

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Georgia Tech Research Corporation**STATE:** GA

PROJECT TITLE: Direct Air Capture of CO₂ and Delivery to Photobioreactors for Algal Biofuel Production

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001908	DE-EE0008520	GFO-0008520-001	

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.)

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 the Georgia Tech Research Corporation to complete a project focused on developing a Direct Air Capture (DAC) system that would integrate with existing technology to deliver 20% of the carbon dioxide required for algae cultivation. The project would be completed over three Budget Periods (BPs). BP1 would involve the initial verification of the project proposal by DOE. BP2 would include design, construction, and initial testing of a mobile DAC unit that would allow testing under laboratory conditions at an existing biorefinery facility. BP3 would include integrating and operating the DAC system with existing infrastructure at an existing biorefinery facility.

Project activities would occur at multiple locations: Georgia Tech, Algenol Biotech LLC, Global Thermostat and the National Renewable Energy Laboratory (NREL). Georgia Tech and Global Thermostat LLC would collaborate to engineer a DAC process that extracts CO₂ from the air for feeding to an algal photobioreactor. This would include design, modeling, development and fabrication of components at Georgia Tech in a dedicated university laboratory. The developed device would be tested in-lab at Georgia Tech and in the field at Algenol Biotech's facility in Fort Myers, FL. Techno-economic and life-cycle analysis would be conducted by Georgia Tech, Algenol Biotech, and at NREL in Golden, CO. No modifications, construction, ground disturbing activities, changes in use, installations, or deployments beyond what currently exist each site would occur. No new permits or modifications to existing permits are required.

At Georgia Tech, researchers would carry out routine laboratory work involving standard laboratory equipment, solvents, compressed gases, and hazardous chemicals. Sorbent synthesis will involve use of chemicals and solvents and will generate chemical waste. Toxic and flammable materials would be processed in chemical fume hoods. Chemical waste would be collected and disposed of by a licensed disposal firm. Georgia Tech has a chemical and environmental safety office that monitors activities on campus.

At Global Thermostat, researchers would carry out routine laboratory work involving standard laboratory equipment

and compressed gases. Activities would be conducted in dedicated laboratory facility, containing sprinklers and a ventilation system.

At Algenol's facility in Ft. Myers, Florida, Algenol researchers would carry out routine laboratory work involving standard laboratory equipment, solvents, compressed gases, and hazardous chemicals. In addition, Algenol may conduct outdoor cultivations of cyanobacteria and may work with compressed gas lines, control systems, motors, pumps, mechanical equipment, and chemicals for media formulation. All applicable state and federal regulations and established company/institution EH&S safety and biosafety protocols would be followed. Hazard mitigation is handled in consultation with the Algenol EH&S group and external safety consultants, and by following all applicable federal, state, and local municipality regulations. DOE completed a final Environmental Assessment and Finding of No Significant Impact for the final design, construction, and start-up of Algenol's pilot-scale integrated biorefinery in Ft. Myers, Florida (DOE/EA-1786).

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

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.

Notes:

This NEPA determination requires a tailored NEPA provision.
Bioenergy Technologies Office

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:

 **Kristin Kerwin**
NEPA Compliance Officer

Date: 12/19/2018

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: _____
Field Office Manager

Date: _____