

PMC-ND
(1.08.09.13)

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



RECIPIENT:University of Arkansas

STATE: AR

PROJECT TITLE : A Reliable, Cost-Effective Transformerless Medium-Voltage Inverter for Grid Integration of Combined Solar and Energy Storage

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001740	DE-EE0008349	GFO-0008349-001	GO8349

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 funding to the University of Arkansas (UARK) to develop a 300 kW medium-voltage inverter system that would not require a transformer and would incorporate power electronics (PE) into the system design. Two prototype inverters would be designed, fabricated, and tested as part of this project.

The proposed project would encompass data analysis, computer modeling, preliminary engineering and design, and laboratory scale research and development. A variety of power electronic components and processes would be integrated into the two prototype inverters developed as part of the project, including silicon carbide power modules, multi-level PE circuits, high frequency transformers, switching sequence based control and electro-thermal management methods. Proposed project activities include applied research and analysis, component design and demonstration, air manifold optimization/temperature control improvements, development of a switching sequence control, solar inverter system design and integration, performance testing and simulations, and commercial strategy development.

All experimental work would be carried out by UARK and its project partners in existing, purpose-built facilities. Wolfspeed (Fayetteville, AR), NextWatt (Hoffman Estates, IL) and UARK would participate in design, assembly, and testing work. UARK would oversee all project activities and would perform project work at its Engineering Research Center and the National Center for Reliable Electric Power Transmission (both located in Fayetteville, AR), which is also owned and operated by UARK. Eaton Corporation (Menomonee Falls, WI) would participate in process and equipment evaluation activities, as well as commercialization planning. No change in the use, mission, or operation of any existing facilities, owned or operated by UARK or its project partners, would arise out of these efforts. Neither UARK nor any of its project partners would need to obtain any additional permits to perform any of the work associated with this project.

The proposed project would not involve the use or handling of hazardous materials or industrial solvents. All experimental work would be completed in laboratory settings with well-established health and safety protocols and procedures. Any risks involving the handling of power electronics would be mitigated by these protocols, which include safety training, use of protective gear, regular monitoring, and internal assessments. All applicable health, safety and environmental rules and regulations, at the local, State and Federal level would be adhered to.

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 :

Solar Energy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Jonathan Hartman on 6/27/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Date: 6/28/2018
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