporate an automatic positioning system (APS) prototype. The APS would use a system of fans to control the blade position of a wind turbine blade suspended from a crane. Use of this technology would increase the efficiency of blade repairs by reducing the time necessary to complete them, as compared to currently used tag line positioning systems. The integrated system, once assembled, would be used for verification testing at an existing on-shore wind turbine test site. Testing would inform conceptual design work for proposed future offshore applications.

Project tasks would focus on SBI/APS development, fabrication, and testing. Data analysis would be performed

throughout the process. Testing and lessons-learned would then be incorporated into conceptual designs for future applications. Each of these tasks is described in more detail below.

Task 0 – Project Management and Progress Reporting: This would be an ongoing task throughout the life of the project consisting of all administrative, financial, and reporting activities associated with the completion of the project.

Task 1 - Design and Construction of Onshore Field-Scale Prototype: This task would consist of the development of design specifications for the APS prototype, which would be incorporated into an existing SBI unit. GE would perform an engineering analysis on the APS system and its operations once integrated into the SBI. This would include analysis of wind dynamics and a failure mode and effects analysis.

As part of this task, the APS prototype would be fabricated and assembled. All component fabrication would be performed by GE's project partner Hvide Sande Shipyard, Steel and Service (HVSA), in Hvide Sande, Denmark. Components would be custom built for the project. The primary components of the APS system would include two propellers, mounting frames, a control box housing controller equipment, a motor, and auxiliary components (e.g., cables and electrical connections). These components would be shipped to GE and integrated into an existing SBI unit.

The SBI unit itself is essentially a harness system consisting of a chain suspension and a series of clamps to hold and secure a wind turbine blade for installation. The SBI unit weighs approximately 25 tons. During testing (to be performed as part of Task 2), the blade would be secured to the SBI on the ground and the system would be hoisted into the air using a crane. The APS system would consist of a propeller system attached to the SBI, which would use air generated by the propellers to move and position the wind turbine blade for installation.

Task 2 - Testing and Data Analysis for Onshore Scale Prototype: This task would consist of performance testing utilizing the assembled SBI/APS prototype at a preexisting wind farm near Lubbock, Texas. The SBI/APS would be hoisted into the air using a crane. The SBI/APS would be designed to secure the wind turbine blade using a system of clamps. As part of testing, an existing 68.7 m blade would be used in mock installation runs. The blade would be lifted from the ground using the crane and SBI/APS system. The SBI/APS system would then be used to position the blade as it would be positioned during installation. However, blade installation would not actually be performed. The trial runs would be performed for demonstration purposes only. As part of the mock installation runs, data would be acquired on parameters including wind force resistance, torque generated by the fan systems, positioning accuracy, and other variables. Some of the trials runs would be performed without the blade, using only the SBI/APS system. Tests and assessments would also be performed on the SBI/APS system at ground level.

Task 3 - Conceptual Design for Full-Scale Offshore Tool: Data acquired from the SBI/APS mock installation testing performed during Task 2 would be used to inform conceptual design work for proposed offshore applications of the technology. Computational analysis would be performed to assess variables applicable to offshore usage. Conceptual designs would be developed of the SBI/APS tool to accommodate proposed turbine blade hardware for offshore applications. A technoeconomic analysis would also be performed.

Task 4 – Final Report: This task would consist of the development and dissemination of a summary report on the performance of the tasks above and the conclusions of the analyses and demonstration activities.

GE would coordinate all project activities and perform conceptual design work, analysis, reporting, and integrated SBI/APS testing at its Prairie Dog Wind Farm testing site near Lubbock, TX. Its project partner HVSA, would perform APS system design and fabrication at its manufacturing facility in Hvide Sande, Denmark. SBI/APS testing at GE's Prairie Dog Wind Farm would require the temporary deployment of a crane mat and trailer-mounted office. These deployments would occur in previously disturbed areas within the testing site. No physical modifications to existing facilities, ground disturbance, or changes to the use, mission, or operations of existing facilities would be required. No additional permits or authorizations would be required.

Project work would involve the use and handling of heavy machinery and powered equipment with moving parts. All such handling would be performed at purpose-built testing sites by qualified personnel. To mitigate potential risks, GE and its project partners would adhere to established corporate health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, the performance of regularly safety assessments, engineering controls, and active site monitoring.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Budget Period 1
Budget Period 2
Budget Period 3
Sub Award to GE Renewable Energy

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Budget Period 4

Notes:

This NEPA determination does require a tailored NEPA provision
Wind Energy Technology Office
Review completed by Jonathan Hartman, 09/27/2021

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

DOE has determined that work to be carried out outside of the United States, its territories and possessions is exempt from further review pursuant to Section 5.1.1 of the DOE Final Guidelines for Implementation of Executive Order 12114; “Environmental Effects Abroad of Major Federal Actions.”

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Roak Parker Date: 9/27/2021
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☑ Field Office Manager review not required
☐ Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager