PMC-ND
(1.08.09.13)

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

RECIPIENT: New Mexico Consortium **STATE:** NM

PROJECT TITLE : SUCCESS THROUGH SYNERGY: INCREASING CULTIVATION YIELD AND STABILITY WITH RATIONALLY DESIGNED CONSORTIA

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001628	DE-EE0008122	GFO-0008122-001	GO8122

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 New Mexico Consortium (NMC) to design, develop and validate algae-bacteria communities, termed “consortia,” that will improve the biomass feedstock yield of algal cultivation systems through increases in the productivity and stability of the genus Nannochloropsis.

The proposed project involves the use of biological and ecological engineering approaches to create optimized combinations of microalgal taxa and growth-promoting bacteria sourced from culture collections and natural environmental sources in New Mexico. The performance of generated consortia would be tested in bench-scale growth assays and bioreactor experiments, and the consortia with the greatest growth rates would be scaled up for field trials within outdoor raceways. The types of activities associated with the proposed project would include data analysis, computer modeling, laboratory scale research and development (R&D), and pilot scale demonstration. Data analysis, techno-economic modeling, strain cultivation, and high-throughput growth assays would take place at NMC’s laboratory and greenhouse facilities in Los Alamos, NM. Supplementary data analysis as well as in-lab bioreactor experiments, genome sequencing, and high-throughput screening for bacteria would occur at the Los Alamos National Laboratory (LANL) in Los Alamos, NM.

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.

Outdoor field trials would be conducted at the New Mexico State University (NMSU) Energy Research Laboratory in Las Cruces, NM, an established testbed location. All project-related work at this purpose-built facility would rely entirely on existing infrastructure and resources, including harvesting equipment and miniponds (300L raceways which generate minimal waste streams) that are currently installed on a previously developed, plastic lined site. As such, no physical modifications, equipment installations, new construction or ground-breaking activities would be required to

conduct the proposed validation work. The facility has all applicable permits in place, and the recipient would not need additional research permits for the proposed activities. Specifically, this project employs non-toxic strains of bacteria/algae and does not involve the use or development of recombinant DNA or genetically modified organisms; therefore, the proposed outdoor field trials do not require approval from the U.S. Environmental Protection Agency under the Toxic Substances Control Act (TSCA).

For each field trial, consortia would be grown in brackish cultivation media for at least three growth cycles and performance would be compared to an additional baseline monoculture. Less than 15,000L of water, 250kg of commercial salts, 5L of commercial grade fertilizer, and 5L of phosphoric acid would be used during the minipond experiments. Water and production media would be recycled if possible, decreasing these amounts by one third. Laboratory R&D activities at NMC and LANL would use less than 500L of water, 10kg of commercial salts, 0.25 L of commercial grade fertilizer, 0.25 L of phosphoric acid, and minor amounts of various other chemicals (<10 mL) for microfluidics assays. Some of these materials are classified as hazardous and thus require special handling. All such handling would occur in dedicated laboratory facilities following standard institutional operating practices for management of hazardous materials and disposal of chemical waste in compliance with all applicable federal, state and local regulations. Hazard mitigation would be overseen by each institution's designated committee to ensure compliance with environmental health and safety standards and regulations. Existing policies and procedures would be followed to minimize risks in line with the strong safety cultures of each institution. Examples include rigorous employee training, the use of appropriate PPE, monitoring of all project participants, and internal assessments.

Non-hazardous wastes resulting from project activities would consist of typical laboratory supplies such as nitrile gloves, pipet tips, and paper products. Recyclable products would be processed by existing facilities at each location. Other products not eligible for recycling would be disposed of properly via waste management systems already in place. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be required. No decommissioning or disposition of equipment would be required at the conclusion of the proposed project. All equipment would be retained by the respective institutions to support ongoing and future research.

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:
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.
NEPA review completed by Whitney Doss, 1/11/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 1/12/2018
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