



U.S. Department of Energy

Categorical Exclusion Determination Form

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Proposed Action Title: Georgia Tech Research Corporation - Wind-driven direct air capture system using 3D printed, passive, amine-loaded contactors

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Atlanta, Georgia

Proposed Action Description:

AMENDED NEPA DETERMINATION: (See attached original Determination, dated January 22, 2021). This Amended Determination follows the approval of additional funds and period of performance to support the project team's small-scale, research and development of a passive wind-driven CO₂ direct air capture (WEDAC) technology. Specifically, the project team will expand upon their current WEDAC technology to develop a lab-scale, continuously operating, autonomous prototype WEDAC system. If successful, this project could facilitate large-scale WEDAC systems capable of removing large quantities of CO₂ from the atmosphere.

Project activities will be conducted at an existing facility at Georgia Tech Research Corporation and Georgia Tech Research Institute (Atlanta, GA). Project tasks continue to fit within the class of actions identified under the DOE Categorical Exclusions identified below and do not involve any extraordinary circumstances that may affect the significance of the environmental effects of the project. This assessment was based on a review of the proposed scope of work and the potential environmental impact of the project. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements. No modifications will be made to the existing facilities to accommodate the proposed work.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: **GEOFFREY GOODE** Digitally signed by GEOFFREY GOODE
Date: 2023.07.27 13:18:41 -04'00'

Date Determined:



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Proposed Action Title: Solicitation on Topics Informing New Program Areas Funding Opportunity Announcement (FOA), Topic P: "Direct Removal of Carbon Dioxide from Ambient Air" (DAC & DAC SBIR/STTR) (FOA Nos. DE-FOA-0001953 & DE-FOA-0001954) Programs

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Location(s) (City/County/State): GA; MA; MI; NC; NH

Proposed Action Description:

The DAC Program seeks to support the establishment of robust, energy efficient, and low-cost strategies for direct removal of carbon dioxide from ambient air. Specifically, DAC projects will develop novel capture materials, components, and full system designs that enable direct air capture systems with the potential to lower capital and operating expenditures, and to scale to Gt-levels of CO2 capture. If successful, DAC projects will enable full systems to achieve a Levelized Cost of Capture <\$100/t CO2; Second Law Efficiency >30%; and Embodied Emissions <5%.

The DAC Program is composed of 3 small-scale research and development projects that will be conducted by universities, non-profit entities, for-profit entities, and federal laboratories. This Determination covers all 3 projects (listed in Attachment A). All 3 projects fit within the class of actions identified under the DOE Categorical Exclusion identified below and do not involve any extraordinary circumstances that may affect the significance of the environmental effects of the projects. This assessment was based on a review of the proposed scope of work and the potential environmental impacts of each project. All project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and Local regulatory requirements.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

B3.15 - Small-scale indoor research and development projects using nanoscale materials

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: **Geoffrey Goode** Digitally signed by Geoffrey Goode
Date: 2021.01.22 09:53:58 -05'00'

Date Determined:

Attachment A: Projects in the Solicitation on Topics Informing New Program Areas Funding Opportunity Announcement (FOA), Topic P: “Direct Removal of Carbon Dioxide from Ambient Air” (DAC & DAC SBIR/STTR) (FOA Nos. DE-FOA-0001953 & DE-FOA-0001954) Programs

Full Application Control Number	Lead Organization	Project Title	Categorical Exclusion
1953-1807	REGENTS OF THE UNIVERSITY OF MICHIGAN	Electrochemical Direct Air Capture of CO ₂ using Redox-Active Textiles	A9, B3.6, B3.15
1953-1822	GEORGIA INSTITUTE OF TECHNOLOGY	Wind-driven direct air capture system using 3D printed, passive, amine-loaded contactors	A9, B3.6, B3.15
1954-1660	CREARE LLC	High-Efficiency, Low-Cost, Additive-Manufactured Air Contactor	A9, B3.6