

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** UL LLC**STATE:** IL**PROJECT****TITLE:**

A Data-driven Approach to Real-world Degradation of Backsheets

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001840	DE-EE0008748	GFO-0008748-001	

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.

B5.16 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 funding to UL LLC to model the degradation of field-deployed backsheets within solar photovoltaic (PV) modules in various conditions of use. A study would be performed in order to develop lifetime predictions of materials in specific climate zones. Field surveys would be performed within the United States and internationally in order to develop a standardized protocol for field assessments across a variety of climate zones. The project would be completed over two Budget Periods (BPs) with a Go/No-Go Decision Point in between each BP.

The proposed project activities would be similar across both BPs, but would be performed at different solar PV sites. In each BP, between 10 and 50 solar PV sites would be identified for field surveys and the survey protocol would be developed (then optimized in BP2). Field surveys would then be performed at between 15 and 40 of the identified sites. In BP1, all solar PV sites would be domestic sites located at specific climate zones within the United States. In BP2, the sample of sites would be composed of both domestic and international locations. Field surveys would consist of visual inspections and non-destructive evaluations (e.g. assessments of color, gloss). Select modules would then be retrieved for degradation analysis within a laboratory setting. Degradation analysis activities would include spectrometry, fluorescence assessments, cross sectional analysis, and other characterization techniques.

UL LLC would oversee all project activities and would perform accelerated aging and characterization of PV modules at its laboratory facilities in Northbrook, IL. Accelerated aging and characterization would also be performed

in coordination with the Solar Durability and Lifetime Extension Center (SDLE) at Case Western Reserve University in Cleveland, OH. Characterization of cells, encapsulants, and glass would be performed at the National Renewable Energy Laboratory (NREL) in Golden, CO and at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. No physical modifications to existing facilities, ground disturbing activities, or changes in the use, mission, or operation of existing facilities would be required for this project. Likewise, no additional permits, licenses, or authorizations would be required.

Project activities would involve the handling of electrically energized PV modules. All such handling would be performed by qualified personnel who have undergone safety training. Additional protocols would be adhered to in order to mitigate against potential health and safety risks, including engineering controls to ensure touch-safe electrical connections, tooling for electrical disconnects, and disconnects under load contacts. No hazardous chemicals would be used. All laboratory testing activities would be performed at existing facilities that regularly perform work similar in nature to that included in this project. Some laboratory assessments would result in the destruction/decommissioning of PV modules. All waste materials would be disposed of in accordance with established protocols and procedures. UL LLC and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations when performing project work.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

Notes:

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA Provision. Include the standard laboratory language in the award.

NEPA review completed by Jonathan Hartman, 06/18/2019

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.

DOE has determined that work to be carried out outside of the United States, its territories and possessions is exempt from further review pursuant to Section 5.1.1 of the DOE Final Guidelines for Implementation of Executive Order 12114; "Environmental Effects Abroad of Major Federal Actions."

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: 6/19/2019

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: _____