

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



RECIPIENT: University of New Hampshire

STATE: NH

PROJECT TITLE: An Atlantic Marine Energy Center (AMEC) for Advancing the Marine Renewable Energy Industry and Powering the Blue Economy

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002234	DE-EE0009450	GFO-0009450-006	GO9450

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.
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.
B5.25 Small-scale renewable energy research and development and pilot projects in aquatic environments	Small-scale renewable energy research and development projects and small-scale pilot projects located in aquatic environments. Activities would be in accordance with, where applicable, an approved spill prevention, control, and response plan, and would incorporate appropriate control technologies and best management practices. Covered actions would not occur (1) within areas of hazardous natural bottom conditions or (2) within the boundary of an established marine sanctuary or wildlife refuge, a governmentally proposed marine sanctuary or wildlife refuge, or a governmentally recognized area of high biological sensitivity, unless authorized by the agency responsible for such refuge, sanctuary, or area (or after consultation with the responsible agency, if no authorization is required). If the proposed activities would occur outside such refuge, sanctuary, or area and if the activities would have the potential to cause impacts within such refuge, sanctuary, or area, then the responsible agency shall be consulted in order to determine whether authorization is required and whether such activities would have the potential to cause significant impacts on such refuge, sanctuary, or area. Areas of high biological sensitivity include, but are not limited to, areas of known ecological importance, whale and marine mammal mating and calving/pupping areas, and fish and invertebrate spawning and nursery areas recognized as being limited or unique and vulnerable to perturbation; these areas can occur in bays, estuaries, near shore, and far offshore, and may vary seasonally. No permanent facilities or devices would be constructed or installed. Covered actions do not include drilling of resource exploration or extraction wells, use of large-scale vibratory coring techniques, or seismic activities other than passive techniques.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the University of New Hampshire (UNH) to lead a consortium which would include UNH, Stony Brook University (SBU), Lehigh University (LU), and the Coastal Studies Institute (CSI; administered by East Carolina University) to establish the Atlantic Marine Energy Center (AMEC). In addition to establishing AMEC organizational structure, participants, and research capabilities, award activities would include laboratory and field research.

DOE previously completed five NEPA Determinations (NDs) (GFO-0009450-001, 08/20/2021: A9, A11, B3.6, B5.15;

GFO-0009450-002, 03/03/2022: A9, B3.6; GFO-0009450-003, 03/14/2022: A9, B3.6; GFO-0009450-004, 07/22/2022: A9, B3.6, B5.25; GFO-0009450-005, 03/12/2024: A9, B1.31, B3.6, B3.16) which did not apply to Budget Period (BP)2 activities. This ND applies only to BP2 Tasks 10-13 (all Subtasks), Subtasks 14.1, 14.3-14.9, and Tasks 16-22 (all Subtasks). DOE will complete the NEPA review for Subtasks 14.2 and Task 15 when sufficient information is available to conduct a meaningful review.

BP1 Subtasks 4.2-4.7 activities would continue into BP2. These activities have already been reviewed under ND GFO-0009450-002 (Subtasks 4.3-4.7) and ND GFO-0009450-005 (Subtask 4.2).

Tasks 10-12 would include the continued operation of AMEC, engagement with Marine Energy Industry stakeholders, and education and workforce development activities. All activities in tasks 10 through 12 would be intellectual, academic, or analytical in nature.

Task 13 would include completion of the Jennette's Pier green energy hub installation and testing initiated in subtask 4.9, which was reviewed under ND GFO-0009450-002. A final report for the green energy hub would also be completed in this task.

Task 14 would include completion of the steps necessary to achieve designation of two of the proposed open ocean testing facilities in AMEC (UNH Memorial Bridge and Jennette's Pier) as marine energy test centers. The proposed activities of Task 14 subtasks are described below:

Subtask 14.1: Prepare for tidal energy converter testing (demonstration of proficiency) at the UNH Tidal Energy Test Site at Memorial Bridge, including review of existing standard operating procedures (SOPs) and development of additional SOPs as needed.

Subtask 14.2: Conduct an in-water test of a current energy converter at the UNH Tidal Energy Test Site at Memorial Bridge. This activity would have the potential to impact Endangered Species Act listed species, Essential Fish Habitat, and marine mammals. Additional information will need to be provided to DOE before a meaningful NEPA review can be completed. As such, this subtask is restricted and not covered under this ND.

Subtask 14.3: Prepare for wave energy converter (WEC) testing (demonstration of proficiency) at the CSI Wave Energy Test Site at Jennette's Pier, including review of existing standard operating procedures (SOPs) and development of additional SOPs as needed.

Subtask 14.4: Conduct an in-water test of a WEC at the Jennette's Pier Wave Energy Test Center, which is located alongside the existing Jennette's Pier (North Carolina Aquarium Division, NC Department of Natural and Cultural Resources). The device deployment area is approximately 50 meters from the pier, 200 meters from shore, and measures 50 square meters. The WEC testing would occur for 30 days and only a single device measuring approximately six feet in diameter would be deployed at a time. All equipment cables and lines would run to Jennette's Pier along the seafloor and would not be suspended in the water column. The device would be moored at an existing mooring anchor. The device would be deployed using boats and divers launched from shore (Zodiac or kayak) or the pier (divers).

The area of the beach around Jennette's Pier is very populated most of the year, with little to no wildlife species presence. Based on the lack of species presence, temporary nature of the device testing, and the few lines associated with the device running along the seafloor to the pier, the U.S. Army Corps of Engineers (USACE) made a no effect determination for the proposed activities and issued CSI a Nationwide Permit 5 (Scientific Measurement Devices) that expires in March 2026. DOE concurs with this determination. CSI would comply with all conditions of the USACE permit, including those relating to the Endangered Species Act and the Marine Mammal Protection Act.

In the unlikely event that a West Indian manatee is observed within 50 feet of project activities, all in-water operations, including vessels, must be shut down. Activities will not resume until the manatee has departed the project area on its own volition (i.e., it may not be herded or harassed from the area). The recipient must inform the DOE Project Officer if a manatee is observed during the project.

Activities at Jennette's Pier would involve transport on boats, diving, handling of equipment and instrumentation, and conducting activities on an open-water research platform. Mitigation of the hazards associated with those activities would include following existing environmental health and safety procedures such as the East Carolina University (ECU) Boating Safety Manual, ECU Severe Weather and Emergency Plan, ECU Diving Safety Manual, certification of all personnel operating heavy equipment, and an NREL General Safe Work Permit.

Subtasks 14.5-14.9: Continue permitting and NEPA discussions for open water testing sites in accordance with the permitting plan developed in BP1 and provide feedback on applicable marine energy standards used in accreditation.

Task 15 would include detailed characterization of the UNH Tidal Energy Test Site at Memorial Bridge. Collection of bathymetry data would involve using stationery and vessel mounted acoustic doppler current profilers (ADCPs) and acoustic doppler velocimeters (ADVs). This activity would have the potential to impact Endangered Species Act listed species, Essential Fish Habitat, and marine mammals. Additional information will need to be provided to DOE before a meaningful NEPA review can be completed. As such, this task is restricted and not covered under this ND.

Task 16 would include conducting laboratory experiments of marine hydrokinetic (MHK) devices over mobile beds at the LU mobile sediment flume, constructing computational models and conducting numerical simulations, creating a digital map of the UNH sediment transport test site in Portsmouth Harbor using available site-specific bathymetry,

sediment characteristics, and hydrodynamic data, and using the digital twin of the test site in Portsmouth Harbor to computationally investigate the interaction of various MHK devices and arrays. All activities would occur in purpose-built facilities and no additional permits, licenses, or authorizations would be required. No field work or field data gathering would take place.

Task 17 would include conducting a WEC pump case study using the device and results collected from Task 9 (BP1), design of a commercial scale system, and providing feedback on WEC marine energy standards. Activities would occur in purpose-built UNH facilities. No field work or field data gathering would take place.

Task 18 would include the development and validation of reduced order models (ROMs) that could be used to efficiently optimize tidal turbine arrays in real-life settings. The previously simulated UNH Memorial Bridge site would be used for demonstration. All work would be computational.

Task 19 would include the development and demonstration of a simulation platform and associated modules that would allow analysts to predict the performance of coastal electric infrastructure systems and their ability to serve local communities during and after hurricane events. Activities would also include industry engagement and solicitation of expert feedback to inform methodology refinement. No field work or field data gathering would take place.

Task 20 would include collecting soil-foundation interaction (SFI) test data and creating interface degradation models to develop design criteria for foundations supporting MHK systems. Testing would occur at the SFI facility at LU. All activities would occur in purpose-built facilities and no additional permits, licenses, or authorizations would be required. Existing university health and safety policies and procedures would be followed.

Task 21 would include developing optimization models for two supply chains related to marine renewable energy (MRE): the supply chain of durable goods that enable MRE (MREG), and the supply chain of the energy itself produced by the MRE system (MREE). No field work or field data gathering would take place.

Task 22 would include investigation of storage integration across MRE from Power Grid to Blue Economy Markets. AMEC's laboratory microgrids (e.g., CSI's Green Energy Hub microgrid at Jennette's Pier and the energy-water microgrid (EWM) at Shoals Marine Lab) would be evaluated as test cases. No field work or field data gathering would take place.

Apart from the in-water WEC testing at Jennette's Pier, all project activities would be completed in existing, purpose-built facilities. No facility modifications would be needed to perform project activities. Potential hazards include the handling and use of machine tools and hydraulics. Award recipients would adhere to established health and safety policies and procedures when performing project work, and would observe all applicable federal, state, and local health, safety, and environmental regulations.

Information gathering and data analysis work would be conducted by UNH, SBU, LU and CSI at university or other office locations. Additional analytical work would be performed at Old Dominion University. Technical advice and other assistance would be received from The National Renewable Energy Laboratory, Sandia National Laboratory, the Pacific Northwest National Laboratory, and the European Marine Energy Center (Orkney, Scotland and Ocean City, New Jersey offices). All such work would be conducted in office environments, or in computer laboratory environments. Existing university and corporate health and safety standards would be followed.

DOE has considered potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate adverse impacts on these resources.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a conditional NEPA determination.

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

Tasks 10-13 (all Subtasks)
Subtasks 14.1 and 14.3-14.9
Tasks 16-22 (all Subtasks)

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

Subtask 14.2

Task 15

Include the following condition in the financial assistance agreement:

All in-water operations, including vessels, must be shut down if a manatee comes within 50 feet of the project activities. Activities will not resume until the manatee has departed the project area on its own volition (i.e., it may not be herded or harassed from the area). The recipient must inform the DOE Project Officer if a manatee is observed during the project.

Notes:

Water Power Technologies Office (WPTO)
This NEPA determination requires legal review of the tailored NEPA provision.
NEPA review completed by Melissa Parker, 03/18/24

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: Andrew Montano Date: 3/20/2024
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