

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)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001825	DE-EE0008680	GFO-0008680-001	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.)

B3.6 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 (UAV) to collect data (e.g. heat transfer data and envelope material conditions) on newly constructed building envelopes, via an attached infrared camera. The AirBEM system would be field-tested at buildings on the campuses of Georgia Tech and its project partners.

The project would be completed over three Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. This NEPA Determination will only review BP1 activities, as BP2 and BP3 activities would center on the completion of outdoor envelope energy audits using UAVs. Because aspects of the UAV flights are not yet fully defined (e.g. UAV devices to be used, pilot information/certifications) and because associated documentation needs to be submitted to DOE for review prior to UAV flight testing, a meaningful review on BP2/BP3 tasks cannot currently be completed. Accordingly, these BPs are restricted until further NEPA review is completed. Approved BP1 activities are limited to laboratory research/testing, analysis, computer modeling, and reporting. No outdoor UAV flight testing is permitted during this BP. Additional NEPA review will be completed once all relevant information has been provided by the Recipient.

Proposed project activities for BP1 would focus on development of cyber-physical infrastructure through applied science research. Specific tasks would include development of operating standards for UAV energy audits, computer modeling, algorithm development (e.g. for autonomous analysis, computer vision, and image processing), and development of a market transformation plan. All project activities would be performed at existing, purpose-based facilities on the campuses of Georgia Tech (Atlanta, GA) or its project partners Syracuse University (Syracuse, NY) or the Massachusetts Institute of Technology (Cambridge, MA). No changes to the use, mission, or operation of these facilities would be required. Likewise, no additional permits or authorizations would be needed for completion of project activities in BP1.

Because approved BP1 task work would be limited to computer analysis and office-based work, no significant health and safety risks are anticipated. 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.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

[Budget Period 1 Tasks excluding outdoor Unmanned Aerial Vehicle flight testing.](#)

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

[Budget Period 2](#)

[Budget Period 3](#)

[Outdoor Unmanned Aerial Vehicle flight testing activities.](#)

Notes:

[Building Technologies Office](#)

[This NEPA determination requires a tailored NEPA provision.](#)

[Review completed by Jonathan Hartman on 7/29/2019](#)

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



[Casey Strickland](#)

NEPA Compliance Officer

Date: 7/29/2019

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: _____