

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



RECIPIENT: Woods Hole Oceanographic Institute

STATE: MA

PROJECT TITLE : Cost-Effective Environmental Monitoring of Offshore Wind Installations with Automated Marine Robotics

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002237	DE-EE0009801	GFO-0009801-001	

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Woods Hole Oceanographic Institute (WHOI) to design, build, and conduct sea trials and demonstration testing of an autonomous surface vehicle (ASV) and an autonomous underwater glider (AUG) for purposes of developing new robotic technology to monitor offshore wind turbine installations. The ASV and AUG would be combined to create a commercially viable robotic marine survey system for automated, unattended ecological assessments of regions of interest. The project is divided into two phases (including six tasks). Phase I would consist of development and testing efforts, during which a study plan would be completed and field testing sites would be finalized. Phase II would consist of field demonstration and commercialization. At this time, there is insufficient information to review Phase II activities. As such, this NEPA determination will review Phase I, non-field-testing tasks: Task 1, Tasks 2.1-2.2, Tasks 3.1-3.3, Task 4.1, and Task 6. Tasks 2.3-2.5, Tasks 3.4-3.6, Tasks 4.2-4.4, and Task 5 will be reviewed once further information is available.

Phase I activities would include ASV power plant mechanical design and modeling, ASV power plant fabrication and bench testing, ASV power plant electrochemical integration, AUG passive acoustic monitoring system and optical imaging sensor payload development and integration, and ASV sensor payload integration. The AUG is approximately 2 meters long. The ASV is approximately 5 meters long by 2 meters wide.

Specific tasks are described below:

Task 1: Study Plan and Design with Peer Review. WHOI would develop a Study Plan and Field Demonstration Plan. These would address engineering performance testing methods and evaluation criteria for the AUG sensor payload, ASV sensor payload, and ASV power plant technologies to be developed, integrated, and tested. Plans would include bench and in-water (i.e., dock) testing criteria and performance requirements, proposed trial locations and associated schedules, specific in-water tests to be conducted, active acoustic frequencies and source levels used, and plans for environmental health and safety compliance and for obtaining required permits.

Subtask 2.1: AUG sensor payload optical imaging development. The optical bay and strobe lights would be designed, fabricated, and embedded into the AUG and connected to the internal single board computer that performs data acquisition.

Subtask 2.2: AUG sensor payload passive acoustic monitoring development. The AUG's self-contained hydrophone, the main sensor for detection and classification of vocalizing animals, would be integrated into the AUG.

Subtask 3.1: Integrate ASV sensor payload sensors. The doppler radar for bird detection, lidar for seal weighing, thermal camera for marine mammal detection, and optical imaging for species and individual identification would be integrated into the ASV sensor payload.

Subtask 3.2: Integrate feature extraction and identification process. Whale blow detection algorithms and bird detection algorithms would be integrated into the entire workflow.

Subtask 3.3: Integrate automated control and target tracking process. An algorithm would be established to allow the camera to select detected animals of interest and reliably tilt towards that animal.

Subtask 4.1: Develop ASV power plant hull shape, thruster assembly electronics architecture, and power controls. The hulls would be designed and modeled, fabricated, bench tested, and integrated onto an almost 5-meter long wave adaptive motion vehicle.

Task 6: Closeout reporting.

Above tasks are laboratory-based engineering and fabrication activities which would take place at dedicated facilities at WHOI in Woods Hole, MA. Testing of waterproof casing would be conducted in WHOI's pressure test facility on campus.

No changes in the use, mission, or operation of existing facilities would be required as part of this project and no additional permits would be required in order to conduct any of the work activities.

Project activities would involve the use and handling of lithium-ion battery packs and lab work. Staff are required to complete battery safety handling training and abide by safety policies specified by WHOI's Environmental Health and Safety (EHS) office. During fabrication and laboratory testing operations all participants are required to complete safety trainings and abide by safety policies specified by WHOI's EHS office, including use of PPE. All waste products would be disposed of by licensed waste management service providers. WHOI would observe all applicable Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a conditional NEPA determination.

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

Task 1 (all subtasks)
Task 2.1-2.2
Task 3.1-3.3
Task 4.1
Task 6

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

Task 2.3-2.5
Task 3.4-3.6
Task 4.2-4.4
Task 5 (all subtasks)

Notes:

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:  _____ Date: 5/12/2022
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