

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** University of California, Berkeley**STATE:** CA

PROJECT TITLE: Multi-Input, Multi-Output Biorefineries to Reduce Greenhouse Gas and Air Pollutant Emissions

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002029	DE-EE0008934	GFO-0008934-001	GO8934

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 University of California, Berkeley (UCB) to develop conceptual designs for multi-input, multi-output biorefineries that can convert lignocellulosic biomass, manure, and other wet organic waste into liquid fuels, platform chemicals, and other products. Lifecycle analyses (LCA) and techno-economic analyses (TEA) would be performed using data collected from a commercial fermentation system and laboratory-scale testing. A biorefinery analysis web tool would also be developed as part of the project and made publicly available.

Proposed project activities would include conceptual design development, computer modeling/simulations, data analysis, biogas conversion process characterization (performed in-lab), and characterization of commercial-scale biomass fermentations (approximately 1,200 gallon batches). Five conceptual biorefinery designs would be developed over the course of the project. Data acquired from computer modeling and process characterization would be used for the development of these designs. The designs would be the basis for the web tool that would be developed for the project.

All project activities would be coordinated by UCB. UCB would perform data analysis and computer modeling activities at office facilities at its campus in Berkeley, CA. Laboratory-scale testing of bioproduct formation from biogas substrates would be performed by project partner Mango Materials at its existing laboratory space in Albany, CA. Laboratory testing would be performed with existing equipment. No facilities modifications would be required for laboratory-based activities.

Commercial scale biomass fermentations would be performed by project partner, Mango Materials. Fermentations would be performed in order to quantify the output yields of targeted products (e.g. polyhydroxyalkanoate (PHA) and single cell protein (SCP)). Biogas and oxygen would be used as inputs for the process, along with small amounts of other nutrients (e.g. nitrogen, phosphorous, trace metals). Fermentations would be performed at a methane-to-PHA production facility that will be constructed in 2020 and operated by Mango Materials. The facility would be located

within the Silicon Valley Clean Water wastewater treatment plant in Redwood City, CA. This facility will be constructed regardless of DOE funding. No DOE funding would be used for construction activities. Sensor components would be integrated into existing equipment at this facility. No large scale equipment would be installed as part of this project.

No physical modifications to existing facilities, construction of new facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required for any project activities. Likewise, no additional permits or authorizations would be required.

The proposed project would involve the use of methane/oxygen mixtures. Any risks associated with the handling of these materials would be mitigated through established corporate health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, engineering controls, monitoring, and internal assessments. UCB and Mango Materials would observe 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, 03/10/2020

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

Date: 3/10/2020

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: _____
Field Office Manager

Date: _____