

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



RECIPIENT: MicroBio Engineering Inc

STATE: CA

PROJECT TITLE: Microalgae Commodities Production with a Direct Air Capture Process

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002203	DE-EE0009276	GFO-0009276-002	GO9276

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 MicroBio Engineering, Inc. (MBE) to design, fabricate, and test a novel direct air-capture (DAC) system for algae cultivation applications. The award aims to fabricate a pilot DAC system capable of using the metabolic capacity of algal cells to increase the capture of carbon dioxide (CO₂) from the air.

DOE previously completed one NEPA Determination (ND) (GFO-0009276-001; A9/B3.6; 05/24/2021). Since then, the award has progressed into Task 4 with Cyanotech Corporation (Cyanotech) performing Subtasks 4.1 and 4.2 before leaving the award activities as a subrecipient. Originally under GFO-0009276-001, Cyanotech was to receive the DAC system from Global Thermostat (GT) and perform outdoor algae cultivation trials in Subtask 4.3 at their Kailua-Kona, HI outdoor raceway location. As a result of Cyanotech's departure, the integrated DAC-CO₂ generation and algal cultivation trial (i.e., Subtask 4.3) would now take place in a non-integrated fashion, with the DAC system operated at GT's Brighton, CO facility. The DAC system would feed data (i.e., CO₂ generation rate) to MBE for a DAC-simulated cultivation trial at MBE's Azul Farms outdoor microalgal cultivation facility in Paso Robles, CA. This ND covers the remaining award activities, i.e., Subtask 4.3 through Task 7.

MBE would perform award activities at their San Luis Obispo, CA location as well as their Azul Farms location. MBE would be responsible for abiotic pond CO₂ transfer studies, outdoor algal cultivation, biomass harvest, culture media recycle, and techno-economic/life-cycle assessments. Task 5 or bench-scale Chlorella strain screening and optimization would be performed by the Pacific Northwest National Laboratory in Richland, WA. GT would commission, test, and operate the DAC system in an extended 2,000-hour trial, producing and tracking CO₂ production to simulate delivery to algae. The DAC system is sited on an existing concrete pad and requires no further site work. All facilities are preexisting purpose-built facilities for the type of work to be conducted for this award. Facility modifications or new permits would not be required.

Award activities would involve the use and handling of cultivation media and compressed gases as well as the

operation of potentially hazardous equipment. All such handling would be performed in controlled laboratory environments where algae cultivation is routinely performed. Potential hazards would be mitigated through adherence to established health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, engineering controls, monitoring, and internal assessments. Biological waste would be treated prior to disposal. Waste materials would be disposed of by qualified waste management service providers. MBE and its award partners would observe all applicable federal, state, and local health, safety, and environmental regulations.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technologies Office (BETO)
NEPA review completed by Corrin MacLuckie, 06/28/2024.

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:


NEPA Compliance Officer

Date: 6/28/2024

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required