

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



RECIPIENT: Portland State University

STATE: OR

PROJECT TITLE : Open Water Testing of an Electromagnetic Resonant Power Take-off Generator

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002415	DE-EE0009958	GFO-0009958-001	GO9958

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 Portland State University (PSU) to design, fabricate, and test a power take-off (PTO) generator with magnetic components ("components"). The PTO generator would be designed for wave energy converter (WEC) applications.

The award would be divided into two Budget Periods (BPs). This NEPA determination (ND) applies to BP1 activities only. Such activities would include designing, fabricating, and testing components, including a gearbox, pretensioner, and tension spring. Additional activities would include water tank testing of the PTO generator as part of a WEC. BP1 would not include open water testing activities. A WEC advisory board including multiple companies would be formed to ensure the components would be designed to be compatible with multiple types of WECs.

Component design activities would be completed by PSU. Fabrication of components would be completed by FluxMagic, Inc. (Portland, OR). Laboratory testing and analysis of components would be completed by PSU, FluxMagic, and Sandia National Laboratory (SNL) (Albuquerque, NM). Numerical modeling and simulations would be conducted to evaluate the potential performance of components and a WEC utilizing the components.

Additional activities would include preparation activities for a planned open water deployment at PacWave South (Oregon) for the WEC. These activities would not include deployment activities. Activities would include document preparation, including the development of a risk management plan and contracts with contractors to support future deployment activities.

AquaHarmonics (West Linn, OR) would fabricate a WEC hull, integrate the fabricated components, and conduct water tank testing of the assembled WEC at the Oregon State University O.H. Hinsdale Wave Research Laboratory (Corvallis, OR). The WEC would be designed to mitigate noise and electromagnetic (EM) fields produced by components. The WEC would be designed to produce noise below the National Marine Fisheries Services (NMFS) underwater noise thresholds. If it is observed that EM fields exceed acceptable levels, additional safety precautions and safeguards would be implemented to mitigate the effect of EM fields. Magnet material would be housed in safety boxes. Specialized equipment, gloves, and goggles would be used when handling the magnets. The National Renewable Energy Laboratory (NREL) (Golden, CO) would provide third party accreditation support for testing.

PSU would involve high school students, undergraduates, and graduate students from groups that are

underrepresented in science, technology, engineering, and math (STEM) fields.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

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

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

Budget Period 2

Notes:

Water Power Technologies Office (WPTO)
Review completed by Alex Colling on 06/28/2022.

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.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 7/8/2022

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: _____