

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** University of North Dakota**STATE:** ND

PROJECT TITLE: SCALE-UP OF THE PRIMARY CONVERSION REACTOR TO GENERATE A LIGNIN-DERIVED CYCLOHEXANE JET FUEL

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002203	DE-EE0009257	GFO-0009257-001	

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 to the University of North Dakota (UND) to upscale previously developed reaction technologies for lignin processing to produce jet fuels (e.g. cyclohexane) from unrefined organic materials and to determine the technical, economic, and environmental feasibility of producing jet fuel and by-products using this technology.

Proposed project activities would include preprocessing of corn stover, pelletized catalyst development, chemical conversions, the design, fabrication, and demonstration of bench-scale and engineering-scale conversion reactions systems, techno economic and sustainability analyses, and analyses of hydrocarbon samples. UND would oversee the project. Idaho National Laboratory (INL), National Renewable Energy Laboratory (NREL), University of Dayton, and Washington State University (WSU) would be sub recipients on the project.

During this project, up to 30 metric tons (MT) of corn stover would be acquired, milled, and preprocessed by INL. The preprocessed corn stover would then be shipped to NREL. NREL would convert the corn stover using a screw reactor to produce lignin which would be collected and clarified through a pilot scale centrifuge. Up to 4,200 liters of the lignin would be produced by NREL and then shipped to UND. WSU would produce up to 20,500 grams of metal-impregnated pelletized mineral catalysts. Catalysts produced by WSU would be shipped to UND for use by UND in the processing of the lignin to jet fuel.

UND would design, assemble, and commission a continuous bench-scale reaction system which would utilize the reactive lignin solution (obtained from NREL) and the pelletized catalyst (obtained from WSU) to convert the lignin into jet fuel. Approximately 200 milliliters of jet fuel would be produced during the bench scale process. After acceptable reaction conditions are established at bench scale, UND would proceed to design, assemble, and commission an engineering-scale reaction system. The engineering-scale system would utilize approximately 3,600 liters of lignin solution and 10 kilo grams of pelletized catalyst in an effort to produce approximately 4 liters of jet fuel. UND would also conduct a techno-economic and sustainability analysis on both the bench-scale system and scaled-up system of producing jet fuel using this technology.

Analytical testing of various hydrocarbon samples generated by the project would be conducted by UND as well as the University of Dayton.

All work would be done in existing purpose built laboratory facilities. No facility modifications or changes in the use, mission, or operation of existing facilities would be required as part of this project. No additional permits would be required in order to conduct any of the work activities.

Project activities would involve the use and handling of hazardous chemicals and industrial machinery. Any risks associated with the handling of these materials and equipment would be mitigated through adherence to established health and safety policies and procedures. Protocols would include personnel training, the use of personal protective equipment, monitoring, oversight, and engineering controls. All waste products would be disposed of by licensed waste management service providers. UND and its project partners would observe all applicable environmental, health, and safety laws and regulations.

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:

Bioenergy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Shaina Aguilar on 10/20/20.

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: _____


NEPA Compliance Officer

Date: 10/22/2020

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: _____

