

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Amtech Systems, Inc.**STATE:** AZ

PROJECT TITLE: Field-Effect Passivation by Desired Charge Injection into SiNx Passivation in Crystalline-Silicon Solar Cells

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001840	DE-EE0008566	GFO-0008566-001	

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 Amtech Systems, Inc. (Amtech) to develop a plasma charging method which introduces charges on dielectric passivation film in solar photovoltaic (PV) applications. The project would seek to optimize the technology and address previously identified performance issues. The project would be split into three Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP.

Proposed project activities for BP1 would include performance optimization of an existing prototype plasma charging tool, PV passivation layer optimization, and Passivated Emitter & Rear Cell (p-PERC) development. BP2 activities would include cell optimization (p-PERC and Passivated Emitter & Rear Totally Diffused (n-PERT)), cell fabrication for reliability testing, and 2-cell mini-module reliability testing. BP3 activities would include mini-module fabrication and extended reliability testing.

All project activities would be performed in existing, purpose-built laboratory and manufacturing facilities. Amtech would lead and coordinate all project activities; and would complete development of the plasma charging technology at its research and development facility in Tempe, AZ. Georgia Institute of Technology (GIT) would develop, fabricate and characterize test wafers and solar cells at its campus in Atlanta, GA. Solar PTL would perform mini-module reliability testing at its testing facility in Tempe, AZ. A clean room would be installed within the existing lab space at Amtech's Tempe facility. The installation process would require modifications to the facility's electrical, plumbing and ventilation systems. GIT and Solar PTL's facilities would not require any modifications. No changes in the use, mission, or operation of existing facilities would be required. Neither Amtech nor any of its project partners would need to obtain any additional permits in order to perform the work activities proposed as part of this award.

Proposed project activities would involve the use and handling of various metals, industrial chemicals, and gases. Amtech and its project partners regularly work with these project materials and would adhere to existing health and safety policies in order to mitigate any potential risks. Gases and chemicals would be labelled and stored

appropriately. Gases would be scrubbed prior to release and chemicals would be neutralized prior to disposal. All hazardous materials would be disposed of by a certified entity. Amtech and its project partners would observe all Federal, state and local health, safety, and environmental laws and 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, 01/30/2019

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:  _____ Date: 2/4/2019
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