



PMC-EF2a

**U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION**



(201402)

RECIPIENT: Columbia Power Technologies, LLC

STATE: OR

PROJECT TITLE : Direct Drive Wave Energy Buoy

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000069	EE0002647	GFO-10-116	GOO

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

- A9** Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.
- B3.6** Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

Funding for this project supports the development efforts of a full scale wave energy device and will be used specifically to study and test a 1:15 scale version of an optimized Direct Drive Wave Energy Buoy in a wave tank and a 1:5 scale version of the Wave Energy Conversion (WEC) buoy in bay/ocean waters.

Tasks include:

Task 1- kick off meeting with DOE

Task 2 - WEC Energy Optimization

Site parameters for full-scale deployment location will be used to optimize energy buoy for energy capture and a reduction of manufacturing costs.

Task 3 - Optimized 1:15 Scale Tank Test

An "optimized" 1:15 scale energy buoy will be used to validate new performance estimates and numerical models.

Task 4 - 1:5 Scale Testing at Sea

This will be a 2-4 month deployment of a 1:5 scale energy buoy which may be extended if permitting and funding allow. Under this task the 1:5 scale energy buoy will be designed and built, including mooring system design and antifouling material study.

Task 5 - Full-Scale Analysis

As information is gathered, findings will be analyzed in relation to the full-scale model for incorporation in the full-scale design.

Task 6 - Integrate findings into full-scale design

All of the information gathered up until this point during the project will be used to incorporate the latest information into the design of the full-scale model.

Task 7 - Final Report

The 1:15 scale tank testing will take place in an existing wave tank at Oregon State University.

The 1:5 scale WEC buoy will be deployed in bay/ocean waters for a duration of 2 to 4 months and the buoy and anchors will be completely removed following the completion of the testing. The deployment is planned for October/November of 2010. The project location is situated 0.5 miles west of West Point, Seattle in Puget Sound in approximately 40 to 80 feet of water, just east of Nunn Buoy "G-1" at the northern exit of Elliot Bay. The project location is approximately 0.5 miles east of the Puget Sound commercial shipping lanes, placing the buoy outside any designated vessel traffic areas. Navigation lights (flashing amber) and radar reflector will be located on the buoy and will meet or exceed USCG aids to navigation requirements.

The buoy will have a top-side diameter of 11.8 feet, spar draft of 16.4 feet, and a displacement

of between 5.1 to 14 tons. The buoy has three anchor lines connected to 7 ton weights which will have a maximum seabed displacement of 3.4 cubic yards. The anchor weights will be connected via synthetic polyester lines with a minimum of three times the breaking load safety factor and appropriate design considerations given to corrosion prevention, abrasion resistance, and fish bite. The anchor diameter will be 320 feet. There will be no grid connection and radio communication will be employed between the buoy and the shore. Renewable wave energy will power the buoy with a maximum of 1.4 kW and will be used to supply buoy instrumentation and keep the battery charged. Excess power will be removed by small water heaters on the buoy. The maximum power dissipated will be up to 1.4 kW, which is negligible compared to the 7.8 kW of heat energy generated by a 20HP outboard motor.

Of the seven threatened or endangered marine species which inhabit the Puget Sound area, four of these species either do not inhabit the West Point area or do not inhabit Puget Sound during the winter months. Three salmonid species will likely occur in the project area, but the deployment of the buoy at depths between 40 to 80 feet will avoid any nearby eel grass, the habitat for the primary prey of these salmonids. Additionally, the temporary nature of the buoy will avoid the creation of an artificial habitat. Therefore, the proposed action will not adversely affect federally listed threatened or endangered species.

The applicant will obtain all the necessary permits including, USACE NWP-5, JARPA, US Fish and Wildlife Approval, National Marine Fisheries Approval, Washington State Permits, King County shoreline conditional use permit, and USCG Aids to Navigation. This NEPA determination is conditional on the applicant receiving all necessary permits and exemptions prior to the deployment of the buoy.

Tasks 1, 2, 5, 6, and 7 comprise information gathering, data analysis, and dissemination and are therefore classified under CX A9. Task 3 comprises bench-scale research projects and conventional laboratory operations and is therefore classified under CX B3.6. Task 4, which includes the deployment of a 1:5 scale buoy for a 2-4 month period, comprises a small scale pilot project and is therefore also classified under CX B3.6.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Insert the following language in the award:

You are required to:
This NEPA determination is contingent on the applicant receiving the following permits and exemptions prior to the deployment of the buoy in bay/ocean waters: USACE NWP-5, JARPA, US Fish and Wildlife Approval, National Marine Fisheries Approval, Washington State Permits, King County shoreline conditional use permit, and USCG Aids to Navigation.

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Date: 3/23/10
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :