PMC-EF2a

(2.06.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: University of Maine AEWC Advanced Structures and Composites Center **STATE:** ME

PROJECT TITLE: Recovery Act: DeepCwind Consortium National Research Program: Validation of Coupled Models and Optimization of Materials for Offshore Wind Structures

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000090	DE-EE0002981	GFO-10-121	EE2981

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:

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

B3.1 Onsite and offsite site characterization and environmental monitoring, including siting, construction (or modification), operation, and dismantlement or closing (abandonment) of characterization and monitoring devices and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis. Activities covered include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. Specific activities include, but are not limited to:

B3.3 Field and laboratory research, inventory, and information collection activities that are directly related to the conservation of fish or wildlife resources and that involve only negligible habitat destruction or population reduction

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

The objective for this project is to focus on furthering the development of floating offshore wind farm technologies for deep water deployments. Project activities will include curriculum development; field studies; environmental monitoring; cost analyses; lab studies to validate aeroelastic-hydrodynamic models and floating platform designs for floating turbines; and the installation of one to three scale-model floating wind turbine platforms.

Wind turbine platforms will not be fabricated or deployed at the University of Maine Deepwater Offshore Wind Test Site under this Department of Energy award. Additional Congressionally Directed funding will cover these tasks and preliminary Environmental Assessment preparations have already occurred for these activities.

Tasks for the entire project, including CDP funding, are as follows:

**Task 1.0 Micrositing, Geophysical Investigations, and Geotechnical Engineering (seismic reflection, multi-beam bathymetric and side scan sonar survey techniques)
*Subtask 1.1 Seafloor geophysical investigations to assess sediment stratigraphy and the presence of historical resources,
*Subtask 1.2 Geotechnical investigations: sediment sampling for laboratory testing and centrifuge modeling of sediment-anchor interaction.
*Subtask 1.3 Site plans and documentation

**Task 2.0 Study of Environmental/Ecological Impacts
*Subtask 2.1 Benthic invertebrates and sediments (switchback sampling)
*Subtask 2.2 Fish (acoustic monitoring)
*Subtask 2.3 Marine mammals (acoustic monitoring)
*Subtask 2.4 Birds and bats (horizontal and vertical array marine surveillance radar system monitoring techniques)

**Task 3.0 Permitting and Policy

**Task 4.0 Floating Turbines Design and Lab Testing
*Subtask 4.1: Initial platform evaluation and down select for tank testing

*Subtask 4.2: Perform tank testing of selected concepts
*Subtask 4.3: Validate/revise coupled aeroelastic/hydrodynamic models
*Subtask 4.4: Develop preliminary platform designs and concept estimates
*Subtask 4.5: Platform optimization and lab testing of hybrid composite components
*Subtask 4.6: Begin final design of floating platform(s)

**Task 5.0 Offshore turbine testing, monitoring, and reliability
*Subtask 5.1 Physical Ocean environment monitoring
*Subtask 5.2 Test turbine instrumentation and monitoring
**Task 6.0 Education and Outreach
*Subtask 6.1 Develop Master of Science degree model
*Subtask 6.2 Develop undergraduate minor in deepwater wind energy
*Subtask 6.3 Develop associates degree program in wind power technology

**Task 7.0 Project Management and Reporting

Task 1 (subtasks 1.0 – 1.3) will involve field studies that will provide characterization of the seafloor environment for turbine anchoring at the University of Maine Deepwater Offshore Wind Test bed located in the Gulf of Maine. Activities will include Seismic reflection profiling which involves using a "boomer" seismic system towed behind Maine Maritime Academy's R/V Friendship vessel. Approximately 3 km2 of seafloor will be explored across three locations over areas that have the most potential for turbine siting. Small quantities of bottom sediment samples will be collected at sites where survey data is inconclusive. Surveys will be used to determine seabed bathymetry, surficial material types and their spatial variability, and important geologic features such as prehistoric, submerged coastlines or basins of potential archeological significance.

Task 2 (subtask 2.1) will involve environmental monitoring for potential turbine siting locations. Activities under this task will include additional seafloor characterization by use of a Remote Operating Vehicle (ROV) which will be equipped with a video camera. This devise will be remotely driven along the seafloor using a switchback sampling design covering the same area from task 1.

Task 2 (subtasks 2.2 and 2.3) will involve underwater acoustic monitoring and recording of fish and cetacean species. Acoustic monitoring systems will be deployed into the test and control sites and used to analyze the distribution of local fish populations. Autonomous passive acoustic recorders will be used to monitor the presence and activity of marine mammal populations. Both systems are relatively small and will be lowered to the sea floor to record activity throughout the duration of the project.

Tasks 2 (subtask 2.4) will involve species and habitat monitoring on regional ocean dependant avian species. The monitoring will be conducted by using a horizontal and vertical array marine surveillance radar system around the proposed region for control data. This system will be located adjacent to the proposed turbine installation sites, and will be used throughout the duration of the project.

The University of Maine's Deepwater Offshore Wind Test Site area has undergone comprehensive review at the state level. Per LD1465, the Maine state statute that allows the establishment of the Test Site, the following state and federal agencies will be consulted, provided with copies of the site, navigation, project removal, remedial action, and environmental/ecological monitoring plans, and provided reports and updates on site activities:

* Department of Marine Resources
* Department of Inland Fisheries and Wildlife
* Department of Conservation
* Coast Guard
* Army Corps of Engineers
* NOAA Fisheries

The University of Maine has stated that as part of their environmental/ecological monitoring plan, which is part of their test site permit application, a review of the potential threats to marine organization will be considered and mitigations measures will be designed. No collection of animal species will occur as part of this project.

Task 1 and 2 (all subtasks) activities involve site characterization and environmental monitoring of ocean dwelling and avian species which will not significantly impact either populations or habitat; therefore a CX B3.1 and B3.3 apply.

Task 3 involves planning and securing permits for the project from all applicable local, state, and federal permitting

authorities; therefore a CX A9 applies.

Task 4, subtasks 4.1 – 4.5, involves laboratory testing and validation activities for various components and composites as part of the design research for the floating wind turbines structure. The University of Maine has filled out and returned an R&D questionnaire for these activities which thoroughly addresses their safety and waste handling procedures; therefore a CX B3.6 will apply.

Subtask 4.6 and Task 5 (all subtasks) activities involve project and turbine final design, construction, deployment, and testing of one to three (10 kW to 100 kW) off shore floating wind turbines at the University of Maine's Deepwater Offshore Wind Test bed in the Gulf of Maine. Impacts for these activities are unknown at this time; therefore a NEPA determination cannot be made for these tasks.

Tasks 6 and 7 for this project will involve curriculum development and project management activities; therefore CX A9 applies.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Subtask 4.6 (final design) and Task 5 (Subtasks 5.1 and 5.2); including capital equipment purchase, final design, earth moving, site prep, construction and deployment activities associated with the construction and deployment of off-shore wind turbines.
This restriction does not preclude you from:
Tasks 1 – 3 (all subtasks), Task 4 (subtasks 4.1 – 4.5 only), Tasks 6-7
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Subtask 4.6 and Task 5 (Subtasks 5.1 and 5.2) in the current SOPO of this project are conditional and unallowable activities under this award. NEPA recommend the recipient's funding be placed on ASAP approval.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 1/21/10
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