

PMC-ND
(1.08.09.13)

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



RECIPIENT: [NREL](#)

STATE: CO

PROJECT TITLE: [NREL-20-028 Wave Buoy Deployment - Buxton, NC](#)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-AC36-08GO28308	NREL-20-028	GO28308

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:

- 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.
- 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.)

Rationale for determination:

The U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) is proposing to deploy one Waverider buoy to collect wave resource measurements off the coast of Buxton, North Carolina. The purpose of the project is to validate high-resolution numerical wave models of the region, and to provide industry with resource information of the site. The project is part of a multi-laboratory project led by NREL in collaboration with Pacific Northwest National Laboratory and Sandia National Laboratory.

NREL would subcontract with East Carolina University's Coastal Studies Institute (CSI) to deploy, maintain, and recover one NREL-owned Datawell Waverider DWR4/ACM wave and water current measurement buoy. The proposed project area is located approximately 15 nautical miles offshore of Buxton, North Carolina (approximate location: 35.25923°N, 75.28612°W) at approximately 26 m (85 ft) water depth. The buoy would be deployed and retrieved using a CSI-owned research vessel, a 42' Duffy named the R/V Miss Caroline. The deployment period would be for 12 months, and deployment of the buoy would occur in May or June of 2021.

Buoy Preparation

The buoy would be shipped from NREL to CSI. The buoy would be prepared, inspected, and assembled in

accordance with manufacturer recommendations at the CSI marina garage in Wanchese, North Carolina. Once assembled, the buoy would be loaded onto the vessel at the CSI marina before traversing to the project location.

Buoy Components

The buoy is 0.9 m (~3 ft) in diameter and weighs nearly 200 kg (~440 lbs). The buoy floats on the ocean's surface, half-submerged, and is mounted with an anti-spin triangle (each side of the triangle is approximately 1.5 m (5 ft) in length), an HF whip antenna extending 1.95 m (6.4 ft) upward from the top of the buoy for data transmission, and an LED flasher at the end of the antenna. The buoy would be anchored to the seafloor with a scrap steel chain anchor. The anchor would have an anchor weight of approximately 500 kg (1102 lbs) and would have a footprint of approximately 1 m² (10.8 ft²) on the seafloor. Once deployed, the buoy remains in a 'watch circle' about its mooring and can move only 10 m (33 ft) horizontally in any direction from its position directly above the anchor. The buoy houses sensors to measure waves, surface currents, and water temperature. The buoy also contains components that provide power, communications, and data storage.

Buoy Deployment

Upon arrival at the project location, the team would conduct a side scan survey to verify that there are no underwater obstacles that could complicate the deployment of the buoy within a 200 square meter area. Once verified, the buoy and mooring line would be paid out from the stern of the vessel using the deck winch, A-frame, and controlled release system, followed by the anchor. The round-trip deployment effort would be completed in one day, with an approximately 6-hour round-trip travel time and 2-hour deployment. All work would occur during daylight.

During the research period, the team would be on standby in the event an emergency recovery is required. The team would be alerted in near-real time if the buoy goes outside of a specified water circle, the buoy stops reporting, or if the buoy begins reporting spurious data from the current meter, wave temperature sensor, or wave accelerometers.

Buoy Retrieval

At the conclusion of the deployment period, the research team would use the R/V Miss Caroline and the same route of transit to recover the buoy and mooring system. Once at the deployment site, two divers would separate the buoy from the mooring line. The buoy would then be lifted from the water using the A-frame and winch and secured on deck. Once secured, the divers would re-enter the water to retrieve the mooring line, and a decision would be made to recover the anchor.

Chain pile anchors are not usually retrieved; however, if it is safe for the team to recover the anchor (i.e. the anchor has not experienced significant corrosion) they would do so. If it is not safe, the anchor would be abandoned in place on the seafloor. If it is safe to recover the anchor, the dive team would place lift bags to provide approximately 300 pounds of buoyancy to the chain pile. The divers would return to the vessel and the crew would retrieve the mooring line and stow it on deck. The anchor line would be fastened to the deck winch line and the anchor would be hauled aboard and secured.

The R/V Miss Caroline would return to the CSI marina and the equipment would be shipped back to NREL for use in future research.

Permitting

Prior to commencing project activities, the team would obtain all required permits. Permits that could be required include: U.S. Army Corps of Engineers Nationwide Permit #5, Scientific Measurement Devices; U.S. Coast Guard Private Aids to Navigation or Notice to Mariners; and/or a Land Use permit. Project activities shall not commence until all required permits have been obtained.

NMFS Consultation

There are 11 federally listed endangered species that could occur in the proposed project area. These species are: Green turtle (North Atlantic and South Atlantic (SA) distinct population segment (DPS)); Kemp's Ridley turtle; Leatherback turtle; Loggerhead sea turtle (Northwest Atlantic DPS); Hawksbill turtle; Atlantic Sturgeon (Carolina, SA, Chesapeake Bay, New York Bight, Gulf of Maine DPSs); Giant manta ray; North Atlantic right whale; Fin whale; Sei whale; and Sperm whale. The proposed project location also includes designated critical habitat for one species, the Loggerhead sea turtle. DOE requested expedited informal Endangered Species Act (ESA) consultation with the National Marine Fisheries Service (NMFS) on February 1, 2021.

Physical effects to species could include collisions with the vessel and/or project equipment during deployment and retrieval. The likelihood of this is low due to the short timeframe needed to deploy and retrieve project equipment, limited number of vessel trips (2 trips each), and presence of a marine mammal observer aboard the vessel. All in-water work would be delayed or stopped if a marine mammal is within 50 yards of the vessel, and vessel operators would watch for and avoid marine species in accordance with NMFS-recommended best management practices (BMPs).

Marine species could be entangled with the mooring line, but the likelihood is low due to the taught line configuration. In addition, the buoy would have a GPS to alert the project team in near real time if the buoy goes outside of a specified water circle indicating that it is adrift, the buoy stops reporting, or the buoy beings reporting spurious data from the current meter, water temperature sensor, or wave accelerometers. If altered, the team would initiate an emergency response to travel to the deployment site to remedy the situation as quickly as possible.

NMFS concurred with DOE's determination that the proposed project is not likely to adversely affect the NMFS ESA-listed species and designated critical habitat. The letter of concurrence was received by DOE on February 2, 2021.

Additional Impacts

Cultural resources were not identified in the project area. The chain pile anchor would disturb approximately 1 square meter (10.8 square feet) of the seafloor, which would not affect the use of the area by marine life or human activity. Temporary deployment of project equipment and operation of the vessel would not affect the use, availability, or quality of water resources, or planned or ongoing land uses. Vessel use would result in de minimus air emissions, and noise generated from the vessel during transit to and from the project locations would be short-term and intermittent.

Individuals working on this project could be exposed to various hazards during equipment assembly, testing, deployment, and retrieval. Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, and engineering controls; additional policies and procedures would be implemented as new health and safety risks are identified. A Marine Safe Work Plan and dive plan would be developed prior to commencing project activities. Project activities would be conducted in accordance with all applicable policies, procedures, and safety requirements.

The planned duration of the proposed deployment is for 12 months, and it is possible that the deployment period could be extended 12-24 months beyond what is planned. If this occurs, DOE shall reinitiate ESA consultation with NMFS, and the research team shall update or obtain permits as necessary.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

All required permits, permissions, notifications, and approvals shall be received prior to commencing project activities.

The research team shall abide by the mitigation measures outlined in DOE's consultation letter with NMFS. Mitigation measures include: adherence to NMFS recommended BMPs; watching out for and avoiding interactions with giant manta ray; and immediately reporting any interaction with a protected species to NOAA Fisheries SERO PRD and the local authorized stranding/rescue organization.

If the project is to be extended beyond the initial 12-month period, DOE shall reinitiate ESA consultation with NMFS, and the research team shall update or obtain new permits as necessary.

Notes:

NREL
Nicole Serio 2/25/2021

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.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  **Electronically Signed By: Lisa Jorgensen** Date: 2/25/2021
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