

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-0008520-002	GO8520

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the Georgia Tech Research Corporation (Georgia Tech) 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).

A NEPA Determination was made for this award on 12/19/2019 (Applied CXs: A9 and B5.15). Since that time, the project partner originally tasked with performing algae cultivation (Algenol Biotech LLC) has indicated that it will no longer be able to complete this task work at its facilities. Accordingly, Georgia Tech has requested to perform cultivation activities at its facilities in Atlanta, GA using photobioreactors (PBRs) supplied by Algenol Biotech. Some of the task work originally performed by Algenol Biotech would also be taken over by project partner Global Thermostat. Algenol Biotech would still be responsible for the fabrication and deployment of the PBR systems. It would also train Georgia Tech and Global Thermostat in their use.

These changes are reflected specifically in Subtasks 8.2 and 8.3 of the project's revised Statement of Project Objectives (SOPO). Additionally, a new bacterial strain would be used for cultivation experiments. Task work involving this strain was not previously reviewed, and is described under Subtask 13.2 of the SOPO. All other experimental/analytical tasks that would take place after Task 8.3 are activities that were previously included in the scope of the project and reviewed, but were originally to have taken place at Algenol Biotech's facilities. The scope of these activities would not change, but the site location would be changed to the Georgia Tech facilities described below.

Specific changes to the SOPO include:

Subtask 8.2: Delivery & Installation of PBRs – Algenol Biotech would deliver eighteen (18) individual photobioreactor (PBR) units to the Carbon-Neutral Energy Solutions Laboratory (C-NES) at Georgia Tech's campus in Atlanta, GA.

These PBR units would then be installed by Algenol Biotech and Georgia Tech personnel in a restricted access cultivation area outdoors, adjacent to the C-NES building. Service lines (e.g. electrical, piping) would be installed prior to system assembly, with guidance from Algenol Biotech. Additional electrical power would also be routed to the cultivation area in order to accommodate the power needs of the installed PBRs. Algenol Biotech is experienced in deploying their PBR systems remotely and would adhere to established corporate health and safety policies and procedures when deploying the systems.

Once deployed, Georgia Tech researchers would be trained by Algenol Biotech personnel in the operation of the PBR units. Global Thermostat would also integrate the DAC units developed as part of this project into the PBRs after they are installed at the outdoor cultivation area.

Subtask 8.3: Demonstrate Algae Production at Scale at Georgia Tech – Algae cultivation would be performed using the newly installed PBR units, throughout the summer of 2020. Initial cultures would be grown indoors at an established laboratory facility at the Georgia Tech campus. These cultures would then be transferred to the outdoor cultivation area.

Subtask 13.2: Integration of Revised DAC System with PBR with AB1 Strain – This subtask was added to the SOPO since the last NEPA Determination was made. Activities under this subtask would consist of cultivation experiments using a production strain provided to Georgia Tech by Algenol Biotech. The strain to be used is a naturally-occurring cyanobacterium sp. strain that is commonly cultivated for biofuel applications.

Project work would involve the use and handling of solvents, compressed gases, and hazardous chemicals. All such handling would be performed in controlled, laboratory settings equipped with proper safety equipment (e.g. fume hoods, sprinklers, ventilation systems). Personnel performing project work would receive proper health and safety training. Georgia Tech and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

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, 02/18/2020

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: 2/19/2020

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: _____