

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Oregon State University**STATE:** OR

PROJECT TITLE: Co-Design of Marine Energy Converters for Autonomous Underwater Vehicle Docking and Recharging

| | | | |
|--|--------------------------------------|----------------------------|-------------------|
| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
| DE-FOA-0002234 | DE-EE0009449 | GFO-0009449-001 | G09449 |

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 Oregon State University (OSU) to design, fabricate, and test an autonomous underwater vehicle dock which could utilize wave energy to provide both power and communications to an autonomous underwater vehicle (AUV). Specifically the dock would be a wave energy converter-autonomous underwater vehicle dock (WEC-AUV docking system, or docking system). The project would be completed over two Budget Periods (BPs) with a Go/No-Go decision point between each BP. This NEPA determination only applies to BP 1.

Proposed project activities in BP1 would include numerical modeling, design, fabrication, and testing of the WEC-AUV docking system.

OSU in Corvallis, OR would oversee the project. Project partners would include the University of Washington (UW) and the University of Hawaii (UH). Numerical models would be developed to represent WECs, AUVs, and the WEC-AUV docking systems. Metocean conditions (i.e., winds, wave, currents, and depth changes) for different ocean locations would be identified and modeled using existing data. All three project partners would engage in the above work. UH would design the hardware and software for the WEC-AUV docking system. UW would then fabricate the intelligent interface module in the Applied Physics Laboratory and OSU would fabricate the main dock structure. The WEC-AUV docking system would include a heave plate and central waterproof bottle for electronics, position and depth sensors, rate gyros and accelerometers, internal computing components, and an AUV capture mechanism. The approximate size of the WEC-AUV docking system would be approximately 50 inches by 30 inches by 30 inches. Bench testing of components prior to fabrication, and of the completed system would occur at UW. In water testing of the WEC-AUV docking system would be conducted using two different off the shelf AUVs; specifically the Seabotix and/or the BlueROV. These AUV's, which would be purchased for this project, are approximately 25 inches by 15 inches by 15 inches. Preliminary in water testing of the complete WEC-AUV docking system would occur in the OSU Dixon Recreation Center pool to ensure the systems are watertight and that the AUV can achieve docking in calm conditions. Annual testing of the system would occur at the OSU O.H. Hinsdale Wave Research Laboratory in increasingly difficult conditions as identified and modeled earlier in the project. Data from tests would be analyzed between tests and adjustments to software and modeling would be made prior to the next test. Project results would be disseminated in relevant conferences and journals.

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 of machinery to fabricate the docking station, and risks associated with electrical components and poolside slips or falls. Risks associated with fabrication would be mitigated through adherence to established UJ and OSU Environment Health and Safety policies and procedures. Protocols would include personnel training and the use of personal protective equipment. Risks associated with work conducted in and around water would be mitigated by following existing OSU safety procedures. Water discharged from O. H. Hinsdale is pre-treated to remove excess chlorine and released to a nearby creek. The OSU swimming pool discharges its water into the wastewater system. All waste products would be disposed of by licensed waste management service providers. OSU and its project partners 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:

[Budget Period 1 - all tasks](#)

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

[Budget Period 2 - all tasks](#)

Notes:

[Water Power Technologies Office](#)

[This NEPA determination requires a tailored NEPA provision.](#)

[Review completed by Shaina Aguilar on 8/3/21.](#)

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: **Roak Parker**

NEPA Compliance Officer

Date: 8/3/2021

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: _____