

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-0008636-002	GO8636

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.

DOE completed a NEPA review of Tasks 1 – 5 in May 2019 (GFO-0008636-001; CXs A9 and B3.6). Those tasks consisted primarily of conceptual design work of the MHK prototype and associated subsystems. Tasks 6 - 9 were restricted at this time, as they included fabrication and field-testing activities that were dependent on FAU obtaining requisite permits/authorizations, selecting test site locations, and submitting relevant information to DOE for NEPA review. Since that time, FAU has submitted information to DOE regarding the survey work that would be needed for test site selection, as well as additional information on the MHK prototype to be fabricated. Accordingly, fabrication and survey activities will now be reviewed. This NEPA Determination will be applicable to Tasks 6 and 7, and Subtask 8.1. Subtask 8.2 and Task 9 are restricted until field testing sites have been selected and all relevant information, including a Biological Evaluation, is submitted to DOE for NEPA review.

Proposed project activities for tasks 6, 7 and 8.1 would consist of component procurement, assembly of the MHK device, verification testing, and the completion of site surveys. Each of these tasks will be described in detail below.

Task 6 – Fabrication and Testing of Components and Subsystems: This task would consist of the procurement of commercial off-the-shelf components and fabrication of specialized components for the prototype MHK turbine and associated systems. All fabrication of specialized components would be performed by qualified, third-party manufacturers. Components to be procured would include inflatable pontoons, a mechanical propulsion system, an anchoring system, a power take-off (PTO) unit, a generator, battery, and auxiliary equipment. FAU would perform testing on components and sub-systems to verify that the equipment functions as intended. Testing would be performed at laboratory-facilities at FAU's campus in Dania Beach, FL. Component testing would be performed in adherence to established FAU health and safety policies and procedures.

Task 7 – Assembly and Installation on the Floating Platform: The floating platform would be assembled from the components procured and tested as part of Task 6. The floating platform would include the MHK, PTO, generator, UAV

systems, and associated equipment and structures (e.g., floating pontoons). The fully assembled platform would measure approximately 16' lengthwise and weigh approximately 140 lbs.

Once assembled, the system would be tested to verify the functionality of the integrated components and systems. System assembly and verification testing would be performed at laboratory-facilities at FAU's campus. This would include in-lab testing of the UAV system to verify recharging functionality. Outdoor UAV tests would not be conducted. Assembly and testing would be performed in adherence to established FAU health and safety policies and procedures.

Component testing and system assembly would not require any physical modifications to existing facilities, ground disturbance, or changes to the use, mission, or operations of existing facilities. No additional permits or authorizations would be required

Subtask 8.1 – Prepare for Testing – Site Surveying and NEPA/BE Preparation and Permitting: Site surveys would be performed in order to assess the suitability of potential site locations for future field testing to be performed as part of Subtask 8.2. Site surveys would be conducted dockside at FAU's Sea Tech Campus in Dania, FL, at predetermined locations within the Intracoastal Waterway, and at predetermined coastal locations offshore in Fort Lauderdale, FL. Within the Intracoastal Waterway, three (3) sites would be surveyed. All three would be at a distance of less than 1,500 m from FAU's campus. Coastal locations to be surveyed would be limited to coastal waters near the Port Everglades inlet. Three (3) coastal sites would be surveyed.

Survey work at all seven locations would assess ocean bottom type and ecology, current resources, and the suitability of each site for performing testing operations. Site suitability assessments would include verifying whether or not anchoring would be needed for testing. However, no anchoring would occur during survey assessments. Site surveys would be performed utilizing instruments that would not require in-water installation. Various measurement instruments would be utilized for site surveys and introduced into the water temporarily. This would include depth sounders, to determine water depth and camera systems to photograph the ocean bottom. Trained divers would perform ocean bottom surveying in accordance with established FAU diving safety protocols. A small support vessel operated by trained personnel may be utilized for survey work. The vessel would not anchor when performing survey activities. Current measurements would be obtained using a combination of onshore optical measurements and existing data gathered by the National Oceanic and Atmospheric Administration (NOAA) and FAU. No current meters would be deployed.

Survey work would only be performed during the day, in accordance with established FAU boat safety protocols and in observance of Federal, state, and local regulations for small watercrafts. All locations where surveying would occur are areas with regular boat traffic. Surveying is expected to take place periodically throughout Summer/Fall 2021. After site surveys, a Biological Evaluation would also be prepared for proposed testing work at chosen sites. The Biological Evaluation would be submitted to DOE for review and use in potential consultations. Task 8.2 and Task 9 are restricted until the Biological Evaluation is submitted to DOE, an additional NEPA review is completed, and testing activities are approved.

NEPA PROVISION

DOE has made a conditional NEPA determination.

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

Task 6 – Fabrication and Testing of Components and Subsystems

Task 7 – Assembly and Installation on the Floating Platform

Subtask 8.1 – Prepare for Testing – Site Surveying and NEPA/BE Preparation and Permitting

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

Subtask 8.2 – Testing in open waters

Task 9 – Development of final project deliverables

Include the following condition in the financial assistance agreement:

No in-water testing is permitted outside of the measurements required to be performed during surveying. No anchoring or deployment of current meters is permitted.

Notes:

Water Power Technologies Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Jonathan Hartman, 03/31/2021

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:

 Electronically Signed By: **Roak Parker**
NEPA Compliance Officer

Date: 4/1/2021

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: _____