

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



RECIPIENT: University of Washington

STATE: WA

PROJECT TITLE : Energy Efficient, Rapid Manufacturing of Fiber Composites Using Machine Learning Enabled Ultrafast Radio Frequency Heating

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002864	DE-EE0011031	GFO-0011031-001	GO11031

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 the University of Washington to perform experimental testing and simulations of carbon fiber/thermoplastic composites using radiofrequency fields for local heating and for the development of an automated welding platform for welding aerospace-grade composites.

Award activities would be completed over three Budget Periods (BPs,) with Go/No Go Decision Points between the BPs. This NEPA determination applies to all three BPs.

Proposed project activities by location are:

Vashisth Research Laboratory, University of Washington, Seattle, WA

- Experimental testing and simulations of carbon fiber/thermoplastic composites, data analysis, development of a machine learning based controls program, and fabrication of welding machine.

Oak Ridge National Laboratory, Knoxville, TN

- Development of protocols for finite element simulations and development of machine learning models to guide the machine learning-controls algorithm.

IACMI – The Composites Institute, Knoxville, TN

- Fabrication of carbon fiber/thermoplastic composites for thermo-mechanical characterization at University of Washington.

The project activities would involve the use and handling of various hazardous materials, including chemical solvents. All uses would occur in the laboratories identified above, which are dedicated to proper hazardous materials handling and disposal practices. Hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Existing university and corporate health and safety policies and procedures would be followed at all sites.

The project would also involve the use of low-frequency radiofrequency (RF) fields to heat carbon fiber composites. All experiments involving RF heating will be carried out in a controlled laboratory setting in accordance with University of Washington and Federal Communication Commission guidelines, which require personnel training, proper protective equipment, and use of RF monitoring devices.

All project work would be performed at existing, purpose-built laboratory facilities. No modifications to existing

facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. No additional permits, licenses, or authorizations would be required. DOE does not anticipate any impacts to resources of concern due to the proposed award activities.

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.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Materials & Manufacturing Technologies Office (AMMTO)
NEPA review completed by Melissa Parker, 11/21/23

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.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

 Electronically Signed By: Andrew Montano

NEPA Compliance Officer

Date: 11/21/2023

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: _____