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

RECIPIENT: University System of New Hampshire **STATE:** NH

PROJECT TITLE : Center for Ocean Renewable Energy (CORE) Infrastructure Enhancements

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
FY10 CDP	DE-EE0003263	GFO-0003263-002	GO3263

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

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 US Department of Energy (DOE) is proposing to provide federal funding to the University of New Hampshire (UNH) Center for Ocean Renewable Energy (CORE) to develop a tidal energy testing site at the General Sullivan Bridge (GSB) in Great Bay Estuary, Newington, New Hampshire. The purpose of the tidal energy testing site would be to deploy tidal energy devices that have been developed in the laboratory and are ready for field testing to optimize their performance and durability. A testing platform would be designed, fabricated, and used to deploy and test tidal energy devices at the GSB site.

DOE completed a previous NEPA determination for Tasks 2 and 3 (GFO-0003263-001 CX A9, B3.1 and B3.6 06/28/2011) which included laboratory upgrades and environmental monitoring buoy replacement. This NEPA determination applies to Task 1, fabrication and deployment of the test platform to the project site, and monitoring and testing of tidal energy devices (turbines).

The project site is located in the Piscataqua River at the entrance to Great and Little Bays, where there is a natural constriction in water flow between the bays upstream and Atlantic Ocean downstream. The Little Bay and General Sullivan Bridges cross the constriction point. The proposed project would be located upstream of the bridges, adjacent to the General Sullivan Bridge. The river channel is 452 meters wide at Lower Low Water (LLW) with a river cross-sectional area of 2,200 square meters. The water depth at the site is approximately eight meters at LLW. Substrate at the test site consists of bedrock and coarse sand.

The tidal energy test platform would be a pontoon-based barge that can be moved readily between shore for storage and the testing site. The test platform would be placed at the site only when devices are being tested. Once each device testing period is completed, the platform would be removed from the site and towed back to UNH facilities. It is not expected that the test platform would be a permanent fixture at the site. The test platform would have a deck area of 60 feet long x 30 feet wide. The platform would be designed for testing multiple scenarios such as vertical and horizontal axis turbines, cross flow and parallel flow turbines and un-shrouded and shrouded turbines.

The actual physical size of the turbines that would be deployed from the test platform would range in size, depending on type, as follows: in-stream or horizontal axis up to 4 meters in diameter; cross stream (often vertical axis) 3 meters in diameter and 5 meters long; and ducted turbines which average one to two meters in diameter. Anticipated testing periods could be as little as half a tidal cycle (e.g. flood or ebb) lasting approximately 6 hours to a full lunar phase cycle which is about one month. The mooring system for the tidal turbine testing platform would require the drilling of four (4) holes, with a maximum diameter of five inches each to a depth of five meters into the rock bottom of the estuary at the GSB site. These four holes would total approximately 0.7 square feet of estuary bottom. The mooring pins would be grouted into place. Any electricity produced by the test turbines would be collected in a battery storage tank. There are no cables or powerlines associated with the proposed project. The only in-water maintenance would be related to the mooring pins in the event that they are not functioning properly.

The proposed project activities would include monitoring the platform and turbine interactions with the environment as well as measuring turbine performance such as rotor efficiency and power output. Environmental monitoring of fauna, flora and substrate would be accomplished with several methods. Six video cameras suspended from the platform would be positioned around the turbine to capture interactions with fish and other animals. For the pre-platform installation benthic video surveys, a video camera in a purpose-made rig would be lowered from a moored vessel or possibly carried by divers to record a baseline for the benthic environment at the project site prior to devices being tested. For benthic video surveys after platform installation and during device testing, the camera rig would be lowered off of designated locations on the test platform itself. A hydrophone deployed from a boat or the platform would be used to collect data on ambient noise levels of the turbines and the underwater environment of the site in general. Instrumentation that would measure turbine performance dynamics would be chosen based on the device being tested. However, equipment used to measure torque, load, efficiency, power, etc. would be fitted to the device itself. It would consist of small plastic and metal hardware encasing a battery, transmitter and strain gauge, and is not expected to increase the footprint of the test platform.

DOE has completed a thorough review of potential impacts that could occur to the natural environment as a result of the proposed project. DOE initiated formal consultation with the National Marine Fisheries Service (NMFS) to comply with Section 7 of the Endangered Species Act and the Magnuson-Stevens Act. NMFS concurred with DOE's determination that the proposed project would not have adverse effects on threatened and endangered species or essential fish habitat (EFH). UNH has submitted a monitoring plan to NMFS that satisfies the EFH conservation recommendation set forth by NMFS in their response to the EFH assessment. The New Hampshire Fish and Game have also concurred with DOE's determination that the proposed project would not have adverse effects on EFH. The New England district of the United States Army Corps of Engineers (USACE) has reviewed the proposed project as part of their NEPA and permitting obligations and has determined that UNH CORE's testing platform project would have only minimal individual and cumulative impacts on U.S. waters including wetlands. USACE has authorized the proposed project as a Category I activity under the New Hampshire Programmatic General Permit (PGP). The New Hampshire Dept. of Environmental Services (NHDES) Wetlands Bureau has reviewed the proposed project and issued Wetlands Permit #2011-02356 which allows disturbance of 6 square feet of estuarine bottom for installation of the mooring pins. There are not expected to be adverse effects to wetlands as a result of the proposed project. The New Hampshire Division of Historical Resources has reviewed the proposed project and concurs with DOE that there would be no adverse effect to historic properties near the proposed project site. UNH has executed a Memorandum of Understanding (MOU) with the New Hampshire Dept. of Transportation (NHDOT) which recognizes UNH's proposed project adjacent to the GSB owned and managed by NHDOT. The proposed project is required to obtain a U.S. Coast Guard Private Aids To Navigation (PAToN) permit prior to deployment of any structures into the water and would operate within the conditions set forth in the permit.

Based on the review of the project information and the above analysis, DOE has determined the design, fabrication, and deployment of a tidal turbine test platform and subsequent testing of tidal energy devices would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion B5.25 "Small-scale renewable energy research and development and pilot projects in aquatic environments," and is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Insert the following language in the award:

You are required to:
The recipient is required to perform a qualitative video survey of the benthic environment at the test site following procedures established in the National Marine Fisheries Service (NMFS)-recommended monitoring plan. In addition, the recipient is required to provide NMFS with a copy of the pre-construction monitoring report and a copy of each annual monitoring report for the life of the project. The recipient is required to conduct the proposed project activities in accordance with the conditions set forth in all required permits and the New Hampshire Department of Transportation MOU. The recipient is required to submit a copy of all permits to the DOE upon request.

Allowed activities include all Subtasks under Task 1 as described in the finalized SOPO and the monitoring and testing of MHK devices using the test platform as described in the DOE NEPA determination (GFO-0003263-002). If the project scope is revised in such a manner that affects the basis for this DOE NEPA determination or the completed Endangered Species Act and Essential Fish Habitat consultations, the recipient is required to submit the revisions to DOE for additional NEPA review prior to commencement of these activities."

Note to Specialist :

Water Power Program

This NEPA determination requires a tailored NEPA provision. Please see notes in the "You are required to" section above.

Review completed by Logan Sholar, 4/29/2015

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray /Lori Gray/ Date: 4/29/2015
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager