

PMC-ND

(1.08.09.13)

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

**RECIPIENT:**Arizona State University**STATE:** AZ**PROJECT TITLE** : Solution for Predictive Physical Modeling in CdTe and Other Thin-Film PV Technologies

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE FOA 0001387	DE EE 0007536	GFO-0007536-001	

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 federal funding to Arizona State University (ASU) to develop and experimentally verify a software package equipped with advanced physical models for explaining and predicting performance of Cadmium Telluride (CdTe) and other thin-film photovoltaic (TFPV) devices.

Activities associated with the proposed project would include development of a theoretical model, design and development of numerical infrastructure and a simulation tool for modeling TFPV, and verification of the package using experimental data. Physical and mathematical model development would take place at ASU in Tempe, AZ; First Solar in Perrysburg, OH; and San Jose State University in San Jose, CA. Software design and development would occur at Purdue University in West Lafayette, IN. Experimental efforts would be performed at First Solar.

Experimental verification of developed models would involve performing measurements on test samples of TFPV materials to characterize various properties and processes at the atomistic level coupled to the electronic subsystem responsible for a PV device's function. The facilities at First Solar are designed for these types of advanced characterization techniques. Such research is incorporated into the everyday production process at First Solar; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary.

The proposed project would involve the use and handling of CdTe at First Solar. Existing corporate health and safety policies and procedures would be followed including employee training, personal protective equipment (PPE), engineering controls, monitoring and internal assessments. Cadmium contaminated PPE and small quantities of debris generated in-lab during fabrication of test samples would be collected and stored in a designated hazardous waste storage location and transported per Department of Transportation regulations to proper treatment and disposal facilities.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of 10 CFR 1021 subpart B 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 Whitney Doss on 08/02/2016.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Electronically Signed By: Kristin Kerwin

Kristin Kerwin

Date: _____

8/2/2016

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: _____

Field Office Manager

Date: _____