

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Scion Plasma LLC**STATE:** MI

PROJECT TITLE: Developing a Single Beam Ion Source Technology for Efficient Manufacturing of Transparent Conductive Thin Films

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002064	DE-EE0009018	GFO-0009018-001	

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 federal funding to Scion Plasma, LLC to develop a scalable single beam ion source enhanced sputtering technology that enables high-rate deposition of high-quality transparent conductive indium-tin-oxide thin films. The proposed technology provides a hardware solution to significantly reduce the manufacturing costs of advanced solar cells.

Activities associated with the proposed project would include: simulation of ion sources; design, development, fabrication, and testing of a scalable linear single beam ion source device suitable for lab-scale applications; design scale-up to demonstrate commercial viability, and; the characterization of thin film samples fabricated using the prototype technology. Simulation, design, development, fabrication, and scale-up would be performed by Scion Plasma. Hardware testing would be conducted by subrecipient Fraunhofer USA CDD. Testing activities would involve installing the ion source device on existing laboratory equipment and measuring various performance metrics. Thin film characterization using a variety of standard analytical methods would be conducted by subrecipient Michigan State University (MSU).

All work would occur within dedicated MSU-owned research and development (R&D) facilities in East Lansing, MI. No change in the use, mission, or operation of existing facilities would arise out of this effort. The project would not need to obtain any new or additional permits to carry out the proposed activities.

The proposed project involves the use and handling of small quantities of hazardous chemicals including isopropanol, ethanol, acetone, and methanol (less than approximately 20 liters of each) as well as nanostructured thin films. The project would also employ laboratory systems that use high voltages and electrical currents. All such work would occur in fully-equipped MSU/Fraunhofer laboratories, where the nature and scale of project activities would be consistent with current operations. Established measures are in place to ensure compliance with applicable health and safety rules and regulations. All personnel engaged in the proposed research would be provided with personal protective equipment (PPE) as well as appropriate training in engineering controls, chemical

management processes, and standard operating procedures for laboratory equipment.

Relatively small accumulations of hazardous liquid waste generated by project activities at the MSU/Fraunhofer locations would be properly collected in-lab then disposed of through the university Environmental Health and Safety (EHS) collection service. Routine amounts of non-hazardous solid laboratory and office waste would be either disposed of or recycled via campus or municipal programs. No materials or equipment would require decommissioning upon conclusion of the project. Fabricated materials would be limited to thin film samples and prototype hardware for future R&D, and the scope of work excludes procurement and/or installation of new equipment as the aforementioned facilities were purpose-built for the types of activities being proposed.

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, 1/16/2020

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
NEPA Compliance Officer

Date: 1/16/2020

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: