

PMC-ND  
(1.08.09.13)

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



RECIPIENT: Silevo, Inc

STATE: CA

PROJECT TITLE : Manufacturing of Silicon Tunnel Junction PV Cells with Gen 8.5 PECVD

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-EE0001018	DE-EE0006807	GFO-0006807-001	

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:

- 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 Silevo, Inc. to adapt a Generation 8.5, thin-film, manufacturing toolset originally developed for the LCD industry thereby cutting the per-wafer equipment cost for plasma-enhanced chemical vapor deposition (PECVD) and significantly reducing the total capital-cost, cost-of-capital and wafer-to-cell production cost associated with high volume manufacture (HVM) of high-quality tunnel-junction Silicon PhotoVoltaic (PV) cells.

The proposed project activities would include the following: equipment development involving the upgrade of an existing Generation 8.5 PECVD tool from 13.56MHz to 40MHz; carrier development, involving the innovation of a wafer-carrier, mimicking Generation 8.5 glass size, shape, strength and rigidity, but holding 208 Si wafers (156mm); and process development which would involve the transfer of Silevo's existing Generation 5 integrated cell process to this new toolset and carrier, and optimization to meet all production and performance requirements. All research and development activities would take place at Silevo's existing industrial facility in Fremont, CA. Permits for existing equipment are in place and up to date and only minor modifications would be made to accommodate the installation of new equipment such as installing connections for cooling waters, power, special gases, and pumps and scrubbers. Any additional permits needed for auxiliary equipment would be obtained through the appropriate channels.

The proposed project would involve the use and handling of hazardous materials, including flammable and toxic gases. All such handling would occur in-lab, and all hazardous material would be managed in accordance with federal, state, and local environmental regulations. The hazardous materials would be used and stored with protective equipment and/or engineering controls in place and are continuously monitored by sensors.

Based on review of the project information and the above analysis, DOE has determined the proposed project 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 :

This NEPA determination does not require a tailored NEPA provision.  
Review completed by Rebecca McCord 09/15/2014.

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

NEPA Compliance Officer Signature:  NEPA Compliance Officer Date: 9/16/2014

**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: \_\_\_\_\_ Date: \_\_\_\_\_  
Field Office Manager