

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Florida Atlantic University**STATE:** FL**PROJECT TITLE:** Low-Flow Marine Hydrokinetic Turbine for Small Autonomous Unmanned Mobile Recharge Stations

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001837	DE-EE0008636	GFO-0008636-001	

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 funding to Florida Atlantic University (FAU) to design, develop, and test a prototype low-flow marine hydrokinetic (MHK) turbine, which would provide partial power to recharge battery banks onboard a mobile unmanned autonomous floating recharge station for unmanned aerial vehicles (UAVs). A small catamaran, with two electric outboard engines and with capabilities for autonomous navigation, would serve as the floating platform.

Tasks 1 - 5 would focus on design work for the MHK prototype and associated subsystems. Tasks 6 - 9 would consist of design optimization, parts procurement, fabrication and assembly of components and field testing of the MHK prototype, floating recharge station, and UAV. Field testing would be performed in the Intracoastal Waterway off FAU Sea Tech and in coastal waters south of Port Everglades. All planning work for obtaining required permits and authorizations for testing, including consultation with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (USFWS), would be performed as part of Tasks 1 - 5. These processes would be initiated in this period as well. Because fabrication and testing activities would depend on successfully obtaining all required permits/authorizations, only Tasks 1 – 5 are being reviewed as part of this determination. Tasks 6 – 9 are restricted until further NEPA review is completed. Additional NEPA review will be completed, once the applicable permits/authorizations are obtained by FAU and all relevant information has been provided by the Recipient.

Proposed project activities for BP1 would encompass the following tasks:

Task 1 would consist of design work and computer simulated testing of the MHK turbine components, subsystems, and associated systems. These would include the power take-off, flow concentrator, deployment subsystem, anchoring sub-system, environmental shielding system, battery charge adaptor, monitoring sensors, and the UAV charging pad. Various MHK turbine designs would be assessed, with one model ultimately being selected. As part of this task, a commercial, off-the-shelf electricity generator would be selected for later incorporation into the turbine.

This task would include laboratory testing of scaled models to evaluate turbine designs, as well as off-the-shelf commercial equipment, including a re-charging pad and UAV. UAV testing would be limited to laboratory testing, performed indoors in controlled environments, to verify recharge capabilities.

Task 2 would consist of numerical modeling to simulate system operation.

Task 3 would focus on the development of plans for fabrication of components/subsystems, component/subsystem testing, installation of components onto the floating platform, operation & maintenance (IO&M), and risk management. The National Renewable Energy Laboratory (NREL) would assist in the development of the risk management plan.

Task 4 would consist of market research and industry engagement to assess the commercialization potential of the system.

Task 5 would consist of updates to the design of the prototype system and the plans developed under Task 3 (e.g. design optimization).

All project activities would be completed by FAU at existing, purpose-built facilities at its Sea Tech Campus in Dania Beach, FL and its primary campus in Boca Raton, FL. Project activities completed as part of Tasks 1 – 5 would be limited to in-lab computer modeling and performance testing using scaled models of equipment assembled from off-the-shelf parts. No physical modifications to existing facilities, ground disturbing activities, or changes in the use, mission, or operation of existing facilities would be required for this project. Likewise, no additional permits or authorizations would need to be obtained.

FAU would adhere to established university health and safety policies and procedures when performing laboratory testing. FAU would observe all Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Task 1: Develop components and subsystem designs

Task 2: Numerical modeling studies

Task 3: Plans for fabrication, testing, IO&M, and risk management

Task 4: Engage Industry for market transformation

Task 5: Update system design and plans for fabrication, IO&M, testing and risk management

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

Task 6: Fabrication and testing of components and subsystems

Task 7: Assembly and Installation on the floating platform

Task 8: Field testing

Task 9: Development of final project deliverables

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:

Water Power Technologies Office

This NEPA determination requires a tailored NEPA provision.

Review completed by Jonathan Hartman, 05/22/2019

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____


NEPA Compliance Officer

Date: 5/24/2019

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: _____