PMC-ND

(1.08.09.13)

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

RECIPIENT: North Carolina State University **STATE:** NC

PROJECT TITLE : Adaptive Stiffness Power Take-Off for Broadband Wave Energy Converters

Notice of Funding Opportunity Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-003097	DE-EE0011703	GFO-0011703-001	GO11703

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 design, evaluate, fabricate, and test wave energy converter power take-off systems.

The design, simulation, development, analysis, fabrication, and laboratory testing of the adaptive stiffness power take-off system, surface buoy hardware, and control system would take place at NCSU's Aerospace Engineering Laboratory in Raleigh, NC. A pre-existing linear motion dynamometer would also be utilized at this facility to test the take-off system. Hose-pump hardware design, simulation, development, fabrication, analysis, and laboratory testing would occur using pre-existing tensile testing machines at NCSU's Chemistry and Science Facility in Raleigh, NC. Design, fabrication, and testing of a laboratory-scale integrated system in a wave tank would occur at East Carolina University's Coastal Studies Institute in Wanchese, NC. Computer-aided design, modeling, and analysis of hose-pump and mooring components as well as computer-based simulations of responses to sea conditions would occur at the Woods Hole Oceanographic Institution's Coastal Research Laboratory in Woods Hole, MA. Custom fiber braiding and wrapping services for hose-pump prototype creation would occur at Steeger USA Research and Development Laboratory in Inman, SC.

Award activities would be completed in existing, purpose-built facilities. No building modifications, ground disturbance, new permits, or licenses would be needed to perform project activities.

Potential hazards include working with fiber braiding machines, hydraulic and electric power/control systems, a laboratory wave tank with a pneumatic wave maker. 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.

- The proposed action is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Water Power Technologies Office
NEPA review completed by Chris Akios, 9/24/2025

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 9/24/2025

NEPA Compliance Officer

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: _____ Date: _____

Field Office Manager