

PMC-ND

(1.08.09.13)

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

**RECIPIENT:**Clemson University**STATE:** SC

**PROJECT TITLE :** All-Digital Plug and Play Passive RFID Sensors for Energy Efficient Building Control

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001383	DE-EE0007683	GFO-0007683-001	G07683

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 federal funding to Clemson University to develop, demonstrate, and pre-commercialize a sensor technology for indoor and outdoor temperature and humidity measurement for building controls and operations that would be 3-D printed and use long range RFID technology for wireless interrogation of the sensors. Project work would occur at Clemson University in Clemson and Anderson, South Carolina; Harvard University in Boston, Massachusetts; Phase IV Engineering in Boulder, Colorado; and at the Energy Resource Station of the Iowa Energy Center in Ankeny, Iowa.

Project activities include design, development, fabrication, commercialization planning, and testing of the sensor technology and associated systems. Health and safety concerns are not expected for work occurring at Phase IV Engineering (e.g. adapt RFID sensor electronics, antenna design, data interface). Laboratory work at both Clemson and Harvard would involve the use and handling of various hazardous materials. Both universities have a full set of safety controls, equipment, training and operational procedures to handle the hazardous materials. Each person involved in the project would be required to take safety training in order to follow the corresponding safety regulation at both sites. Project activities involving these materials would pose no risk to the public and are overseen by the safety officers responsible for handling hazardous materials in accordance with federal, state, and local environmental regulations. Field testing would occur at the Energy Resource Station in Iowa and could include electrical and mechanical safety hazards. Project workers would follow existing health and safety policies and procedures including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. Project activities would require no change in the use, mission or operation of the existing facilities and would require no physical modification of existing facilities or construction of new facilities. All chemicals and solvents would be stored appropriately and disposed of in accordance with all applicable safety guidelines. Waste would be disposed of in accordance with governing regulations of the state and county where the project work is occurring. DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the



proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

#### NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

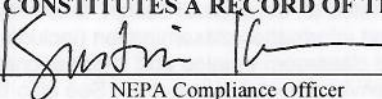
Building Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Casey Strickland 08/15/16

#### SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: \_\_\_\_\_

  
NEPA Compliance Officer

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

8/15/2016

#### FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

#### NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- ☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- ☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

#### BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: \_\_\_\_\_

Field Office Manager

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