

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



**RECIPIENT:** Oregon State University

**STATE:** OR

**PROJECT TITLE :** Wave-to-Wire Prototype Development and Testing of Real-Time Autonomous Underwater Vehicle Docking and Recharging from Wave Energy Converters

**Notice of Funding Opportunity Number**  
DE-FOA-0003097

**Procurement Instrument Number**  
DE-EE0011707

**NEPA Control Number**  
GFO-0011707-001

**CID Number**  
GO11707

**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 federal funding to Oregon State University (OSU) to develop the supporting theory, algorithms, and mechanical design to demonstrate wave-to-wire docking and recharging with real-time communication between wave energy converter (WEC)/dock infrastructure and an automated underwater vehicle (AUV).

Tasks would be completed over a 36-month budget period. Proposed project activities would include fabrication and laboratory testing at OSU's O. H. Hinsdale Wave Research Laboratory and integration of an open-source WEC with a novel AUV docking and recharging system (Corvallis, OR), component testing of the proposed interface system (University of Washington, Seattle, WA), and modeling and simulation of the proposed interface system (University of Hawai'i Natural Energy Institute (HNEI) Manoa, Honolulu, HI).

This ND applies only to Tasks 1-3 (all Subtasks), Subtask 4.2.0, and Tasks 5-8 (all Subtasks). DOE would complete the NEPA review for Subtask 4.1.0 (AUV/WEC Rendezvous Feasibility) when sufficient information is available to conduct a meaningful review. Subtask 4.1.0 would involve deployment of an AUV at the Kilo Nalu Observatory in Honolulu, HI and would potentially require consultation under Section 7 of the Endangered Species Act.

Task 1 would include modeling, redesign, and modification of a WEC power-take-off (PTO) system to allow for electrical power output and associated energy storage for AUV recharge as well as modification of a lab-scale WEC to integrate with an AUV dock into a single combined WEC-AUV system.

Task 2 would include the development and design of autonomous underwater docking algorithms utilizing real-time sensing and communication from a lab-scale WEC connected to a dock.

Task 3 would include AUV hardware integration, including integration of the optical modem and wireless charging interfaces with the AUV that would be used for autonomous docking demonstrations and the development of a power modeling tool to inform WEC-AUV system design.

Subtask 4.2.0 would involve data collection, systems testing, and in-water validation of hardware in the O.H. Hinsdale Wave Lab. Developed wave-to-wire energy collection systems would be demonstrated using a lab-scale WEC with an integrated AUV dock.

Task 5 would involve conducting wave modeling and forecasting to predict trends at future open water testing sites.

Task 6 would involve community outreach activities, including hosting an open house at the UH School of Ocean Earth Science and Technology for K-12 students from all over the island of Oahu, development of a curriculum to educate students on the potential for underwater vehicles in monitoring, inspection, and maintenance of marine energy arrays, and hiring of an undergraduate student at OSU to work with the project team in the third year of the project.

Task 7 would involve dissemination of research results through conference and journal publications and software and data releases.

Task 8 would involve coordination activities with the University Marine Energy Research Community (UMERC), including joining the UMERC portal, attending periodic in-person or virtual meetings hosted by the UMERC, and responding to occasional requests for information from the UMERC.

All proposed project work would be performed at existing, purpose-built facilities. No changes to the use, mission, or operation of these facilities, modifications, or ground disturbing activities would be required. No additional permits, licenses, or authorizations would be required.

Proposed activities would involve typical hazards associated with research laboratories and testing facilities, including working with electrical and mechanical subsystems. Existing university health, safety, and environmental policies and procedures would be followed, including personnel training, proper personal protective equipment (PPE), engineering controls, monitoring, and internal assessments.

DOE has considered potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate adverse impacts on these resources.

EERE is aware of the November 12, 2024, decision in *Marin Audubon Society v. FAA*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the Council on Environmental Quality (CEQ) regulations implementing NEPA are not judicially enforceable or binding on this agency action, EERE has nonetheless elected to follow those regulations at 40 C.F.R. Parts 1500-1508, in addition to DOE's procedures/regulations implementing NEPA at 10 C.F.R. Part 1021, to meet the agency's obligations under NEPA, 42 U.S.C. §§ 4321 et seq.

## NEPA PROVISION

DOE has made a conditional NEPA determination.

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

Tasks 1-3 (all Subtasks)

Subtask 4.2.0

Tasks 5-8 (all Subtasks)

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

Subtask 4.1.0

Notes:

Water Power Technologies Office (WPTO)  
NEPA review completed by Melissa Parker, 01/29/25

## 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: Andrew Montano** Date: **2/24/2025**  
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