

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



RECIPIENT: RTX Corporation, RTX Technology Research Center

STATE: CT

PROJECT TITLE : Durable CMC Interfaces with Reduced Manufacturing Cost to Enable Solar Heat Exchanger, Nuclear Fuel Cladding, and Hydrogen Turbine Applications

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002864	DE-EE0011026	GFO-0011026-001	GO11026

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.)
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Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to RTX Corporation's Technology Research Center (RTX) to design, fabricate, characterize and test durable ceramic matrix composite (CMC) interfaces with reduced manufacturing cost to enable solar heat exchanger, nuclear fuel cladding, and hydrogen turbine applications.

This effort would occur at three locations throughout the United States. Chemical vapor deposit coating and CMC-making and characterization would occur at RTX facilities in East Hartford, Connecticut. Creation of CMC from tow and testing would occur Ceramic Tubular Products' (CTPs) laboratory and manufacturing facility in Rustburg, Virginia. Design, coating via chemical vapor deposition and characterization of tows for CMCs would occur at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee.

The project would involve the use and handling of hazardous materials, including reactant gases and solvents. All handling would occur within existing laboratories with appropriate environmental health and safety review. The project would also involve a task with a significant safety review for the types of materials used and potential byproducts, with atmospheric reactor modifications to improve the system's safety and further reduce safety risks to staff at RTX and ORNL. The furnace byproduct gasses such as CO₂ would be handled in the manufacturing area at CTP and managed according to the laws of the state of Virginia. The project would involve the use and handling of hazardous materials, including reactant gases and solvents at ORNL. All handling would occur within a laboratory setting with appropriate Environmental Health and Safety Research Safety Summary document review. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations.

Air emissions at the RTX facility would include 1 pound (lb.) carbon dioxide, 1 lb. water vapor and 0.001 lb. ammonia, which would be vented through existing laboratory exhaust vents and a fume hood. Air emissions at the CTP facility would include 10 (kilograms) kg of SPR-212 and 475 grams (g) of hydrogen, which would be handled through CTP's existing venting system. Air emissions at ORNL would include 1 lb. carbon dioxide, 1 lb. water vapor and 0.001 lb. ammonia vented through existing laboratory exhaust vents and a fume hood. ORNL has air emission authorization for all vapor deposition exhaust products at the levels created during these procedures.

All project work would be performed at the purpose-built facilities of the recipient and subrecipients, with no modification of the existing facilities, ground disturbances, changes in use of facilities or outdoor equipment installations. 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 and Manufacturing Technologies Office
NEPA review completed by Chris Akios, 06/11/2024

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:  _____ Date: 6/18/2024
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