PMC-ND

(1.08.09.13)

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

RECIPIENT: West Virginia University Research Research Corporation **STATE:** WV

PROJECT TITLE : Intensified Dynamic Non-Equilibrium Reactions by Pulsed Microwave Heating for Efficient Chemical Processing

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002997	DE-EE0011195	GFO-0011195-001	

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 West Virginia University (WVU) for the development of an integrated approach to monolithic catalyst synthesis, characterization, optical fiber sensor design and machine learning to demonstrate low carbon intensity olefin and/or ammonia production in a microwave reactor.

All project-related activities would occur at five laboratories. Project efforts at WVU in Morgantown, West Virginia would include design and fabrication of catalyst and microwave reactor and testing including CH4 and N2 conversion. Award efforts at Clemson University in Anderson, South Carolina would include the design and fabrication of optical fiber sensors for microwave reactor installation. The University of South Carolina (USC) in Columbia, South Carolina would develop and synthesize monolithic catalysts to be installed in microwave reactors to be tested at WVU and the National Energy Technology Laboratory (NETL) in Morgantown, West Virginia. West Virginia State University (WVSU), in Dunbar, West Virginia would synthesize catalyst in powder form and characterize it using surface chemistry instrumentation.

The project would involve the use and handling of various hazardous materials, including metal oxide, solvents, and those with flammability hazards at the WVU, USC and WVSU facilities. All such handling would occur in a laboratory setting with task-appropriate personal protective equipment (PPE). Material handling would occur within a chemical fume hood when appropriate. All hazardous materials would be handled and disposed of in accordance with local, state and federal environmental regulations.

Award work at NTEL would include working with chemical precursors and gas products, (i.e., C2H4 and NH3), which have potential health and safety hazards to the environment. These materials are caustic, toxic, and in some cases, suspected carcinogens. All employees at this facility must pass mandatory annual safety training programs and would conduct project work within a laboratory setting with task-appropriate PPE. A safety plan for the laboratory is in place and all hazardous materials would be handled and disposed of following existing policies and procedures and in accordance with local, state and federal environmental regulations.

Project work at Clemson university would include developing electronic sensors and no hazardous material handling would occur at this location.

Air emissions related to this project are expected to be negligible and all project work locations are within USEPA

Attainment Areas.

No outdoor equipment installations or modifications to existing facilities, no ground disturbances and no change in mission to existing facilities would occur as part of this award.

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.

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:

Industrial Efficiency & Decarbonization Office
NEPA review completed by Chris Akios, 06/20/2024

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: Electronically Signed By: Andrew Montano Date: 6/21/2024

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