

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** HeonYong Kang/Texas A&M University**STATE:** TX

PROJECT TITLE: An Innovative SR-WEC for a Market-Disruptive LCOE

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001837	DE-EE0008630	GFO-0008630-001	GO8630

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 Texas A&M University to design, fabricate, and test a scaled prototype of a Surface Riding Wave Energy Converter (SR-WEC). The SR-WEC would a cylindrical wave energy device containing magnets and coil. The device would float on the surface of the water. Wave action would move the magnet within the device to creating electricity. Three cylinders could be combined to make a triangular shaped device.

The proposed project would be divided into 15 tasks. Tasks 1-10 (with the exception of subtask 8.3) would be limited to information gathering, computer modeling, and design work. This would include development of initial test plans, project management plans, fabrication plans, initial and updated performance prediction and techno-economic models, as well as an iterative design process to design the body and system subcomponents of the SR-WEC. This work would be conducted at Texas A&M University at the H.J. and Reta Haynes Engineering Building. Techno-economic analysis would be supported by the National Renewable Energy Lab, in Golden, Colorado.

Subtask 8.3 would include the fabrication of a small scale (1/50 – 1/100 scale) model system and the conducting of approximately 20 tests of the system in a wave basin. This model would be less than one foot long and less than 6 inches in diameter. Fabrication work in subtask 8.3 would be conducted at the Engineering Building's laboratory facility. Fabrication would consist of the use of small amounts of steel, magnets, and plastics. Testing of the small scale device would occur at Texas A&M University at the Offshore Technology Research Center (OTRC), RELLIS campus, wave basin test facility. Results from small scale fabrication and testing would be utilized in final design and planning which would occur in tasks 8-10.

Task 11 would include fabrication and testing of the subsystems of a 1/15 – 1/20 scale model SR-WEC and assembly of the subsystems components into the SR-WEC. This scale model SR-WEC would be approximately 3 feet long and 1 foot in diameter. Three scale models could be combined to create a triangular shaped model. Fabrication would include the use of magnets (up to .001 cubic meter volume), coils (up to .005 cubic meter

volume), wood (up to .05 cubic meter volume), steel (up to .005 cubic meter volume), plastic (up to .05 cubic meter volume), and foam (up to .1 cubic meter volume). Once fabricated, subsystems would be bench tested, primarily with actuators. Once tested, system components would be assembled into a final SR-WEC. All work in task 11 would occur at the Engineering Building laboratory facility.

Task 12 would include updating the cost and risk plans.

Task 13 would include wave tank testing the completed SR-WEC and analysis of data collected during tests. Wave tank testing would occur at the OTRC wave basin test facility. Testing would include performance under regular wave conditions as well as varying wave conditions. The scale model would undergo testing 60-80 times over a two month period.

Tasks 14 and 15 would be limited to data analysis of results from task 13 as well as reporting.

The Engineering Building laboratory facility is a purpose built laboratory facility designed for the type of work which will be conducted for this project. Existing university health and safety policies and procedures would be followed for all work. All materials would be handled in compliance with federal, state and local regulations with proposer disposal of excess materials. No changes or modifications to the facility, or new permits, would be required.

The OTRC wave basin test facility is a purpose built wave tank test facility. The basin is 150 feet long and 100 feet wide with a depth of 19 feet. The center of the basin has a depth of 55 feet. Forty eight individually controlled paddles can generate a variety of wave conditions. The facility is designed for wave tank testing of devices such as the device in this project. All university health and safety policies and procedures would be followed for all work. No changes or modifications to the facility, or new permits, would be required.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

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.

Notes:

This NEPA determination does not require a tailored NEPA provision.
Water Power Technology Office
NEPA review completed by Roak Parker 3/14/19

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: _____


NEPA Compliance Officer

Date: 5/17/2019

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: _____