

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Solar Dynamics LLC**STATE:** CO**PROJECT TITLE** : DROP C: The Drop-in, Ring-Of-Power heliostat for COLLECTS< 6 ¢/kWh Levelized

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DOE-FOA-0001268	DE-EE0008024	GFO-0008024-001	GO8024

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.
- B5.17 Solar thermal systems** The installation, modification, operation, and removal of commercially available smallscale solar thermal systems (including, but not limited to, solar hot water systems) located on or contiguous to a building, and if located on land, generally comprising less than 10 acres within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Solar Dynamics LLC to develop and prove a novel heliostat and supporting technologies enabling rapid installation and operation.

Proposed project activities would include the design, development, fabrication, and testing of prototype low-cost, drop-in-place heliostats. A wireless mesh network system for solar field heliostat control would be specified, installed, and tested in a simulated and/or operational heliostat field. Finally, a rapid calibration system for heliostat alignment would be designed, developed, and tested on a pilot-scale heliostat solar field. Project management, paper studies, and computer modeling would be completed from Solar Dynamics offices in Broomfield and Golden, CO. Initial engineering would be supported by Replicant, LLC from their office in Denver, CO. Design and fabrication of various components would take place at Lindsay Precast's concrete casting facility in Colorado Springs, Co and at Gestamp Solar Steel in Surprise, AZ. Trinamic Inc. in Itasca, IL would be responsible for control system hardware engineering. Lab testing activities to include wind tunnel testing would be completed at Cermak Peterka Peterson in Ft. Collins, CO.

Field testing would be conducted at SolarTAC, a dedicated solar energy testing facility in Watkins, CO and Sandia National Laboratory's (SNL's) National Solar Thermal Test Facility in Albuquerque, NM. Testing activities at SolarTAC would involve outdoor installation of multiple heliostat prototypes and associated testing of assembly, placement, optical performance, structural performance, tracking function, and mirror washing. Testing at SNL would involve deployment of an array of wireless controller modules and communications relay modules (a controller combined with a small freestanding antenna tower) at various locations throughout the field, and the temporary installation of four or more sensing cameras around the periphery of the tower receiver with temporarily installed ethernet cabling to route their signals to an adjacent computer. At SolarTAC only very minimal re-grading of a previously disturbed site may be required to install the prototype heliostats. Minor disturbance is anticipated at SNL for the use of equipment and/or scaffolding required to install rapid calibration camera equipment and targets on existing tower receivers and heliostats, as well as from installation of wireless mesh network hardware.

The work being done at the SolarTAC test site would involve assembly and testing of prototypes of large, slow-moving, steel frameworks with glass mirror reflectors. Prototype solar concentrator equipment would also be installed and commissioned by qualified personnel in accordance with SolarTAC site policies. Prototype testing would be performed by qualified, experienced Solar Dynamics team members working under a site specific procedure for operations, safety, and personal protective equipment. At the National Solar Thermal Test Facility, rapid calibration equipment would be installed on equipment at hazardous elevations on heliostats and receiver towers, by qualified personnel in an environment where such activities are commonplace. Appropriate fall protection measures as defined by OSHA 29 CFR 1910 and any additional test facility safety procedures would be utilized. Existing health and safety policies and procedures would be followed including employee training, personal protective equipment, engineering controls, monitoring, and internal assessments. Wind engineering and testing at Cermak Peterka Peterson would be a combination of office work and wind tunnel testing of scale-mockup solar concentrators, which is commonplace at that facility. The limited hazards that exist would be managed by following that company's existing safety and operational procedures. Design and production of hardware prototypes by Gestamp Solar Steel and Lindsey Precast would be a combination of office work and prototype production in those companies' respective workshops. Both companies maintain dedicated workshop facilities which are staffed by experienced personnel working under rigorous safety and personal protective equipment procedures designed to mitigate the hazards of performing such work.

The facilities in which the proposed work would occur are all purpose-built for the type of activities being proposed; therefore, no adverse impacts to sensitive resources are expected as a result of the proposed project. 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.

Based on the review of the proposal, DOE has determined that the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to this proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal are 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 the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:

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.

Note to Specialist :

Solar Energy Technologies Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Rebecca McCord 08/24/2017.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Kristin Kerwin
NEPA Compliance Officer

Date: 8/24/2017

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: _____