

PMC-ND  
(1.08.09.13)

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

**RECIPIENT:** Georgia Institute of Technology**STATE:** GA**PROJECT TITLE:** Aerial Intelligence for Retrofit Building Energy Modeling (AirBEM)

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001825	DE-EE0008680	GFO-0008680-002	GO8680

**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.)

**B3.2 Aviation activities** Aviation activities for survey, monitoring, or security purposes that comply with Federal Aviation Administration regulations.

**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 Institute of Technology (Georgia Tech) to develop, demonstrate, and test a novel system to produce building energy models for evaluation of existing building envelopes (e.g. outdoor envelope energy audits). The system, AirBEM, would utilize an unmanned aerial vehicle to collect data (e.g. heat transfer data and envelope material conditions) on newly constructed building envelopes, via an attached infrared camera. Budget Period (BP) 1 project activities were reviewed by GFO-0008680-001 in August 2019. This NEPA review will cover the remainder of the project activities (BP2 and BP3) such as integrating aerial energy auditing and building energy modeling as well as AirBEM tool development and system validation.

Remaining project activities focus on the continued development of cyber-physical infrastructure through applied science research similar to activities previously reviewed in BP1 and the field testing of the AirBEM system. All research activities would occur on the campuses of Georgia Tech, Syracuse University, Massachusetts Institute of Technology (MIT), and industry partner Pattern r+d. These project activities would occur in existing facilities designed for this type of work that would utilize standard equipment; therefore no modifications, new permits, additional licenses and/or authorizations would be necessary. No ground disturbing activities, no changes in the operation of existing facilities, and no installation of equipment outdoors would occur for project activities.

Building audit workflows would be demonstrated and validated through audit cases by field testing of the AirBEM system at buildings in Atlanta, GA; Syracuse, NY and Cambridge, MA. None of the locations where work would occur would require changes to the use, mission, or operation of the facilities. Georgia Tech and its project partners would adhere to established health and safety policies and procedures and would observe all applicable health, safety, and environmental regulations.

This project includes the use of small unmanned aircraft systems (sUAS). Field test flights at the Syracuse, NY and Cambridge, MA locations would occur within controlled airspace near Syracuse Hancock International Airport and Logan International Airport, respectively. The recipient is responsible for ensuring that all activities involving sUAS are compliant with 14 CFR Part 107 or an applicable Certificate of Waiver or Authorization (COA). This includes, but is not limited to, aircraft requirements such as remote pilot-in-command certification, authorities and responsibilities; ensuring the sUAS is in a condition for safe operation; registration; understanding airspace classifications and requirements; and accident reporting (if applicable). For field test flights at the two locations mentioned above, the recipient is responsible for coordinating with, and receiving permission from, air traffic control prior to initiating field test flights in controlled airspace.

## NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

The Recipient is responsible for ensuring that all activities involving small unmanned aircraft systems (sUAS) are compliant with 14 CFR Part 107 or an applicable Certificate of Waiver or Authorization (COA). This includes, but is not limited to, aircraft requirements such as remote pilot-in-command certification, authorities and responsibilities; ensuring the sUAS is in a condition for safe operation; registration; understanding airspace classifications and requirements; and accident reporting (if applicable). For field test flights at the Syracuse, NY and Cambridge, MA locations, the Recipient is responsible for coordinating with, and receiving permission from, air traffic control prior to initiating field test flights in controlled airspace.

Notes:

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

## 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:



Date: 5/15/2020

Casey Strickland

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: \_\_\_\_\_  
Field Office Manager

Date: \_\_\_\_\_