

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** GEORGIA INSTITUTE OF TECHNOLOGY**STATE:** GA

PROJECT TITLE: Development of ~ 25% Efficient Double Side Screen Printed Poly-Si/SiOx Passivated Contact Solar Cells

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002243	DE-EE0009350	GFO-0009350-001	

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the Georgia Institute of Technology (GIT) to develop novel solar cell technologies for use in bifacial solar photovoltaic (PV) applications. GIT would optimize various physical parameters of back junction solar cells, including the cell composition, doping, and thickness, to achieve targeted performance efficiencies. Test cells and bifacial contacts would be fabricated and characterized in laboratory settings. The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. This NEPA review is applicable to both BPs.

Proposed project activities would include computer modeling/simulations, fabrication process optimization, material synthesis, and material characterization. Solar cell fabrication process optimization would consist of targeted modifications to relevant physical parameters, including cell printing and doping. Variables such as cell thickness and composition would be adjusted throughout the project. Cell fabrication would be performed via established manufacturing techniques (e.g., screen printing), in laboratory scale quantities (i.e., less than 50 kg of screen printed paste).

GIT would coordinate all project activities and lead a team of investigators in the performance of laboratory analysis, solar cell fabrication, and testing. These tasks would be performed at GIT's laboratory facilities in Atlanta, GA and at the facilities of GIT's project partners, the National University of Singapore and the University of North Carolina Charlotte, in Singapore, and Charlotte, NC, respectively. No physical modifications to existing facilities, ground disturbance, or changes to the use, mission, or operations of existing facilities would be required. No additional permits or authorizations would be required.

Project work would involve the use and handling of industrial chemicals, as well as toxic and/or pyrophoric gases. All such handling would be performed in controlled laboratory settings that routinely work with these materials as part of their regular course of business. GIT and its project partners would adhere to established institutional health and safety policies and procedures. Personnel handling potentially hazardous materials would utilize appropriate personal protective equipment. Gases would be handled under fume hoods. Potentially hazardous materials would be stored in cabinets with proper safety mechanisms in place (e.g., leak detector systems). Gases would be scrubbed prior to release. Acidic and basic chemicals would be neutralized prior to disposal. GIT and its project partners would observe all applicable Federal, state, and local 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.
NEPA review completed by Jonathan Hartman, 03/05/2021

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.

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:  Casey Strickland Date: 3/5/2021
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