PMC-EF2a
(2.04.02)

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

RECIPIENT: Virginia Polytechnic Institute and State University **STATE:** VA

PROJECT TITLE : Field Verification of High-Penetration Levels of PV into the Distribution Grid with Advanced Power Conditioning Systems

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000085	DE-EE0002062	GFO-10-172	0

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 (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

The purpose of this project is to study existing PV inverter technologies and create new technologies to find the most economical and technically sound high-penetration PV into the distribution grid. The project will test the existing PV power conditioners made by commercial companies such as Enphase Energy, SMA America, Xantrex, and the prototype power conditioners developed by Virginia Tech. Cost effectiveness of these power conditioners and other possible configurations will be evaluated for high-penetration PV systems.

The majority of the work in this project will occur within lab facilities at Virginia Tech. Simulations of PV systems will take place at EPRI in Tennessee. The University of Texas at Austin will be performing simulations and field measurements of PV systems in support of this project at existing test facilities. A field test will occur at the existing Western Research Institute, Laramie, Wyoming.
The DOE would be used for the following tasks:
Task 1: Testing and Demonstration of Commercial and FEEC Power Conditioners on Lab Scale PV System
Task 2: Modeling of PV Source for Distribution System Study
Task 3: Laboratory Testing of Power System Interaction with PV Power Conditioners
Task 4: Laboratory Testing of Grid-Interconnection
Task 5: Testing and Demonstration of the DDA with paralleled VTMC modules
Task 6: Testing of Advanced Features of PV Power Conditioners
Task 7: Cost Effectiveness Analysis of PV System Architectures
Task 8: Simulation of the Distribution System with High Penetration PV
Task 9: Workshop on PV Power Conditioning System Demonstration
Task 10: Simulation for Interaction between PV System and Utility Grid with High Penetration PV
Task 11: Hardware-in-the-Loop Development
Task 12: Demonstration of Smart Inverter Operation (VTMC with DDA)
Task 13: Database and Software Update of Open DSS
Task 14: Workshop on High Penetration PV System Modeling and Simulation
Task 15: Field Demonstration at Virginia Tech (15-20kW range)
Task 16: Performance Improvement of VTMC and DDA PCS High Penetration PV System with Energy Storage
Task 17: Field Demonstration at Western Research Institute, Laramie, Wyoming (100kW+ range)
Task 18: Utility Scale PV System Cost and Performance Analysis
Task 19: Workshop on High Penetration PV System Field Demonstration
Task 20: Project Management and Reporting

R&D Laboratory Environmental Questionnaires have been completed for Virginia Tech, UT-Austin and the EPRI facility.

This project involves the installation and operation of small scale research projects and laboratory operations at existing facilities and therefore qualifies for a CX under B3.6. The project also involves data analysis and qualifies for a CX under A9.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 3/21/10

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