# PMC-ND U.S. DEPARTMENT OF ENERGY (1.08.09.13) OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY NEPA DETERMINATION



#### **RECIPIENT: Osazda Energy, LLC**

STATE: NM

**PROJECT**Towards Commercialization of Low-Cost, Crack-Tolerant, Screen-Printable Metallization by Full-Size**TITLE:**Module Testing and Field Characterization

Funding Opportunity Announcement Number<br/>DE-FOA-0002064Procurement Instrument Number<br/>DE-EE0009013NEPA Control Number<br/>GFO-0009013-001CID Number

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.)
B3.15 Small-scale indoor research and development projects using nanoscale materials	Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).
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 Osazda Energy, LLC to conduct field-relevant, module-level analysis and qualification of advanced composite metallization aimed at prolonging the lifetime of solar photovoltaic (PV) modules by electrically bridging the cell cracks that appear due to thermomechanical stress and weather elements.

The project would be comprised of two Budget Periods. Proposed tasks would advance in scope from basic solar cell engineering and sample characterization to the fabrication and performance testing of full-sized PV modules. The project would culminate with the field testing of prototypes that underwent stress testing and module certification. Activities would be carried out by Osazda along with multiple subrecipients, as follows.

Osazda would conduct initial process optimization, engineering, and testing activities at their specialized corporate facility as well as at the University of New Mexico (UM) Centennial Engineering Center (both located in Albuquerque, NM). Characterization of the developed materials would also occur at UM facilities (Dept. of Chemical & Biological Engineering). Solar cell samples would be fabricated at the University of North Carolina (UNC Dept. of Electrical & Computer Engineering; Charlotte, NC). Full-sized modules would be fabricated by D2Solar (San Jose, CA). Module certification and a series of indoor/outdoor performance tests would occur at CFV Solar Test Laboratory (Albuquerque, NM), which is equipped with purpose-built testbeds for the temporary installation and field testing of equipment. Additional technique development and module characterization activities would be performed by Sandia National Laboratories (SNL; Albuquerque, NM).

All project locations are established corporate, university, or federal facilities that were designed for the type of research being proposed; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary. No change in the use, mission or operation of existing facilities would arise out of this effort. Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE

NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Project activities at Osazda, UM, UNC, CFV, and SNL would use bench-scale quantities of various solar cell materials and tools (e.g. Si wafers, printing screens) along with standard laboratory consumables and chemicals. Activities at D2Solar would require larger-scale quantities of commercially-available materials such as PV films and glass, but the amount of equipment fabricated for the project (at least 34 60-cell modules based on current project plans) would be consistent with current product development services at this site. All manufactured equipment and sample materials would be retained by Osazda for future design research.

The project would involve the use of multi-walled carbon nanotubes (MWCNT) for work undertaken by Osazda at UM. MWCNT technology has common applications in solar cell research, and the Recipient is cognizant of the potential occupational health risks associated with nanomaterials. All such material, including any MWCNT waste generated by project activities, would be managed in accordance with the UM Dept. of Safety and Risk Services.

### 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, 01/20/2020

### 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:

Restronced by: Kristin Kerwin NEPA Compliance Officer

Date: 1/21/2020

### 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: