

PMC-ND  
(1.08.09.13)

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



RECIPIENT: Technic Inc

STATE: RI

**PROJECT TITLE :** Silver-free Metallization Technology for Producing High Efficiency, Industrial Silicon Solar Cells

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-00001018	DE-EE0006814	GFO-0006814-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

**CX, EA, EIS APPENDIX AND NUMBER:**

Description:

<b>A9 Information gathering, analysis, and dissemination</b>	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.)
<b>B3.6 Small-scale research and development, laboratory operations, and pilot projects</b>	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 Technic Inc. to develop a commercially viable, silver-free metallization technology that will both reduce cost and increase efficiency of standard silicon solar cells.

The proposed activities would include development, fabrication, testing and optimization of a process and tools to replace the standard silver paste front grid metallization process currently used in manufacturing with the Alternative Seed Layer (ASL) process in which nickel and copper are plated directly on silicon. Design and fabrication of plating equipment would take place at Technic Inc.'s industrial equipment manufacturing facilities in Pawtucket, RI and Clearwater, FL. The formulation of etching and plating solutions would be completed at Technic Inc.'s industrial chemical manufacturing facility in Cranston, RI and deposition of silicon films and copper plating would occur at the dedicated laboratory facility at Arizona State University. Finally, characterization of plated solar cells would be undertaken at the dedicated laboratory facility at Massachusetts Institute of Technology in Cambridge, MA and testing of the final prototype would occur at Technic's facility in Cranston. Each of these facilities is designed for the type of research being completed; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary.

The proposed project would involve the use and handling of various hazardous materials, including metals and industrial solvents. All such handling would occur in-lab, and all organizations (Technic, ASU, and MIT) have dedicated hazardous material handling and disposal protocols in place. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Additionally, all hazardous waste generated by the proposed project will be handled through normal protocol by a licensed hazardous waste hauler and brought to a permitted disposal facility. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be required.

Based on review of the project information and the above analysis, DOE has determined the proposed project, excluding installation and testing activities, would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that this project is consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination" and B3.6 "small-scale research and development, laboratory operations and pilot projects" and is therefore categorically excluded from further NEPA review.

**NEPA PROVISION**

DOE has made a final NEPA determination for this award

Insert the following language in the award:

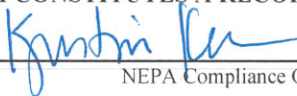
If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Solar Energy Technologies Office  
This NEPA determination does not require a tailored NEPA provision.  
Review completed by Rebecca McCord, 10/15/2014

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: \_\_\_\_\_



NEPA Compliance Officer

Date: \_\_\_\_\_

10/16/2014

**FIELD OFFICE MANAGER DETERMINATION**

Field Office Manager review required

**NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:**

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_