

PMC-ND

(1.08.09.13)

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



RECIPIENT: Kiverdi, Inc

STATE: CA

PROJECT TITLE: Engineering Thermophiles to Produce Drop-in Biofuels from Syngas

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000974	DE-EE0007008	GFO-0007008-001	GO7008

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 the Kiverdi, Inc. to develop a transformation system for the photosynthetic bacterium, *Cfl. aurantiacus*, that would optimize growth conditions at the bottle and bioreactor scale. The bacteria, via genetic modification, would then be used to produce terpenes with syngas as the feedstock.

The proposed activities would include syngas-fermenting bacteria strain development; genetic engineering of the identified bacteria strain; enzyme development for production of terpene; overall process integration and optimization; and techno-economic analysis. Project work would consist of bench-scale laboratory activities including microbial culturing, genetic engineering, enzyme engineering, small-scale fermentation, testing growth on various carbon substrates, and production of targeted products. All work would take place solely at Federal facilities: the USDA Western Regional Research Center in Albany, CA and the National Renewable Energy Lab in Golden, CO. All required permits and authorizations would be obtained prior to beginning work. The project will use recombinant DNA and genetically engineered microorganisms. The model microbe will be modified with plasmids containing naturally occurring DNA materials to alter its metabolic pathway. The genetic modifications include: antibiotic resistance markers, counter-selection markers, other marker genes, terpene synthases, and alterations to regulatory elements. Lab workers are trained in the proper handling of recombinant DNA and genetically engineered microorganisms. The proposed project would involve the use and handling of various hazardous material including organic solvents, strong acids and bases, metals, and flammable and toxic gasses. All such handling would occur in-lab, and workers would be trained in proper hazardous material handling and disposal practices. All hazardous materials would be managed in accordance with federal, state, and local environmental and worker safety regulations. Existing environment, health, and safety training would be followed, including employee training, the use of personal protective equipment, risk reduction strategies, and monitoring. A gas delivery system with safety interlocks would be installed as part of the proposed project.

This NEPA determination applies to DOE's funding action. All work conducted at DOE laboratories may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer and would be required to meet the labs health and safety requirements. Work completed at USDA facilities may also be subject to additional NEPA review.

Based on review of the project information and the above analysis, DOE has determined that the proposed activities would not have a significant individual or cumulative impact to human health and/or environment and are consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination" and B3.6 "Small-scale research and development, laboratory operations, and pilot projects" and are 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Insert the following language in the award:

You are required to:

All work conducted at DOE laboratories may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer and would be required to meet the labs health and safety requirements. Work completed at USDA facilities may also be subject to additional NEPA review.

Note to Specialist :

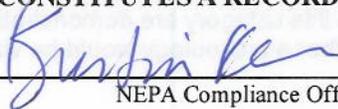
Bioenergy Technologies Office

This NEPA determination does requires a tailored NEPA provision.

Review completed by Logan Sholar on 8/10/2015

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



NEPA Compliance Officer

Date:

8/12/2015

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: