

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



RECIPIENT: New York State Energy Research and Development Authority

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-0008390-049	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.)

B3.6 Small-scale research and development, laboratory operations, and pilot projects

Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

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, 3, and 4 (GFO-0008390-001 CX A1, A9, and A13, 10/09/2018; GFO-0008390-002 CX A1, A9, and A13, 01/13/2020; GFO-0008390-019 CX A1, A9, and A13, 12/02/2020; GFO-0008390-042 CX A1, A9, A11, and A13, 12/28/2021). In addition, DOE completed NEPA reviews for 16 subawards made by the consortium under Task 19, 22 subawards made by the consortium under Task 27, and 5 subawards made by the consortium under Task 35 as well as awards under an Annual Operating Plan to the National Renewable Energy Laboratory (various CX determinations and dates). This NEPA review is for a subaward proposed to be made under Task 35 to the University of Massachusetts Lowell (UML).

Task 35 in BP4 involves reviewing applications received in response to the solicitation released in Task 34, 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 35, 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 this proposed sub award, University of Massachusetts Lowell would design, develop, assemble, and field test an acoustics-based blade structural health monitoring (SHM) system for ultra-large offshore wind turbines. The proposed system would identify blade damage such as holes, cracks, and leading and trailing edge splits in bonded surfaces.

Design, development, and assembly activities would occur at UML's research laboratory and at their testing facilities. A professional testing house may be engaged with lightning tests of the development sensors. The fully assembled and

laboratory tested acoustic monitoring system would be implemented and field-tested on offshore wind turbines operated by Dominion Energy as part of the Coastal Virginia Offshore Wind (CVOW) Pilot project. Alterations to turbines would not be needed. Turbines would be run under normal operating conditions with the exception of stopping operations for one to three days to install sensors.

Task activities reviewed in this NEPA determination are explained below:

Task 0 - Project management and progress reporting including coordinating contractor work, budget and schedule management, meetings, and submitting reports to the consortium.

Task 1 – Team meetings between each collaborator to exchange information on the testing and operating requirements important to offshore wind turbine owners/operators.

Task 2 – Identify vendors, set up the procurement channels and timing, and procure hardware and software necessary to build acoustic monitoring solution, including electronic boards, enclosures, cables, etc. Approximately 10 wireless nodes would be fabricated. These would consist of an enclosure, an electronic board, and an acoustic sensor. Five would be used for testing and the other five would be used for redundancy and environmental testing.

Task 3 – Hardware qualification testing to verify that acoustic nodes are able to withstand environmental conditions present when offshore wind turbine is operating in the field. Assess in-blade environmental conditions and perform system component evaluation to verify that the sensor nodes can withstand the anticipated environmental conditions with tests at UML, Electric Power Research Institute (EPRI), and NTS (a commercial testing house). Vibration testing, long-term thermal testing, long-term humidity testing, and electrical shock from lightning testing of the installed electronics would take place at UML. If necessary, lightning testing would be outsourced to NTS.

Task 4 – Optimize number and position of sensors inside each blade through computation analysis and through discussions with Dominion and EPRI personnel. Numerical simulations performed would inform the team on where to best place the sensor nodes within the blade cavity. Design and procure the appropriate system parts and connections to address the specific requirements for the Dominion Power owned turbines and testing environment.

Task 5 – Test at Dominion Offshore Site. Demonstrate and verify the capabilities of acoustic monitoring system on up to 2 offshore wind turbines in the field operating under different environmental conditions at the CVOW Pilot project site.

Task 6 – Post-process the data collected to identify acoustic trends associated with the blade operational conditions as well as the environmental conditions. Long duration testing of the acoustic based monitoring system would last about 3 or 4 months. Visual inspection data might be used to correlate data collected with acoustic monitoring system. Visual inspection is not part of the scope of this project, only analysis of resulting data. Under normal operational procedures, Dominion Energy's CVOW team occasionally uses drones to inspect the blades. If this data is available, UMass would request to use it to correlate with acoustic data from the same blades.

Task 7 – Identify an industry partner for commercialization or technology licensing and identify the next steps in commercializing the sensing system.

Task 8 – Generate a final report.

Project activities would involve hazards associated with transiting to the wind turbine by crew transfer vessel, ascending and descending the wind turbine, and installing the monitoring system. The project team would adhere to all federal, state, local and Dominion Energy environmental, health, and safety policies and Siemens Gamesa Renewable Energy wind turbine safety rules associated with traveling, climbing, and working within the offshore wind turbines. With the exception of the installation of the monitoring system, no physical modifications, ground disturbing activities, changes in use of the facilities, or installation of outdoor equipment would occur. No new permits would be needed at this time.

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
- Budget Period 4
- Sub Award to University of Massachusetts Lowell

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

All sub awards made under Task 35 (in Budget Period 4) will be subject to additional NEPA review prior to any work being completed on those projects.

Notes:

Wind Energy Technologies Office
Review completed by Shaina Aguilar on 1/23/23.

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.

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:  _____ Date: 1/24/2023
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