PMC-ND
(1.08.09.13)

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

RECIPIENT: NREL **STATE:** CO

PROJECT TITLE: NREL-19-020 Durable Module Materials Capability Development – Sandia National Laboratory

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-AC36-08GO28308	NREL-19-020	GO28308

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:

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.
B3.11 Outdoor tests and experiments on materials and equipment components	Outdoor tests and experiments for the development, quality assurance, or reliability of materials and equipment (including, but not limited to, weapon system components) under controlled conditions. Covered actions include, but are not limited to, burn tests (such as tests of electric cable fire resistance or the combustion characteristics of fuels), impact tests (such as pneumatic ejector tests using earthen embankments or concrete slabs designated and routinely used for that purpose), or drop, puncture, water-immersion, or thermal tests. Covered actions would not involve source, special nuclear, or byproduct materials, except encapsulated sources manufactured to applicable standards that contain source, special nuclear, or byproduct materials may be used for nondestructive actions such as detector/sensor development and testing and first responder field training.
DOE/EA-1968 (NREL STM)	SITEWIDE ENVIRONMENTAL ASSESSMENT, U.S. DOE NATIONAL RENEWABLE ENERGY LABORATORY, SOUTH TABLE MOUNTAIN CAMPUS, GOLDEN, COLORADO

Rationale for determination:

The U.S. Department of Energy's (DOE) Solar Energy Technologies Office (SETO) proposes to provide funding to the National Renewable Energy Laboratory (NREL) to partner with Sandia National Laboratory and the University of South Florida (USF) to conduct accelerated PV module durability testing and data analytics. This effort is part of DOE's national laboratory-led Energy Materials Network Consortium for durable module materials (DuraMAT), an initiative which seeks to accelerate the development of new module materials that enable significant reductions in the levelized cost of energy (LCOE) of photovoltaic (PV) systems.

The proposed project would involve obtaining new PV modules and materials, including PV backsheets, from project partners for use in both indoor and outdoor testing. Both NREL and Sandia would select the materials to be tested.

Indoor testing would occur at NREL (located in Golden, CO) and Sandia (located in Albuquerque, NM). Testing at both sites would involve destructive and non-destructive materials characterization techniques to collect baseline data about the modules prior to outdoor testing. Non-destructive testing would involve various methods, including indoor flash testing, electroluminescence (EL), and infrared (IR) imaging of all modules to measure PV performance. In addition, one module of each type would be subjected to destructive testing methods to characterize the module materials. Destructive testing would include Raman Spectroscopy and Differential Scanning Calorimetry. All tests would occur in existing laboratory space with appropriate engineering controls and procedures to perform such work.

Outdoor testing would occur at NREL, Sandia, and USF's Florida Solar Energy Center (located in Cocoa, FL). At all

sites, PV modules would be installed on existing infrastructure to assess module degradation in the natural environment; each site also has all required electrical, mechanical, and communications hardware in place. The modules would be installed with power optimizers to provide power generation data. Annually, one module of each type would be retrieved from the field and re-characterized using the same non-destructive and destructive characterization methods discussed above.

Testing would take approximately 2 years. At the conclusion of the experiments, the undamaged modules would be removed and either reused, returned to the project partner, or disposed. Small quantities of non-hazardous waste would be produced from destructive testing of the PV modules (glass, silicon, polymer encapsulant, and copper), backsheets, and mini-modules. These wastes would be disposed of properly in accordance with established procedures.

Project activities analyzed in this NEPA review would not affect cultural resources, threatened or endangered species, wetlands, floodplains, or prime farmlands and no permits would be required. The project would not involve ground disturbance, as the modules would be installed on existing infrastructure. No change in the use, mission, or operation of existing facilities would result from the proposed project. As such, no direct or indirect impacts resulting from the proposed project would be anticipated.

Individuals could be exposed physical and electrical hazards during the course of this project. Existing corporate health and safety policies and procedures at NREL, Sandia, and USF would be followed, including employee training, proper protective equipment, engineering controls, and monitoring. Additional policies and procedures would be implemented as necessary if new health and safety risks are identified.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assisstance 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:

NREL
Nicole Serio 3/20/2019

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.

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 Date: 3/21/2019

NEPA Compliance Officer

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: _____ Date: _____

Field Office Manager