

PMC-ND
(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-0008390-030	G08390

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 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 PCCI, Inc.

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 PCCI and its project partners would develop and fabricate an intelligent mooring system (IMS) for floating offshore wind turbine applications. PCCI would coordinate all project activities from its office and manufacturing facilities in Alexandria, VA. Its project partners would assist with research, analysis, fabrication and testing. They would include Intelligent Moorings (Office facilities in Denbighshire, UK and manufacturing facilities in Aylesbury, UK), Ocergy, Inc. (Oakland, CA), University of Exeter (Cornwall, UK), and the National Renewable Energy Laboratory ('NREL' – Golden, CO).

The IMS device would provide additional shock absorption to mooring arrangements using traditional synthetic mooring lines. The device would connect the mooring platform to mooring lines and utilize a system of fluid-filled tubes

to adjust the resistance of the lines in accordance with load levels. PCCI would build on previous efforts and optimize the IMS system to technology readiness level 6 (TRL-6). A 1/4 scale prototype would be fabricated and tested in laboratory settings and in an ocean environment.

Project work would include in-ocean testing of the prototype IMS device (Task 7). However, a site location has not yet been selected for in-ocean testing activities and testing plans have not been developed. Accordingly, Task 7 and Task 8, which consists of final reporting activities dependent on in-ocean testing, will be excluded from this review until a site has been selected and all relevant information has been submitted to DOE for review. This ND will be applicable to Tasks 0 – 6, which are described in 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, oversight, stakeholder engagement, and reporting activities required to advance the project. PCCI would be responsible for this task.

Task 1 – IMS Integration with OCG-Wind: This task would consist of conceptual design work. Structural and component analysis would be performed to evaluate potential system integration methods. No physical integration of components would be performed. PCCI would perform these tasks in conjunction with its project partners.

Task 2 – Modeling Analyses of the OCG-Wind Platform Moored Using the IMS: This task would consist of computer modeling and data analysis. Computer simulations would be developed to assess the performance of the IMS in different operating conditions. PCCI would perform these tasks in conjunction with its project partners.

Task 3 – Design and Fabrication of 1/4-Scale IMS and Control System: This task would consist of the development and fabrication of an IMS and control system prototype. Conceptually, the device would consist of a pressure adjustment system, a load bearing system, and connectors, which together would provide shock absorption to the mooring system. The device would connect at one end, to a floating mooring platform, and at the other end, to traditional mooring lines. At the surface, on a floating mooring platform, the pressure adjustment system would consist of a controller device and a pressurized gas delivery system. These devices would connect to the load bearing system via a fluid hose. The load bearing system would be the main part of the device that would connect to traditional mooring lines. The load bearing system would consist of a series of tubes fabricated from braided steel, allowing for the material to expand and contract in response to changes in load pressure. The braided tube would house the fluid hose connected to the pressure adjustment system. The amount of pressurized gas within the fluid hose would be adjusted automatically by the pressure adjustment system as a response to changes in load pressure, causing the contraction/expansion of the braided steel rope.

It should be noted that the description above applies to how the device would function in an ocean setting. However, no in-ocean testing would be performed as part of this task.

The prototype device would be built at 1/4-scale. The prototype IMS would include 4 braided tubes, each with a diameter of approximately 9" (diameter of full prototype would be approximately 24") and a length of 12'. The device would weigh approximately 200 Kg. The control system would consist of a small control box, housing the fluid hose that would pass through the IMS as described above, as well as a pressurized gas supply canister.

All component fabrication and assembly activities would be performed by Intelligent Moorings. Intelligent Moorings would also conduct initial tensile strength testing. Bench-scale testing would then be performed by University of Exeter. University of Exeter would utilize an existing mooring test machine to assess the performance capabilities of the prototype device. This testing would assess operational performance, tensile failure, dynamic loading, and accelerated life performance. Upon completion of bench-scale testing, the IMS prototype would be shipped to PCCI's facilities in the United States (see Task 5).

Task 4 – IMS Product Design Assessment and Certification: This task would consist of the preparation of IMS design documents for a design assessment and certification. PCCI would prepare the documents and submit them to the American Bureau of Shipping (ABS). ABS would assess whether the IMS design specifications meet industry standards.

Task 5 – 1/4-Scale IMS Receipt and Review: This task would consist of shipping the assembled 1/4 scale IMS from Intelligent Moorings' facility in the UK to PCCI's facility in the United States. Once received, the IMS system's functionality would be verified.

Task 6 – 1/4-Scale IMS At-Sea Test Planning: This task would consist of the preparation of test planning documents for future in-ocean testing. PCCI would coordinate testing strategies with relevant authorities at potential testing sites. Any required permits would be obtained as part of this task. PCCI would also submit all required documentation to DOE necessary to complete a National Environmental Policy Act (NEPA) review of the proposed testing, including the completion of a Biological Evaluation, if necessary.

Project work would involve mechanical assembly, welding, and the use of powered machinery. All such activities would be performed at controlled laboratory and manufacturing facilities that work with manufacturing equipment as part of their regular course of business. Potential hazards would be mitigated through adherence to established institutional health and safety policies and procedures. Protocols would include the use of appropriate personal protective equipment, routine safety monitoring, and the preparation of safety plans and hazard analyses. The mooring test machine to be used by University of Exeter is a purpose built test rig that is regularly used for testing of the nature described above. All applicable operational safety protocols would be observed when utilizing this machinery. PCCI and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

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
Tasks 1 – 6 of Sub Award to PCCI

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

Tasks 7 -8 of Sub Award to PCCI
Budget Period 4

Notes:

This NEPA determination does require a tailored NEPA provision
Wind Energy Technology Office
Review completed by Jonathan Hartman, 08/19/2021

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**
NEPA Compliance Officer

Date: 8/20/2021

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: _____

Field Office Manager

Date: _____