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

RECIPIENT: SUNY - Stony Brook University **STATE:** NY

PROJECT TITLE: Naphthenic Biofuel-Diesel Blend for Optimizing Mixing Controlled Compression Ignition Combustion

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001919	DE-EE0008481	GFO-0008481-001	GO8481

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 the State University of New York at Stony Brook (SBU) to develop and test the use of a biomass-derived naphthenic distillate as a multicomponent liquid bio-blendstock (biocrude) in order to improve the quality of blended diesel fuel.

The proposed project would consist of data acquisition and analysis, computer modeling, laboratory research and development (R&D), and pilot-scale production experiments. Specific activities associated with these types of tasks would include the production, compositional analysis, and performance testing of a naphthenic bio-blendstock derived from loblolly pine. Production and compositional analysis would be carried out by subrecipient RTI International (Research Triangle Park, NC) utilizing existing laboratory equipment at the Johnson Science and Engineering facility as well as pilot-scale units located at the Energy Technology Development Facility. The bio-blendstock would be produced via catalytic biomass pyrolysis in a previously installed, operational 1 ton-per-day unit, then hydrotreated into a liquid fuel and distilled in-lab to recover samples with suitable properties for subsequent testing in a single-cylinder diesel research engine at SBU (Stony Brook, NY). Fuel samples produced at RTI would be periodically shipped to the SBU Advanced Combustion Laboratory for experimental engine testing throughout the expected three-year project duration. Other project activities taking place at SBU would include the preparation of surrogate fuels for supplementary testing of various diesel fuel blends.

Anticipated quantities of materials to be used and produced by the project would not exceed bench-scale volumes at SBU, where activities would consume a total of approximately 30 gal biofuel-diesel blends and lesser amounts of lubricating oil and coolant. Pilot-scale production experiments at RTI would use approximately 1-2 ton biomass feedstock and 100 kg catalyst to produce an estimated 25 gal bio-crude along with 50 gal aqueous by-product (containing roughly 5% organic acids, phenolic, alcohols, and ketones). Limited and temporary sources of air emissions resulting from pilot-scale activities are not likely to surpass quantities emitted by past and ongoing routine operations at RTI.

Small amounts of prepared fuel would be shipped to an approved 3rd party commercial laboratory for chemical analysis in order to obtain independent verification of fuel properties. Fuel samples would also be shipped to one or more DOE National Laboratories that are members of the Co-Optimization of Fuels & Engines (Co-Optima) initiative, a R&D collaboration between DOE, nine national laboratories, and industry. 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.

The proposed project would involve the use and transport of flammable liquid biofuels and hydrocarbon fuels. These materials would be stored in certified flammables cabinets at correctly designated locations within each facility. Fuel samples would be transported according to all pertinent regulatory agency rules and guidelines; the recipients have prior experience with the safe shipment of hazardous chemicals and permanently maintain extensive documentation of all such transports. Small amounts of waste fuel in addition to oil and coolant waste, aqueous byproducts from bio-crude production, and biomass char would be treated as hazardous waste. Collection and disposal would be handled by existing university hazardous waste programs or a qualified chemical waste contractor, depending on project location. Proposed activities at RTI would also involve the use and handling of various other hazardous materials, including gases, catalysts, and organic solvents. All such work would be conducted entirely within properly equipped facilities by trained employees following existing policies in accordance with Occupational Saftey and Health Administration (OSHA) rules and regulations. A comprehensive and detailed set of health and environment programs and services previously instituted at RTI would be adhered to at all times by project participants, in order to ensure that hazardous material management procedures remain in full compliance with Federal, state, and local environmental regulations.

The proposed project also includes minor and standard facility maintenance tasks at SBU in order to rebuild/recommission two existing pieces of laboratory equipment designed for sample analysis. No outdoor installations, new construction, or structural modifications to the facility itself would be required to perform the proposed equipment upgrades. Project-related efforts would not result in any changes to the use, mission, or operation of existing facilities at either SBU or RTI. The recipients have all applicable permits in place, and would not need any new permits, licenses, and/or authorizations to carry out project work. Each facility in which project work would occur was purpose-built for the specific type of activities being proposed therein; therefore, no adverse impacts to sensitive resources are expected as a result of the proposed activities at any location.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assisstance agreement:

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.

Notes:

Bioenergy Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 12/20/2018

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: Casey Strickland Date: 12/20/2018

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- [x] 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