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(1.08.09.13)

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

RECIPIENT: Electric Power Research Institute **STATE:** TN

PROJECT TITLE: Beneficial Integration of Energy Storage and Load Management with PV

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001108	DE-EE0007163	GFO-0007163-001	

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.
B5.16 Solar photovoltaic systems	The installation, modification, operation, and removal of commercially available solar photovoltaic systems located on a building or other structure (such as rooftop, parking lot or facility, and mounted to signage, lighting, gates, or fences), or if located on land, generally comprising less than 10 acres within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Electric Power Research Institute (EPRI) to optimize photovoltaic (PV) control architecture for beneficial integration of distributed energy resources with the grid.

Proposed activities would include design, development and demonstration of EPRI's utility-level system control, with a customer-level, local controller. Product design and project coordination would be completed at EPRI's offices and labs in Knoxville, TN, Palo Alto, CA, and Charlotte, NC. Product development would be undertaken at several locations concurrently to include: Eaton Corporation's dedicated research and development (R&D) facility in Menomonee Falls, WI; Alstom Grid's commercial manufacturing facility in Redmond, WA; Clean Power Research's commercial manufacturing facility in Kirkland, WA; PowerHub's commercial manufacturing facility in Blacksburg, VA; and LG Chem's commercial manufacturing facility in Troy, MI. In-lab component testing would occur at Sandia National Labs in Albuquerque, NM. Installation and demonstration activities would be completed at the Veale Center on campus at Case Western Reserve University (CWRU) in Cleveland, OH, and at Summit Hall on campus at Queens College (CUNY) in Flushing, NY. Additional installation and demonstration would take place at two Florida residences with pre-existing rooftop solar power systems although the specific locations have yet to be identified.

Demonstration activities at CWRU would involve installation of a 50 kW rooftop solar system, a battery (50 kW, 200kWh) and an ultra-capacitor (50 kW, 150 kWs) which would be connected to the pre-existing CWRU campus distribution system and integration of these devices into one photovoltaic energy storage (PV-ES) system using Eaton's 2x125 kVA smart inverter. This array would be located atop Veale Center with energy storage located inside Veale Center next to the electric room for easy access to the electric panel and to provide a controlled climate for

energy storage. Veale Center is not located within a historic district and is not eligible to be listed as a historic property. There would be minor, temporary ground disturbance adjacent to the proposed site which would be returned to its original condition upon completion of installations. Installations would not involve any changes in the structure or finishes of the selected site and existing roads would be used to access the project location.

Demonstration activities at Summit Hall at CUNY would require the installation of a 50-60 kW PV solar array and a Li-Ion battery (300kWh) within the existing CUNY campus distribution system, and integration into one PV-ES system using a DC-coupled smart inverter system. Physical modifications, ground disturbance and installation of equipment outdoors would include installation of the rooftop array, trenching underground wiring from Summit Hall to the electrical room in Fitzgerald gymnasium, and installation of the battery either in the same electrical room or just outside the gymnasium on a concrete pad in an enclosure. CUNY sits on a sole source aquifer; however, groundbreaking activities would be superficial and temporary and would occur on previously disturbed land which would be returned to its original state once underground wiring is buried. No injections or releases of chemicals into the ground are anticipated. Installations would not involve any changes in the structure or finishes of the selected site and existing roads would be used to access the project location.

Demonstration activities at unspecified residential properties would require replacement of the existing string inverters with smart inverters with open standard communication protocol, installation of a Li-Ion battery-based utility distributed energy storage system (DESS) from PowerHub (30kW/34kWh), and smart-controllable loads. Physical modifications, ground disturbance and installation of equipment outdoors are not anticipated at these sites.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements. The recipient is restricted from carrying out modifications or installations on or within buildings of historic, archaeological, or architectural significance designated by federal, state or local governments, property located within or immediately adjacent to a historic district, property 50 years or older, or property eligible for listing on the National Register of Historic Places without first providing additional property details to the DOE Project Officer and awaiting approval from DOE to move ahead with those modifications and installations.

There may be a small amount of construction debris, such as soil, asphalt, and packing materials amassed during the construction process. Materials such as cardboard, metal and pallets will be recycled when possible and, when necessary, disposed of through normal municipal waste streams as dictated by governing standard disposal practice followed by the universities. Fitzgerald Gym meets age criteria for asbestos testing and will be assessed before project activities begin. No hazardous materials would be utilized during the course of this project and none of the associated technologies create emissions. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be required.

Based on review of the project information and the above analysis, DOE has determined the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that this project is consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination", B3.6 "Small-scale research and development, laboratory operations, and pilot projects", and B5.16 "Solar photovoltaic systems" and is therefore 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Insert the following language in the award:

You are required to:
Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

The recipient is restricted from carrying out modifications or installations on or within buildings of historic, archaeological, or architectural significance designated by federal, state or local governments, property located within

or immediately adjacent to a historic district, property 50 years or older, or property eligible for listing on the National Register of Historic Places without first providing additional property details to the DOE Project Officer and awaiting approval from DOE to move ahead with those modifications and installations.

Note to Specialist :

Solar Energy Technologies Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Rebecca McCord on 12/16/2015

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 12/22/2015
NEPA Compliance Officer

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: _____ Date: _____
Field Office Manager