

PMC-ND

(1.08.09.13)

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



RECIPIENT: PVEL

STATE: CA

**PROJECT TITLE:** Bifacial PV Module Energy Modeling Validation Study

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001840	DE-EE0008546	GFO-0008546-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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.

**B5.15 Small-scale renewable energy research and development and pilot projects** Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located 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 funding to PVEL to validate energy models for bifacial solar photovoltaic (PV) modules in order to demonstrate the technology. Various bifacial and monofacial PV modules would be installed, commissioned, and monitored at an outdoor PV system in Davis, CA. All tasks would be completed in a single Budget Period.

Proposed project activities would include module characterization, flash testing using pulsed solar simulators, electroluminescence imaging, installation and commissioning of modules at an outdoor testing facility, data collection (e.g. temperature, albedo, power, current, etc.), and computer modeling (e.g. energy yield simulation modeling).

All laboratory work would be completed at PVEL's laboratory facilities in Berkeley, CA and San Francisco, CA. Outdoor solar PV testing would be performed at PVEL's existing outdoor solar testing facility in Davis, CA. Field testing would be completed over the course of one year. During field testing, different surface types would be used to test reflectivity (e.g. low-lying vegetation and white, reflective surfaces using stones and other materials). Field testing would require the removal of existing trackers and trenching to install new trackers and boreholes for posts. Additionally, stone materials would be applied to the terrain and hydroseeding would be performed to simulate the desired albedo. No changes in the use, mission, or operation of existing facilities would be required. PVEL would not

need to obtain any additional permits in order to realize the work activities proposed as part of this award.

The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation database reports nine endangered or threatened species known to be in the vicinity of the project area or to have been in the area in the past. These include a species of bird, reptile, fish, insect, two species of amphibians, and three species of crustaceans. Of these, only the Valley Elderberry Longhorn Beetle or Western Snowy Plover have any real possibility of being in the project area, as all of the other species' habitats are in or near bodies of water (e.g. ponds, rivers, etc.). However, due to the nature of the project site, it is highly unlikely that either of these two species would be found there. The Snowy Plover tends to be found on beaches and in salt pans or alkaline flats. The Longhorn Beetle is only found in association with its host plant, the elderberry. The solar modules and outdoor testing would be completed on a previously disturbed plot of land, in which no shrubbery is present, and that is currently used for solar testing. Consequently, DOE has determined there would be no effect on ESA-listed species as a result of this project.

There is potential for migratory birds to strike PV panels such as those that would be installed as part of the proposed project. However, due to the small footprint of the proposed PV system and considering that solar PV panels are currently installed at the site, impacts to individuals or populations of migratory birds are not expected as a result of the project.

Electric shocks hazards typical of solar PV installations would exist. Risks associated with project work would be mitigated through adherence to established health and safety policies and procedures. Protocols would include engineering controls, mandatory safety training, enforcement of personal protective equipment, and quarterly reviews of safety procedures and results. PVEL would adhere to all local, state, and Federal health, safety and environmental regulations.

#### **NEPA PROVISION**

DOE has made a final NEPA determination.

Notes:

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Jonathan Hartman, 12/17/2018

#### **FOR CATEGORICAL EXCLUSION DETERMINATIONS**

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

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

NEPA Compliance Officer Signature: \_\_\_\_\_

 Electronically  
Signed By: Kristin Kerwin

NEPA Compliance Officer

Date: 12/20/2018

**FIELD OFFICE MANAGER DETERMINATION**

- Field Office Manager review not required
- Field Office Manager review required

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_