

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



RECIPIENT: University of New Hampshire

STATE: NH

PROJECT TITLE : Bi-Partisan Infrastructure Law (BIL) DOE Funding for activities at the National Marine Energy Centers –Atlantic Marine Energy Center

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
Bi-Partisan Infrastructure Law (BIL)	DE-EE0011379	GFO-0011379-001	GO11379

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.)

A11 Technical advice and assistance to organizations

Technical advice and planning assistance to international, national, state, and local organizations.

B1.31 Installation or relocation of machinery and equipment

Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.

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.

B3.16 Research activities in aquatic environments

Small-scale, temporary surveying, site characterization, and research activities in aquatic environments, limited to: (a) Acquisition of rights-of-way, easements, and temporary use permits; (b) Installation, operation, and removal of passive scientific measurement devices, including, but not limited to, antennae, tide gauges, flow testing equipment for existing wells, weighted hydrophones, salinity measurement devices, and water quality measurement devices; (c) Natural resource inventories, data and sample collection, environmental monitoring, and basic and applied research, excluding (1) large-scale vibratory coring techniques and (2) seismic activities other than passive techniques; and (d) Surveying and mapping. These activities would be conducted in accordance with, where applicable, an approved spill prevention, control, and response plan and would incorporate appropriate control technologies and best management practices. None of the activities listed above would occur 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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the University of New Hampshire (UNH) to support operations at the Atlantic Marine Energy Center (AMEC). The DOE Water Power Technologies Office (WPTO) previously provided funding support for the establishment of four National Marine Energy Centers (NMECs) to increase marine energy research and development and bolster testing infrastructure. The AMEC is one of the four NMECs established under the program and includes UNH (Durham, NH), Stony Brook University (SBU; Stony Brook, NY), Lehigh University (LU; Bethlehem, PA), and the Coastal Studies Institute (CSI; Wanchese, NC).

Tasks would be completed over a 60-month budget period. Proposed project activities would include marine energy short course development and implementation, AMEC strategy development and implementation, research and development (R&D) to support marine energy industry advancement, and improvements to AMEC infrastructure.

This ND applies only to Tasks 1, 2, 4, 5, and 6 (all Subtasks) and Subtasks 3.2-3.12. DOE would complete the NEPA review for Subtask 3.1 (Measurements and modeling at a tidal energy site in support of Digital Twinning) when sufficient information is available to conduct a meaningful review.

Tasks 1 and 2 would include the development and implementation of a series of marine energy short courses and a strategic vision for AMEC. These activities would be completed in coordination with other NMECs. Tasks 5 and 6 would involve development of a community benefits plan and program performance reviews. All activities in Tasks 1, 2, 5, and 6 would be intellectual, academic, or analytical in nature.

Subtask 3.1 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 velocity meters (ADV). This activity would have the potential to impact Endangered Species Act (ESA) listed species and marine mammals. However, additional information would need to be provided to DOE before a meaningful NEPA review could be completed. As such, this task is restricted and not covered under this ND.

Subtask 3.2 would involve researching the structural performance of tidal turbine blades under turbulent loading. These activities would occur at LU testing facilities.

Subtask 3.3 would involve digital twinning of marine hydrokinetic turbines at laboratory scale considering blade hydroelasticity and wave-current conditions. These activities would occur at SBU, LU and UNH facilities.

Subtask 3.4 would involve comprehensive wave energy converter (WEC) modeling, laboratory testing, and scale-up. These activities would occur at UNH facilities.

Subtask 3.5 would involve the continued development of a wave-powered water pump that could be used to promote growth in aquaculture systems. These activities would occur at UNH facilities and would use existing data from UNH open water sites.

Subtask 3.6 would involve the optimization of anchor system assessment for marine renewable energy systems. These activities would occur at UNH facilities and would use existing data from UNH open water sites, and if feasible, data from complementary projects.

Subtask 3.7 would involve the development of innovative shallow and deepwater anchoring systems in support of advancing the deployment of marine energy arrays. These activities would occur at North Carolina State University (NCSU), University of North Carolina – Charlotte (UNC-C), and LU facilities.

Subtask 3.8 would involve numerical simulations and laboratory testing to explore the potential of marine renewable energy devices to passively adapt to variable flow conditions and display improved energy generation capacity. These activities would occur at SBU and LU testing facilities.

Subtask 3.9 would involve the development of a framework for establishing risk-averse offshore energy portfolios and assessment of their techno-economic potential in conjunction with the U.S. Eastern Interconnection system. These activities would occur at CSI, NCSU, and LU computing laboratories.

Subtask 3.10 would involve the use of existing marine data to complete a spatial sustainability assessment of marine energy systems and their applications in islanded microgrids. These activities would occur at Shoals Marine Laboratory, Appledore Island, ME, and would use data from other island communities in the Northeast or Gulf of Maine.

Subtask 3.11 would involve modeling real-time stable marine energy microgrid power management for coastal communities. These activities would occur at LU facilities.

Subtask 3.12 would involve assessing the social acceptability of marine renewable energy on the Atlantic Coast. These activities would occur at the CSI research campus.

Subtask 4.1 would involve infrastructure improvements at UNH, including fabrication of a Wave Energy Converter Reference Model (WEC-RM) – a physical model for wave tank testing and validation of numerical models; procurement and installation of a new motion tracking system for the UNH wave tank; modification and upgrades to the UNH geotechnical centrifuge; selection, procurement, and integration of an environmental monitoring system for the UNH Tidal Energy Test Site (TETS); design, fabrication, and installation of a test bed at the UNH Engineering Tank; and procurement and integration of a towable underwater optical flow measurement system for the UNH towing tank and turbine test beds.

Installation of instrumentation at the UNH TETS would involve transport on small boats, handling of equipment and instrumentation, and activities on an open-water research platform. Hazards would be mitigated by following existing environmental health and safety (EH&S) procedures for UNH and UNH Marine Facilities. On March 6, 2024, the National Marine Fisheries Service concurred that this type of activity at TETS would not be likely to adversely affect any protected species in the area.

Subtask 4.2 would involve infrastructure improvements at SBU, including procurement and installation of a 3D printer, hot press, and vacuum assisted resin transfer molding station; development of a dedicated testing platform to allow rapid evaluation of turbine blade prototypes under static, dynamic and fatigue loads; and upgrades for the SBU high-performance computing cluster.

Subtask 4.3 would involve infrastructure improvements at LU, including procurement and integration of a multi-port converter system into the existing hardware-in-the-loop microgrid facility, a compact shake the box 3D particle imaging velocimeter, and instrumentation upgrades for the Tidal Turbulence Test Facility turbine testbed.

Subtask 4.4 would involve infrastructure improvements at CSI, including procurement and deployment of experimental systems for environmental characterization and monitoring during marine energy research and testing at CSI's Jennette's Pier Wave Energy Test Center (Nags Head, NC). A metocean buoy and acoustic wave and current profiler (AWAC) would be added to complement observation data currently used at Jennette's Pier, which includes two SoFar Buoys. The device deployment area at the pier is approximately 50 meters from the pier, 200 meters from shore, and measures 50 square meters. Deployments would be temporary, and all equipment cables and lines would run to the pier along the seafloor and would not be suspended in the water column.

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 these types of 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 would 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 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 CSI environmental health and safety procedures.

All proposed project work would be performed at existing, purpose-built facilities. No changes to the use, mission, or operation of these facilities, modifications, or ground disturbing activities would be required. No additional permits, licenses, or authorizations would be required.

Proposed activities would involve typical hazards associated with research laboratories and testing facilities. All AMEC partner universities have protocols in place for proper hazardous material handling and disposal. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Existing health and safety policies and procedures set forth by the universities' EH&S offices would be followed, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments.

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.

DOE has made a conditional NEPA determination.

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

- Tasks 1 and 2 (all Subtasks)
- Subtasks 3.2-3.12
- Tasks 4, 5, and 6 (all Subtasks)

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

- Subtask 3.1

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 project activities at Jeanette’s Pier. Activities would 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, 06/27/24

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.

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**
NEPA Compliance Officer

Date: 7/1/2024

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: _____