

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Oregon State University**STATE:** OR**PROJECT TITLE:** Microchannel Reactor for Ethanol to n-Butene Conversion

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0002203	DE-EE0009261	GFO-0009261-001	GO9261

**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.)

**A11 Technical advice and assistance to organizations** Technical advice and planning assistance to international, national, state, and local organizations.

**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 Oregon State University (OSU) to lead a team that would design, develop, fabricate, and test bioreactors for converting biofuels to jet fuels.

OSU and project partner Pacific Northwest National Laboratory (PNNL – Richland, WA) would each be involved in the design, development and fabrication of reactors. All design work would occur at existing university or government research facilities. Reactors to be fabricated would be small (less than one square foot) bench scale units. Both OSU and PNNL would fabricate small reactors for testing.

OSU and PNNL would then test units to insure they are properly functioning, including testing of fluidic behavior of reactors, sealing features and performance, thermal load, and nominal dimensions and similar functionalities and features.

Project partner Lanza Tech (Skokie, IL and Soperton, GA) would provide project support including data analysis and advising. Lanza Tech would also provide fermentation derived ethanol for the project. This ethanol is material that is regularly produced by Lanza Tech at their Soperton, GA facility. No changes to that facility, or changes in use, mission or production would be required. The material would be previously produced ethanol which would be pulled from inventory. Ethanol would be shipped from Lanza Tech to PNNL in 55 gallon drums. Shipment would be by commercial carrier in enclosed semi-trucks.

At PNNL reactor units would then be tested utilizing the supplied ethanol as well as off the shelf standard powder catalysts (such as copper and zirconium nitrates). Feed rates of the reactors would be small, utilizing less than ¼ of a liter of ethanol per minute.

All fabrication and testing would occur in pre-existing university and government labs designed for such work. No new facilities, modification to facilities, or new permits would be required for this project. Work would involve the use of laboratory equipment as well as chemicals as described above. Existing university, government, and corporate health

and safety standards would be followed by all project partners.

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 Technology Office  
This NEPA determination does not require a tailored NEPA provision.  
Review completed by Roak Parker, 05/25/2021

**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: Roak Parker Date: 5/25/2021  
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