

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** : SMART MS Trough: Simplified Melting and Rotation-joint Technology for Molten Salt Troughs

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001640	DE-EE0008140	GFO-0008140-001	

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.
- 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 demonstrate 1. prototype interconnect piping componentry for parabolic trough solar collectors, 2. alternative operational protocols for freeze protection and recovery of parabolic trough receiver tubes containing molten salt mixtures, and 3. a molten salt trough CSP plant process model.

Proposed project activities would include the modification of a cyclic testing rig for molten salt trough interconnect piping and two subsequent rounds of cyclic rotation testing which would be completed in the thermal hydraulics laboratory on campus at the University of Wisconsin in Madison, WI. This would be followed by a small-scale, outdoor lab test at the Solar Technology Acceleration Center (SolarTAC), a dedicated test site for solar collector equipment in Watkins, CO. Molten salt CSP plant process model development and review of similar models produced by Solar Dynamics LLC, at their facility would be provided by the National Renewable Energy Laboratory in Golden, CO. The facilities in which these activities would occur are 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.

Proposed project activities would involve the testing of large, slow-moving steel frameworks containing molten-salt-filled piping that would be at high temperatures (up to 565 degrees C). The molten salts would typically be contained inside a closed piping circuit during testing, but may be handled by project participants during filling and evacuation of the test apparatus. All testing would be performed in a dedicated laboratory with documented safety procedures.



The proposed project would necessitate the use of two nitrate/nitrite salt mixtures whose constituent materials are classified by OSHA as hazardous because they are strong oxidizers. This category of materials is neither flammable nor explosive but can contribute to accelerated combustion of flammable materials when combined and exposed to high temperature. These materials would be used inside closed piping loops for testing at elevated temperatures under controlled laboratory conditions. Testing would be performed by qualified personnel using appropriate procedures and personal protective equipment. When high-temperature testing is underway, the testing area would be evacuated. When testing is not underway the materials would be stored at ambient temperature inside the closed testing loops or evacuated and stored in a dry, closed, and lockable storage container within an access controlled facility.

Non-hazardous wastes generated by the project would include equipment made from galvanized, carbon, and stainless steel materials (which may be scrapped at the end of the project) and copper cabling and connectors. Any such materials that cannot be repurposed or resold beyond the sequence of project testing would be sold or donated as scrap to a qualified salvage company.

Based on the review of the proposal, DOE has determined 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 the 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 is 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.

Note to Specialist :

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Rebecca McCord 08/18/2017.

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

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



NEPA Compliance Officer

Date: 8/21/2017

#### 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: \_\_\_\_\_