

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Lygos, Inc.**STATE:** CA**PROJECT TITLE** : Design & optimization of biofuel production pathways

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-00007179	DE-EE0006113	GFO-0006113-002	

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 Lygos, Inc. to develop a biocatalyst for conversion of sugar feedstocks into fine and commodity chemicals.

Activities associated with the proposed project would include the design, genetic modification and development, in-lab fermentation testing, and analysis of microbes for use as biocatalysts in production of biochemicals from biomass sugars. These activities would be carried out primarily from Lygos, Inc.'s research and development facility in Berkeley, CA, and would be supported by the Advanced Biofuels Process Demonstration Unit at Lawrence Berkeley National Lab in Emeryville, CA. The facilities where the proposed activities would occur were purpose-built for the type of activities being proposed; therefore, no new or modified permits would be required, and no construction of new facilities or physical modifications to existing facilities would occur as a result of the proposed project.

Genetic modifications would include investigating pairwise interactions of 28 genes associated with metabolism by causing glucose to overexpress up to 378 different pairs of genes in order to increase the efficiency of conversion of glucose to organic acids. Glucose is classified as Biosafety Level 1 (BSL1), is non-toxic, non-hazardous, and non-pathogenic, and would be handled in accordance with National Institutes of Health guidelines for handling BSL1 microbes.

The proposed project would necessitate the use and handling of small quantities of hazardous materials, including industrial solvents and chemicals. All materials handling would be performed in a laboratory environment equipped with appropriate personal protective equipment (PPE), including, safety glasses, chemically resistant gloves, and lab coats as well as fume hoods and biosafety cabinets for storage. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Company health and safety policies would be strictly adhered to, including employee safety training, PPE, and engineering controls.

Wastes generated as a result of this project would include spent biomass yeast and fermentation broths which would be thermally or chemically sterilized prior to disposal at a wastewater treatment plant according to NIH guidelines. All other waste would be non-hazardous and would be collected and disposed of through normal municipal waste streams.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the



integral elements of 10 CFR 1021 subpart B 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:

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.

Note to Specialist :

Bioenergy Technologies Office

This NEPA determination requires a tailored NEPA provision.

Review completed by Rebecca McCord, 08/23/2016.

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

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



Electronically Signed By: Kristin Kerwin

Date: 8/29/2016

NEPA Compliance Officer

#### 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: \_\_\_\_\_

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

Field Office Manager