

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Brown University**STATE:** RI

PROJECT TITLE: Innovative Interfacial Engineering for Simultaneous Enhancement in Efficiency, Stability, and Reliability in Perovskite Devices

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002357	DE-EE0009511	GFO-0009511-001	GO9511

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.)

B3.15 Small-scale indoor research and development projects using nanoscale materials Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

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 Brown University to design and develop a scalable manufacturing approach to improving the stability and reliability of perovskite solar cells (PSCs) and minimodules, while simultaneously enhancing their power conversion efficiency.

Activities associated with the proposed project would include design, synthesis, processing, characterization, device fabrication, testing, evaluation, and analysis of halide PSCs and modules. The proposed scope of work is largely experimental and would take place in dedicated photovoltaics research laboratories at Brown University (Providence, RI) and the National Renewable Energy Laboratory (NREL; Golden, CO). 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.

The proposed project would involve the use and handling of hazardous materials, including metals and industrial solvents. All such handling would occur in-lab, following established health and safety policies and procedures for each site. Hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Small quantities (approximately 50 g) of lead-based waste generated by project activities would be disposed of by qualified Environmental, Health and Safety (EH&S) personnel. The proposed project would also

involve the use of nanoparticles of titanium oxide and tin oxide. While there is no known risk associated with these nanoscale materials, they would be disposed of as part of the hazardous waste protocols at both sites.

The estimated quantities of materials to be used and produced by the proposed project would not exceed bench-scale. Any excess materials would be saved for future research. No new equipment would be purchased for the purposes of the proposed project. The facilities in which project work would occur are designed for this type of research; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary. No change in the use, mission, or operation of existing facilities would arise out of this effort.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Whitney Doss Donoghue, 6/25/2021

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:


NEPA Compliance Officer

Date: 6/29/2021

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: