PMC-EF2a

(2.0602)

# U.S. DEPARTMENT OF ENERGY
## EERE PROJECT MANAGEMENT CENTER
## NEPA DETERMINATION

**RECIPIENT:** University of Hawaii, Hawaii Natural Energy Institute **STATE:** HI

**PROJECT TITLE :** Development and Demonstration of Smart Grid Inverters for High-Penetration PV Applications

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| DE-FOA-0000479 | DE-EE0005338 | GFO-0005338-002 | |

**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. |

Rational for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of Hawaii to integrate grid management functionality software (SW) and standards-based communications hardware and software (HW/SW) into a commercially available inverter to create a new Smart Grid inverter. The project would utilize modeling, development, testing, and deployment of new inverter technology to demonstrate the ability of the Smart Grid inverters to mitigate grid reliability impacts resulting from high-penetrations of distributed photovoltaic (PV) systems.

A previous NEPA determination was made on 12/14/2011 (GFO-00005338-001 CX A9, B3.6) for Phase 1 activities which included design, fabrication, laboratory level testing and assessment of Smart Grid Inverters. This determination applies to the deployment of residential PV systems and small data collection units on test feeders to enable testing and assessment of Smart Grid Inverter performance and impact on the feeders.

The University of Hawaii – Hawaii Natural Energy Institute (UH-HNEI) led consortium, which includes Silver Spring Networks (SSN), Fronius, Maui Electric Company (MECO), Hawaiian Electric Company (HECO), Pepco Holdings, Inc. (PHI), Oklahoma Gas and Electric (OG&E), SolarCity, and Rising Sun Solar Electric (Rising Sun), would demonstrate the advanced solution at two different utility sites. The inverters would be tested in a newly constructed inverter laboratory at OG&E to test smart inverter control capabilities in various programmed scenarios. OG&E previously submitted an R&D questionnaire addressing the protocols for laboratory and facility safety, risk management and waste disposal.

At the first field demonstration site on the MECO grid, the team would install approximately 30 new and retrofit PV inverters to test the feasibility of using inverters to mitigate voltage fluctuations caused by the intermittency of PV systems, and control PV system output with the curtailment capability. At a second site on the PHI grid, the project team would install approximately 15 new residential PV systems in three distinct service areas in the territory to test the inverters' ability to manage further PV integration onto a large, interconnected grid.

In order to mitigate any potential impacts from system installations, the recipient has agreed to the following:

•The installations will all be mounted on existing facilities and homes. The inverters will be UL listed and grid-connected through net meters.
•All systems will be installed on existing structures. No ground mounted PV arrays are proposed as part of this project. One inverter would be installed to a ground mounted PV system, however, the PV system was already permitted and installed, and this would be a retrofit.
•The project will not involve any structures listed on the historical register or eligible for listing.
•Roofs / structures will have inspection of an appropriate nature performed to ensure their suitability for a PV installation. The inspection will also include structural integrity.
•Main electric service panel will be inspected to ensure that it is in compliance with all applicable code requirements.
•Appropriately licensed contractors will be used for all work.
•No work would occur in a floodplain or wetland.

Based on review of the project information and the above analysis, DOE has determined the development and installation activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion A9 "information gathering, analysis and dissemination," B3.6 "small-scale research and development, laboratory operations and pilot projects," and B5.16 "solar PV systems" and 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 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:
In order to mitigate any potential impacts from system installations, the recipient has agreed to the following:

•The installations will all be mounted on existing facilities and homes. The inverters will be UL listed and grid-connected through net meters.
•All systems will be installed on existing structures. No ground mounted PV arrays are proposed as part of this project. One inverter would be installed to a ground mounted PV system, however, the PV system was already permitted and installed, and this would be a retrofit.
•The project will not involve any structures listed on the historical register or eligible for listing.
•Roofs / structures will have inspection of an appropriate nature performed to ensure their suitability for a PV installation. The inspection will also include structural integrity.
•Main electric service panel will be inspected to ensure that it is in compliance with all applicable code requirements.
•Appropriately licensed contractors will be used for all work.
•No work would occur in a floodplain or wetland.

Note to Specialist :

Kelly Daigle 5/28/2013

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

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin
NEPA Compliance Officer

Date: 6/3/2013

**FIELD OFFICE MANAGER DETERMINATION**

☐ Field Office Manager review required

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