

PMC-ND
(1.08.09.13)

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



RECIPIENT:University of Illinois

STATE: IL

PROJECT TITLE : Generalizable Mechanistic Understanding of Module-level Light-, Heat- and Humidity-Induced Instabilities in CIGS Photovoltaics

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001195	DE-EE0007141	GFO-0007141-001	GO7141

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 the University of Illinois to identify the root causes of light-, heat-, and humidity-induced instabilities in the operation and accelerated testing of commercial Cu(In,Ga)Se₂ (CIGS) photovoltaic modules produced by major module manufacturers, correlate them with module degradation/failure modes, and produce accurate service lifetime prediction models.

Proposed project activities would include fabrication and characterization of materials and devices, modeling of instabilities and degradation processes, field testing of solar modules and reporting of findings. Materials analysis would take place at dedicated lab facilities on campus at the University of Illinois (U of I) in Urbana-Champaign, IL and Ohio State University (OSU) in Columbus, OH. Materials synthesis would be completed at dedicated lab facilities on campus at Old Dominion University (ODU) in Norfolk, VA. The facilities in which synthesis and analysis work would occur are purpose-built for the type of activities being proposed; therefore, no adverse impacts to sensitive resources are expected as a result of the proposed project. No change in the use, mission or operation of existing facilities would arise out of this effort. The facilities have all applicable permits in place, and would not need additional permits for the proposed activities.

ODU would also conduct field testing of solar modules which would require the installation of modules on existing outdoor test facilities at Old Dominion University. The facilities are specifically intended and designed for such installations; therefore, no adverse impacts to sensitive resources are expected as a result of the proposed project. No ground disturbing activities or change in the use, mission or operation of existing facilities would arise out of this effort.

The project would involve the use of hazardous or toxic chemicals, waste, and other materials that would require disposal as hazardous materials. These materials are likely to consist of acids, solvents, Cadmium Sulfide, CIGS compounds and/or other chemicals needed to prepare samples, typically not considered toxic or hazardous, but which

may become mixed with toxic or hazardous materials as part of their application. All such handling would occur in-lab and would be managed in accordance with federal, state, and local environmental regulations. Existing university health and safety policies and procedures would be followed including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. The modules would be disposed of as hazardous materials as would all prototype materials and devices produced as part of the project. 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.

Note to Specialist :

Solar Energy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Rebecca McCord 08/31/2015.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

 Electronically Signed By: Lori Gray / Lori Gray
NEPA Compliance Officer

Date: 9/2/2015

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: _____

Field Office Manager

Date: _____