PMC-ND
(1.08.09.13)

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

RECIPIENT: Global Algae Innovations **STATE:** CA

PROJECT TITLE: Algae Cultivation From Flue Gas with High CO2 Utilization Efficiency

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001908	DE-EE0008516	GFO-0008516-001	GO8516

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.
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 funding to Global Algae Innovations (GAI) to increase CO2 utilization in algae cultivation from flue gas sources. The project would develop a cultivation system in which CO2 capture efficiency, CO2 utilization efficiency and productivity would be increased. The project would include integrated testing, over a one-year period, of the algae cultivation processes developed. Project activities would be completed over three Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP.

Proposed project activities would include development of a CO2 absorber system, algal strain evaluation (e.g. measuring productivity under different variables, including pH, temperature, and lipid content), development and automation of procedures for adjusting the timing for addition of carbonated media, algal biomass processing and analysis, and Techno-economic Analysis (TEA)/Life-cycle Assessment (LCA) modeling. Testing would be performed using flue gas from a power plant, adjacent to the project site, or from an engine genset.

Algal testing would be performed both in laboratory settings and in outdoors cultivation ponds. Both native Hawaiian and U.S. mainland algal strains would be used for testing. Samples of algae and associated organic matter would be grown and collected from existing outdoor cultivation ponds at the Kauai Algae Facility (KAF), operated by GAI in Lihue, HI, and analyzed for productivity and physiological data at the Kauai Algae Lab (KAL), also operated by GAI

in Lihue, HI. GAI would obtain required USDA Animal and Plant Health Inspection Service (APHIS) permits prior to importing algal species from the U.S. mainland.

All laboratory and outdoor project work would occur at existing, dedicated research and development facilities that do not require physical modifications for the proposed activities. Facilities were purpose-built for the type of activities being proposed, which would not exceed the scope of past and ongoing work at these locations. Minor modifications would be made to existing raceway, CO2 capture, and downstream processing systems at KAF. These modifications would be limited to equipment upgrades and would not include facility modifications. No change in the use, mission or operation of existing facilities would arise out of this effort.

Certain project tasks would involve the use and handling of hazardous materials, including chemicals for analytical chemistry and agricultural fertilizers. Such materials are used routinely at the locations where project work would occur, and all hazardous materials are managed in accordance with federal, state, and local environmental regulations. Fertilizers used for algae production are stored in dry form within designated structures, and the handling of hazardous chemicals would occur in-lab following established health and safety policies, including employee training, the use of personal protective equipment, and enforcement of restricted access facilities. The laboratories in which proposed work would be performed are properly equipped with safety requirements including chemical fume hoods and biological safety cabinets. The proposed project would not involve the use or development of genetically engineered microorganisms.

Water from the Lihue ditch system (run-off water from Mt. Waialeale) would be used for outdoor cultivation experiments in small raceways/ponds. During pond production, no more than 10,000 gallons per day of water would be used. Non-hazardous wastewater from outdoor algal production would be evaporated in a secondary pond following existing procedures. All biological waste would be either chemically disinfected or autoclaved prior to disposal. Hazardous waste materials would be disposed of by a certified hazardous waste disposal company.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Jonathan Hartman, 03/06/2019

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: 3/7/2019

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- ☑ 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