

PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

NEPA DETERMINATION



RECIPIENT: University of Michigan

STATE: MI

PROJECT TITLE: Tailored Bioblendstocks with Low Environmental Impact to Optimize MCCI Engines

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001919	DE-EE0008482	GFO-0008482-001	GO8482

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 federal funding to University of Michigan (UM) to develop and demonstrate a microalgae bio-blendstock with optimized combustion and emissions performance. Project work would focus both on improving the biological processes that result in the chemical composition of bio-crude oil, as well as the chemical processes that comprise mixing controlled compression ignition combustion. The project would be completed over three Budget Periods (BPs), with a Go-No Go Decision Point in between each BP.

Proposed project activities across all BPs would include algae cultivation, hydrothermal liquefaction of wet algae to biocrude, development of life-cycle assessment (LCA) and techno-economic analysis (TEA) models, biocrude upgrading and refining to finished fuel, and engine simulation analysis. All project activities would be performed at existing, purpose-built laboratory facilities that regularly conduct work similar in nature to that proposed as part of this project's scope of work. UM would perform auto-ignition experiments, flow reactor studies, and chemical/technical analyses at its campus in Ann Arbor, MI. UM's sub-recipient Pennsylvania State University would complete flow reactor studies and engine combustion simulations at its campus in University Park, PA. Sub-recipient Arizona State University (ASU) would carry out algae production studies at its campus in Mesa, AZ. Algae cultivation would be carried out in existing commercial-scale (30 m²) raceways at ASU's Arizona Center for Algae Technology (AzCATI). No change in the use, mission or operation of existing facilities would be required as part of this project, nor would any additional permits or authorizations need to be obtained.

The project would involve the use and handling of industrial chemicals, solvents, high temperatures and pressures, and rotating machinery. Risks associated with the handling of project materials and machinery would be mitigated through adherence to established health and safety rules and regulations. Protocols would include the use of personal protective equipment, personnel training, engineering controls, and internal assessments. The fuel produced as part of the award would have a very high combustion temperature and as a result would present a low ignition risk during engine testing. Additionally, inhalation hazards would be mitigated through the use of controlled stacks. Any hazardous waste produced would be handled, stored and disposed of properly, with oversight by each

university's respective Environmental Health & Safety Office. UM and its project partners would adhere to all applicable Federal, State and local health, safety and environmental regulations.

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 Jonathan Hartman, 1/11/2019

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: _____



Casey Strickland

NEPA Compliance Officer

Date: 1/11/2019

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: _____