PMC-ND

(1.08 09/13)

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

RECIPIENT: NatureWorks, LLC **STATE:** MN

PROJECT TITLE: Lactic Acid Producing Methanotrophic Bacteria (LPMB) for Biological Upgrading of Biomethane

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-001085	DE-EE0006876	GFO-0006876-001	GO6876

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.
B5.15 Small-scale renewable energy research and development and pilot projects	Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Natureworks, LLC to develop and optimize a disruptive fermentation process using biomethane extracted from biogas and engineered methanotropic bacteria for the production of lactic acid (HLA). This product could then be leveraged for the development of bioenergy technology aimed at commercialization of biomethane as a liquid transportation fuel in the U.S.

The proposed project activities would include strain engineering, strain adaptation, and bench-scale fermentation testing of those strains found to be capable of converting methane to lactic acid. Strain development and fermentation would occur at Calysta's dedicated lab facility in Menlo Park, CA., while additional fermentation development work, analytical support, project management, and modeling support would occur at NatureWorks, LLC's dedicated lab facility in Minnetonka, MN. The facilities where the proposed project would occur have been previously used for work that is similar to the activities included in the proposed project, 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.

The proposed project would involve the use and handling of various solvents and reagents, including industrial solvents and chemicals. All such handling would occur in-lab, and each facility where proposed project activities would occur has existing health and safety policies as well as a risk management plan in place. The testing activities to be undertaken at Calysta's dedicated lab facility would require using methane and air/oxygen, which presents certain safety hazards. Therefore, at Calysta safety reviews are performed on each procedure and instrument to ensure all precautions are taken. Methane detectors are in place in the laboratory to alert personnel and shut down equipment in case of leaks. All gas is vented via chemical fume hoods and the local fire department has approved all gas handling apparatus. All biological waste generated at either site, as well as potentially contaminated used plastic pipette tips, eppendorf tubes

and pipettes are collected on site for incineration off site. Chemical waste from biochemical assays conducted at Calysta that contain solvents or other potentially harmful chemicals, is collected and treated with Ingenium. All work would follow the guidelines set forth in the established health and safety policies and pose no threat to statutory, regulatory or permit requirements for environment, health and/or safety. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be required and no pre-existing hazardous substances, pollutants, or contaminants would be disturbed.

Based on review of the project information and the above analysis, DOE has determined the research, development and testing activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusions A9 "information gathering, analysis and dissemination," B3.6 "small-scale research and development, laboratory operations and pilot projects and B5.15 "small-scale renewable energy research and development, and pilot projects" and 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 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.

Note to Specialist :

Bioenergy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Rebecca McCord 12/30/2014

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 1/6/2015
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