

PMC-ND

(1.08.09.13)

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



RECIPIENT: Cornell University

STATE: NY

PROJECT TITLE Combustion Dynamics of Liquid Biofuels: a new approach to developing combustion chemistries, sooting propensities, blending strategies, and burn rates

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001461	DE-EE0007978	GFO-0007978-001	GO7978

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 Cornell University to develop and test surrogate mixtures of biofuel blends for petroleum-based transportation fuels as well as a numerical model system to predict performance of the surrogates in combustion engines.

The proposed project would be comprised of data analysis, computer modeling, and laboratory scale research and development. Activities associated with the proposed project would include software and database development, video data collection and processing, small-scale droplet combustion experiments, and chemical analyses of biofuels and blends. Data studies, model development, and all laboratory-based work including experiments, chemical analyses, and imaging would occur within purpose-built fuel system research facilities and computer rooms at the Cornell University campus (Ithaca, NY). These facilities have all applicable permits in place, and would not need additional permits for the proposed activities. In support of this work, additional numerical modeling tasks would take place at the University of San Diego (San Diego, CA). No change in the use, mission or operation of any existing university facility would arise out of these efforts.

Tasks involving combustion experiments and chemical analyses would utilize a previously installed apparatus and various instrumentation that were designed for the type of research being proposed. Such work would follow existing procedures. No physical modifications, new licenses and/or authorizations would be required. A minor hardware alteration would be implemented at the Droplet Combustion Laboratory (DCL) in order to extract supplemental data, and is expected to remain in place at the conclusion of the proposed project.

The proposed project would employ small quantities of fuel feedstocks, which may include normal alkanes, aromatics, alcohols, gasoline and others. These materials would be used and handled in-lab only at the DCL and Nuclear Magnetic Resonance (NMR) Facility. Both are properly equipped with room air circulation and chemical fume hood ventilation systems to discharge hazardous product gases in accordance with federal, state, and local regulations. Routine quantities of nonhazardous laboratory waste generated by project activities would be disposed of via existing university systems.

As an award selected under DE-FOA-0001461, the proposed project is intended to support a larger initiative called "Co-Optimization of Fuels and Engines" (Co-Optima) that primarily consists of DOE National Laboratory participants. At this time, there are no recognized plans for formal participation in project activities by any DOE laboratory; however,

collaboration with the larger National Lab effort is required of Co-Optima FOA awardees. Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

**NEPA PROVISION**

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:  
**Bioenergy Technologies Office**  
**This NEPA determination requires a tailored NEPA Provision.**  
**NEPA review completed by Whitney Doss, 10/23/2017**

Note to Specialist :

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: \_\_\_\_\_



**Kristin Kerwin**  
NEPA Compliance Officer

Date: 10/24/2017

**FIELD OFFICE MANAGER DETERMINATION**

Field Office Manager review required

**NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:**

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_