

PMC-ND  
(1.08.09.13)

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



**RECIPIENT:** [Swift Coat Inc](#)

**STATE:** [AZ](#)

**PROJECT TITLE:** [Reducing module soiling with scalable and robust photocatalytic coatings](#)

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
<a href="#">DE-FOA-0002064</a>	<a href="#">DE-EE0009015</a>	<a href="#">GFO-0009015-001</a>	

**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:

<b><a href="#">A9 Information gathering, analysis, and dissemination</a></b>	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.)
<b><a href="#">B3.6 Small-scale research and development, laboratory operations, and pilot projects</a></b>	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 funding to Swift Coat to develop and test a novel anti-reflective (AR) and anti-soiling (AS) coating technology for use in solar photovoltaic (PV) module glass. The technology would be designed so as to increase annual energy yield

Proposed project activities would include computer modeling, coating experiments, material characterization (e.g. metal oxide coatings, glass samples), material deposition, and outdoor module performance testing. Swift Coat would coordinate all project activities. Work would be performed in existing, purpose-built semiconductor fabrication laboratories. Design, development, and laboratory testing would occur at facilities operated by Swift Coat and at the campus of sub-recipient Arizona State University (ASU); both in Tempe, AZ. Additional characterization/deposition activities would be performed at Cardinal Glass' laboratory in Spring Green, WI.

As part of this project, existing deposition chambers at both ASU and Swift Coat would be outfitted with new spray heads. The spray heads would be designed by Swift Coat and manufactured by a qualified, third-party machinist. Mini-modules and full scale PV modules would also be fabricated for outdoor testing. As noted above, outdoor testing is restricted until testing site locations are identified and this information is provided to DOE for further review. These hardware modifications would not require any alterations or updates to existing facilities.

Outdoor module performance testing would also be performed as part of this project. Outdoor testing would be performed in at least three different locations throughout the United States. Testing would be performed at either a Regional Test Center, operated by one of the Department of Energy's National Laboratories, or an established, privately-owned testing facility. Solar modules would be placed into existing test mounts during testing. No additional alterations or updates would be needed at the testing facilities.

No ground disturbing activities or changes in the use, mission, or operation of existing facilities would be required to perform project activities. Likewise, no additional permits or authorizations would be required.

Project work would include the use and handling of hazardous materials including acids, chemical solvents, and reactive gases. All such handling would occur in controlled, laboratory environments. Risks associated with the performance of project activities would be mitigated through adherence to established corporate health and safety policies and procedures. All personnel would be trained in relevant material handling and safety protocols. Swift Coat

and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

Nanoscale materials would be fabricated/handled throughout the project. This would include the fabrication of nanoscale semiconductors and transparent conductive oxide nanoparticles. All fabrication/deposition would take place within a vacuum chamber that is fully contained. Any free nanoparticles that are not deposited during this process would be collected by a HEPA filter. This system would prevent any nanomaterials from being introduced into the ambient environment.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

**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 Jonathan Hartman, 01/06/2020

**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:  Electronically Signed By: Kristin Kerwin Date: 1/21/2020  
NEPA Compliance Officer

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