PMC-EF2a
(2.06.02)

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

RECIPIENT: Sunlight Photonics Inc. **STATE:** NJ

PROJECT TITLE : Tidal Energy System for On-shore Power Generation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000293	DE-EE0003636	GFO-0003636-001	EE3636

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:

Sunlight Photonics is proposing to use DOE funding to design, build and test a proof-of-concepts (TRL4) model-scale marine hydrokinetic (MHK) on-shore power generation system with no high-ratio gears or submerged electronics. Funding would also be used to collect and report the data to be used toward full-scale implementation of the MHK system.

The proposed project involves information gathering and indoor bench-scale research and conventional laboratory operations. Lab work for Task 2 would be conducted at Rutgers University, Department of Mechanical Aerospace Engineering, 98 Brett Road, Piscataway, NJ 08854-8058. Lab work for Task 3 would be conducted at the Marine Maritime Academy's (MMA) Tidal Energy Demonstration & Evaluation Center (TEDEC), Castine, ME 04420-001. Both Rutgers University and MMA TEDEC are fully-permitted educational R&D sites, both adhere to the safety protocols and policy guidelines set forth by the Occupational Safety and Health Administration (OSHA), and both have appropriately addressed all issues pertaining to safety, permitting and waste management.

Tasks include:

Task 1.0 - Technology Readiness Level 3 (TRL3)
Task 2.0 – Technology Readiness Level 4 (TRL4)
Task 2.1 - Preliminary Design
Task 2.2 – Commercial off-the-shelf (COTS) Component Selection in Engineering Lab
Task 2.3 – Procurement and System Engineering
Task 3.0 - TRL4: Tank Testing, Evaluation and Post-Inspection
Task 4.0 - TRL5/6: Planning

Task 1.0 would focus on desktop feasibility studies and cost assessments. System combinations would be modeled and evaluated. COTS component specifications would be used to create cost profiles for the systems tested. This information would be used to create the TRL4 model-scale system.

Task 2.0 would include three subtasks: preliminary design, COTS component selection in an engineering lab, and procurement and system engineering. All subtasks would be performed at Rutgers University.

Task 2.1 would involve completing the preliminary design for the TRL4 model-scale system.
The design would include expected performance modeling using data collected in Task 1.

Task 2.2 would involve selecting and purchasing COTS components for the pump and gear of the system. In these lab tests, tap water would be circulated from the pump to the generator in a closed loop system using rubber tubing. The water would remain in the system or would be stored in a closed container between tests. Because the water used would contain anti-corrosion additives and lubricants for the gears, the waste water would be packaged, labeled and segregated and would then be disposed of per Rutgers University lab protocol.

Task 2.3 would involve engineering and assembling the final TRL4 system. Similar indoor bench-scale lab tests will be performed on the final system at the Rutgers engineering lab.

Task 3.0 would involve sending the TRL4 system to TEDEC, a deepwater tidal facility, for performance testing under simulated tidal conditions in a submerged marine environment. All testing will be done under the direction and guidance of the MMA. The TEDEC facility has been issued a special declaration from the Federal Energy Regulation Commission (FERC) to perform the type of work associated with this project. Once all testing has been completed at TEDEC, the system will be removed from the water and evaluated for any environmental degradation.

Task 4.0 would involve developing a plan for moving the system forward to demonstration-scale based on the data collected in Tasks 1-3. No testing or construction is associated with this task.

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); therefore tasks 1.0 through 4.0 are categorically excluded from further NEPA review.

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 11/22/2010.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 11/24/10

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