PMC-EF2a

(2.06.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: TetraSun, Inc. **STATE:** CA

PROJECT TITLE: SAI Incubator- TetraSun Inc.; Back Surface Passivation for High Efficiency Crystalline Silicon Solar Cells; NREL Tracking No. 10-011

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
		NREL-10-011	GO10337

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:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

DOE funding would be used by NREL to support the Solar American Initiative (SAI) PV Technology Incubator. The program is structured to allow innovative approaches targeted at research and development of PV cells and module prototypes. The primary objective of this SAI PV Technology Incubator project is to shorten the timeline for companies to transition prototype and pre-commercial PV technologies into pilot and full-scale manufacture. The specific objective of this work is the demonstration of the solar cell performance. The back surface passivation would be integrated into a process flow for solar cell production.

The subcontractor (TetraSun, Milpitas, CA) would introduce its innovative backs surface passivation technology to the crystalline silicon PV market. TetraSun aims to replace the standard screen print & fire aluminum/silver back surface with its innovative solution. TetraSun's technology uses Plasma Enhanced Chemical Vapor Deposition of Silicon Carbide (SiC) layers and associated processes to minimize photo-generated losses and increase solar cell efficiency. The technology is high-temperature stable and offers superior performance at low cost and reduced complexity compared to competitive high-efficiency production processes. The subcontractor would focus on the integration of the back surface technology into industrially feasible process flows and prove its reliability in accelerated solar module degradation testing.

The TetraSun proposed facility for this project is located inside an existing semiconductor fabrication facility, Silicon Microstructures Inc. (SMI), located at 1701 McCarthy Blvd, Milpitas, CA 95035. Tetra Sun operates under a license agreement from SMI, and therefore must abide by SMI's established environmental, health, and safety policies and protocols. These EHS protocols include, but are not limited to: safety training, HAZCOM, HAZMAT protocols, evacuation drills, chemical emergency response team readiness, operation & maintenance, and EHS program monitoring with external third-party audits. This project would be completed using industry standard methods and protocols, and conducted in accordance with all federal, state, and local regulations. SMI holds applicable permits for hazardous waste generation, air emissions, industrial wastewater discharges, and hazardous materials management with the representative regulatory agencies. SMI is a Large Quantity Generator (LQG) with the assigned EPA identification number of CAD98250106. They file California Hazardous Material Business Plans (HMBP) and hazardous waste disposal reports with their local Certified Unified Program Agency (CUPA), County of Santa Clara Hazardous Materials Compliance Division. They also have the appropriate fire code, flammable material, etc. permits with Milpitas Fire Department. SMI holds an industrial wastewater permit with San Jose/Santa Clara Water Pollution Control Plant and complies with the air permitting requirements of the Bay Area Air Quality Management District. No modifications to existing permits and registrations, or acquisition of new permits are required for this project. The facility is equipped with the appropriate exhaust scrubbers and semiconductor emission control technology that is properly rated for this application. This project would result in negligible increases in air emissions, hazardous waste generation, and storage and hazardous materials.

This project comprises bench-scale research projects and a small-scale pilot project therefore the DOE has categorized this project as CX B3.6.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Lori Plummer Lori Plummer Date: 4/8/2010

NEPA Compliance Officer

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