

PMC-ND  
(1.08.09.13)

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



**RECIPIENT:** University of Washington

**STATE:** WA

**PROJECT TITLE :** Modular Wide-Bandgap String Inverters for Low-Cost Medium-Voltage Transformer-less PV Systems

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001740	DE-EE0008346	GFO-0008346-001	GO8346

**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:

<b>A9 Information gathering, analysis, and dissemination</b>	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.)
<b>B3.6 Small-scale research and development, laboratory operations, and pilot projects</b>	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 Washington (UW) to design, develop, and fabricate prototype solar photovoltaic (PV) systems featuring wide-bandgap string inverters and decentralized controls. The design would enable the systems to produce medium voltage alternating current directly and, consequently, function without a transformer.

The proposed project would involve data analysis, computer modeling, preliminary engineering and design, and indoor laboratory research and development. Associated activities would include computer aided design and performance simulations, cost modeling and optimization, system framework design, component design and development, equipment testing and validation, fabrication and testing of medium voltage testbeds, development of a market transition plan, and engagement with industry stakeholders. With the exception of industry stakeholder engagement, all project activities would be carried out on-site at the dedicated laboratory facilities of UW (Seattle, WA) and its project partners, which include the University of Colorado ('CU' – Boulder, CO)), the National Renewable Energy Laboratory ('NREL' – Golden, CO), and Cree Fayetteville (Fayetteville, AR). No change in the use, mission, or operation of existing facilities would result from any of the proposed project activities. Neither UW nor any of its project partners would need to obtain any additional permits in order to realize the work activities proposed as part of this award. Industry stakeholder engagement would be carried out via a single workshop at the end of the project (Task 10). A location has not yet been selected for the workshop. However, hardware would not be deployed as part of this task and no environmental impacts would be expected as a result of outreach activities

The proposed project would seek to develop the target technology from an early stage Technology Readiness Level 3 (TRL-3) concept, to a laboratory-scale demonstration at TRL-5. Ultimately, three medium voltage testbeds would be produced and housed at UW, CU and NREL, respectively. Approximately 30 printed circuit boards would be used with off-the-shelf components to fabricate each system. The test beds would be small enough in scale to rest on standard lab benches. No hazardous materials would be utilized as part of the project. Any unused electronics remaining upon completion of project work would be recycled per the standard policies and procedures of each institution.

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.

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.

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.

Note to Specialist :

Solar Energy Technologies Office  
This NEPA determination requires a tailored NEPA provision.  
Review completed by Jonathan Hartman on 6/19/2018

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

NEPA Compliance Officer Signature:  \_\_\_\_\_ Date: 6/26/2018  
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