

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



RECIPIENT: North Carolina State University

STATE: NC

PROJECT TITLE : MARINER (MARine-based Reciprocating current Energy converter)

Notice of Funding Opportunity Number
DE-FOA-0003097

Procurement Instrument Number
DE-EE0011699

NEPA Control Number
GFO-0011699-001

CID Number
GO11699

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:

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 federal funding to North Carolina State University (NCSU) to prototype and characterize the performance of a novel current energy conversion device called MARINER, designed to harness power from different oceanic current sites.

Project activities would include numerical modeling development to simulate locomotion and power generation of a scalable energy conversion system, and validating these tools through laboratory-scale experiments at NCSU's Aerospace Engineering Laboratory in Raleigh, NC. A 1/20th scale energy conversion system would also be prototyped and tested at this facility to demonstrate, optimize and address and potential system risk. Energy resource analysis, site characterization, planning for the environmental permitting of aggregate materials, economic analysis, and the development of an ocean deployment plan would occur at East Carolina University's Coastal Studies Institute in Wanchese, NC.

All project efforts that fall within Tasks 0 through 10 would occur within the existing facilities described above. These facilities are purpose-built to perform the work that would be performed there, and no facility modifications, ground disturbances, changes in facility use, or outdoor equipment installations would occur. No additional permits, licenses, or authorizations would be required for these efforts. DOE does not anticipate any impacts to resources of concern due to the proposed award activities.

Activities under Task 11 would involve in-water testing of a prototype current energy converter at Jeannette's Pier in Nags Head, NC. In-water testing activities would require further NEPA review once prototype design and site characterization information is finalized; as such, Task 11 is not included in this NEPA Determination.

Potential project hazards under Tasks 0 through 10 include fabrication and testing using machine tools and laboratory equipment handling. Mitigation activities would include following institutional health and safety policies, mandatory employee training, the use of personal protective equipment, adherence to safety protocols, regular safety audits, and risk assessments. Additionally, all applicable federal, state, and local health, safety, and environmental regulations would be adhered to.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders.

For Categorical Exclusion Determinations:

- The proposal fits within a class of actions that is listed in Appendix B to 10 CFR Part 1021 or Appendix B and C

of DOE's NEPA Implementing Procedures (June 30, 2025). To fit within the classes of actions listed in Appendix B to 10 CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

- 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.
- A portion of the proposed action is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a conditional NEPA determination.

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

Tasks 0 through 10

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

Task 11

Notes:

Water Power Technologies Office
NEPA review completed by Chris Akios, 9/29/2025

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

 Electronically
Signed By: **Nicole Serio**
NEPA Compliance Officer

Date: 9/29/2025

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: _____