PMC-EF2a
(2.04.02)

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

RECIPIENT: Turner Hunt Ocean Renewable LLC (aka THOR LLC) **STATE:** OH

PROJECT TITLE : THOR's Power Method

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000293	DE-EE0003634	GFO-0003634-001	EE3634

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:

Turner Hunt Ocean Renewable (THOR), LLC is proposing to use DOE funding to demonstrate a power control method that maximizes the performance and power of an ocean current turbine device. The proposed project would test, demonstrate and validate THOR's Power Method, which uses a constant speed and variable depth control method, as opposed to the conventional constant depth and variable speed method. THOR's Power Method would provide significant increases to the capacity factor and output of ocean current turbines relative to existing marine hydrokinetic (MHK) devices.

The research facility for the proposed project is a rental, one-story building located at 6015 Wooster Pike, Fairfax, Ohio, 45227. As the site of a former car wash establishment in the 1980's and 1990's, the 30' x 150' concrete building has since been used by various retail businesses. All work performed would be on a laboratory scale, adhering to all Occupational Safety and Health Standards (OSHA). No new construction or building modifications would be required.

The primary use of the facility would be to accommodate a large shipping container filled with tap water sourced from the Town of Fairfax municipal water system, Water Works. The final design of the re-circulating ocean current flume (ROC-Flume) would be 40' x 9' x 9' deep, holding a total of 24,235 gallons of water. The open channel re-circulating water flume would be filled and emptied approximately ten times. Water would enter the facility via a 2" water main and would be directly routed to a 2" ball valve located near the bottom of the open channel re-circulating water flume. When the ROC-Flume is emptied, about 6" of water would remain on the floor of the flume. Actual discharge volume would be 40' x 9' x 8.5' x 7.48 = 22,888 gallons. Several large floor drains would empty the flume's water volume directly into the Cincinnati Metropolitan Sewer District (MSD).

The proposed project does not require a sewer discharge permit because tap water is the discharge effluent. The Cincinnati MSD, Division of Industrial Waste, has confirmed that a waste water discharge permit is not required as long as the discharge rate when emptying the tank does not exceed 20 gallons per minute. THOR has an electrical water pump rated at 18 gallons per minute that would be used to empty the ROC-Flume. At 18 gallons per minute, the ROC-Flume would empty in twenty four hours.

The scope of the proposed project would involve preparing, fabricating, modifying and rendering operational the ROC-Flume. The ROC-Flume's main purpose would be to create moving water currents so that scale model water turbines could be developed, installed and tested in the moving water current. Several tests would be performed on the ROC-Flume to verify its operations and performance to the expected current speeds and speed gradients.

The proposed project would also involve designing, fabricating and assembling THOR's scale model renewable ocean

current turbine (ROCT). The software coding of the integral control system would be installed to simulate the ROC-flume conditions. In the final task, the ROCT scale model would be moored to the ROC-Flume and a systematic series of tests would be completed to verify all aspects of operation.

In view of the information provided by the State and the recipient, DOE has determined that the impacts related to the proposed project are anticipated to have negligible affects on the human and natural environment. The proposed project is consistent with actions outlined in A9 (information gathering) and B3.6 (indoor bench-scale and research and conventional laboratory operations).

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

EF2a prepared by Cristina Tyler on 12/8/2010.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 12/14/10

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 :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager