

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



RECIPIENT: Pacific Ocean Energy Trust

STATE: OR

PROJECT TITLE: Network Director for the TEAMER Program

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002012	DE-EE0008895	GFO-0008895-020	G08895

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.)

A11 Technical advice and assistance to organizations

Technical advice and planning assistance to international, national, state, and local organizations.

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 the Pacific Ocean Energy Trust (POET) to administer the Testing and Access for Marine Energy Research (TEAMER) program. POET would collaborate with a Technical Board (TB) which would include representatives from DOE, DOE National Laboratories, and National Marine Renewable Energy Centers. The primary objective of TEAMER is to provide marine energy (ME) technology developers access to a network of facilities within the U.S. which provide testing and modeling assistance for ME technologies. Developers would apply for assistance through a competitive process.

DOE previously completed NEPA reviews which apply to all tasks. However, under Subtask 3.3.1, POET would conduct periodic rounds of funding, specifically identifying facilities offering assistance for which developers could apply. Applications would be reviewed and selected by POET and the TB. Prior to releasing funds to support any selected application, each application would be subject to NEPA review. Applications would include scope of work, where work would be completed, and who would be responsible for completing work (including assistance provided by TEAMER facilities.)

For this review, POET has identified ten Technical Support Recipients (TSRs) to receive support through the TEAMER program:

1. CyTroniQ

For this project, CyTroniQ would receive technical assistance from the Pacific Northwest National Laboratories (PNNL) and the Marine and Coastal Research Laboratory (MCRL). Support activities would include tensile strength testing of power and fiber optics signal cables before and after immersion in seawater (PNNL) and immersion of the cables in running seawater for 3-5 months (MCRL). After removal from the seawater, samples of biofouling on the cables would be examined microscopically to determine if they differ among the materials, with and without embedded technology.

2. E-Wave Technologies LLC (E-Wave)

For this project, E-Wave would receive technical assistance from the American Bureau of Shipping. Support activities

would include conducting New Technology Qualification (NTQ) of E-Wave's wave energy converter design and issuing a statement of maturity letter after the qualification process. Qualification activities would involve risk assessments and engineering evaluations that build upon each other to determine if the new system provides acceptable levels of performance and safety in line with established requirements and current marine industry practice.

3. Emrgy, Inc.

For this project, Emrgy, Inc. would receive technical assistance from the University of Washington (UW). Support activities would include the deployment of multiple physical scale models of potential turbine designs in UW test flumes. The impacts of different blade pitch angles, effects of variable accelerator wall to canal hydraulics, and performance improvement potential with dynamic rotor heights would be investigated.

4. iProTech

For this project, iProTech would receive technical assistance from WEC-Sim/National Renewable Energy Laboratory (NREL). Support activities would include upgrading the numerical model for a Proportional-Integral-Plus wave energy converter's Power Take-Off system by incorporating Coulomb damping, a controlled bypass valve, and controlled check valves. Robust control strategies would be developed, including analytical control laws and reinforcement learning-based control.

5. James Marson

For this project, James Marson would receive technical assistance from WEC-Sim/Sandia National Laboratories. Support activities would include construction of the mesh for a preliminary modular wave energy converter hull and Power Take-Off system design, boundary element analysis and parameterization, modeling in WecOptTool, modeling in WEC-Sim, and reporting.

6. Laminar Scientific Inc.

For this project, Laminar Scientific Inc. would receive technical assistance from AMOG Consulting. Support activities would include numerical analysis of the characteristics of a new wave energy converter (WEC) design and investigation of the two different shape configurations of the WEC (normal and capitulated.) AMOG Consulting would primarily use OrcaFlex numerical analysis software to conduct the analyses.

7. Michigan Technological University (Michigan Tech)

For this project, Michigan Tech would receive technical assistance from Oregon State University (OSU). Support activities would include experimental validation and analysis of the practical performance of developed Deep Reinforcement Learning (DRL) controls for wave energy converters (WECs) using wave tank tests. OSU would provide the numerical model of Laboratory Upgrade Point Absorber (LUPA), which is a robust, open-source WEC. OSU would also assist in demonstrating control implementation, identifying and quantifying implementation challenges, conducting tank testing in different sea states, and collecting and processing data based on specified metrics.

8. Triton Anchor

For this project, Triton Anchor would receive technical assistance from Stress Engineering Services, Inc. (SES) towards optimizing a plate-caisson anchoring system. Support activities would include providing structural numerical capabilities to analyze anchor beam members under realistic MRE loading scenarios, building the finite element model, executing finite element analysis, performing fatigue analysis, and leading the design optimization process.

9. University of Massachusetts Dartmouth (UMassD)

For this project, UMassD would receive technical assistance from a WEC-Sim facility. Support activities would include computational simulations to enhance and optimize the performance of the UMassD Maximal Asymmetric Drag Wave Energy Converter (MADWEC) system and improve its power output, building upon the baseline MADWEC WEC-Sim model. The WEC-Sim facility would also help estimate new resonance frequencies, complete a new hydrodynamic analysis, modify the baseline WEC-Sim model, and generate drag estimates from literature.

10. University of Washington (UW)

For this project, UW would receive technical assistance from NREL. NREL would provide support by allowing UW to run experiments that evaluate the benefits of using model predictive control (MPC) to optimize power absorbed by a laboratory-scale oscillating surge wave energy converter (OSWEC) in the facility's wave tanks. NREL would install and calibrate at least two wave probes in the wave tank, assist with connecting the probes to UW's Data acquisition systems, and run the wave tank under specified conditions.

All TSRs would receive support from one or more facilities within the TEAMER facility network. Prior to admitting a new facility into the network, the facility and its capabilities would be reviewed by POET and the TB. All selections of additional facilities, facility capabilities (i.e., type of support offered,) activities, and TSRs would be subject to additional NEPA review.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on

resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a conditional NEPA determination.

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

All tasks are approved; however, selection of additional facilities, scope of work, and Technical Support Recipients (TSRs) are subject to additional NEPA review.

The following TSRs are approved to receive technical support for activities proposed in the applications that were part of this review:

1. CyTroniQ
2. E-Wave Technologies LLC
3. Emrgy, Inc.
4. iProTech
5. James Marson
6. Laminar Scientific Inc.
7. Michigan Technological University
8. Triton Anchor
9. University of Massachusetts Dartmouth
10. University of Washington

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

All selections of additional facilities, scope of work, activities, and TSRs which this or previous NEPA Determinations do not apply to. Such additions are subject to additional NEPA review. All technical support activities must be completed by pre-approved facilities and must be the type of work which a signed NEPA Determination applies to.

Notes:

Water Power Technologies Office (WPTO)
NEPA review completed by Melissa Parker, 01/18/24

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: 1/18/2024
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