PMC-ND

(1.08.09.13)

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

RECIPIENT: Colorado State University **STATE:** CO

PROJECT TITLE : Advancing Algal Productivity through Innovation in Cultivation Operation and Strain Traits (ADAPT-COST)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002423	DE-EE0009672	GFO-0009672-001	GO9672

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 Colorado State University (CSU) to genetically modify phototrophic algae to improve its productivity and biomass quality, fabricate sensors for monitoring biological and chemical parameters in algal cultivation, and develop an operational toolkit.

Project activities would be performed in laboratory and controlled outdoor settings at secure purpose-built facilities. CSU in Fort Collins, CO would perform genetic modification of algae, sensor development, and indoor algal cultivation. Chemical and biosensor development and strain engineering would take place at Quantitative Biosciences, Inc. (QBI) in San Diego, CA. Both Qualitas Health Algae Farm (QH) in Imperial, TX and AzCATI at Arizona State University in Mesa, AZ would both perform algal cultivation, including outdoor field testing. The Los Alamos National Laboratory (LANL) would provide computational research support.

Proposed project activities would include the technical development and improvement of photosynthetic efficiency and carbon fixation in both genetically modified (GM) and non-GM strains by modifying gene expression. Sensors would also be developed to measure nutrient levels, light levels, and algal biomass concentrations, as well as quantifying algal health. Models would also be developed to predict optimal cultivation conditions for algal ponds. A toolkit for gene expression would be developed. Lastly, techno-economic analyses and life cycle analyses would be completed at different stages of the project.

Laboratory and small-scale outdoor field testing of GM and non-GM algal strains would take place in existing facilities where similar work has already been completed. All outdoor GM algae experiments would occur at AzCATI and QH and would be regulated under the EPA's Toxic Substances Control Act (TSCA), for which a TSCA Environmental Release Application (TERA) would be filed. All necessary TERA permits would be obtained before proceeding with

project activities involving GM materials.

Routine lab work, sensor development, and cultivation of algae with solvents, compressed gases, and hazardous chemicals would be carried out. Fertilizers with ammonium, nitrate, and phosphates would be used in cultivation, and chemical wastes would be produced. Spent cultivation media would be disposed of by institutional, local, state, and federal environmental health and safety regulations. All applicable state and federal regulations and environmental health and safety and biosafety protocols would be followed. All hazardous waste would be collected, stored, and disposed of by certified hazardous waste disposal entities.

Wastewater containing spent growth media and dead algae biomass would be produced by AzCATI, CSU, and QH. Treatment would consist of autoclaving and bleach, and wastewater would be treated by the appropriate party according to TERA and institutional biosafety regulations.

There would be no physical modifications, ground disturbances, or change in operation of facilities or installation of new outdoor equipment at any sites.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technologies Office (BETO)
Review completed by Alex Colling on 02/25/2022

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: 3/21/2022

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