

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



RECIPIENT: Various

STATE: Mult

PROJECT TITLE : Solar Desal Prize - Round 1- Design Contest/Phase 3

Funding Opportunity Announcement Number Procurement Instrument Number NEPA Control Number CID Number
GFO-SolarDesalPrize-001

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.)

B3.6 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 authorize the administration of Round 1 of a prize competition (The American-Made Challenge: Solar Desalination, or "Prize") to accelerate technology innovation through the design, development, and demonstration of desalination systems that use solar thermal energy to produce clean water from very high-salinity water. The Prize would be administered by the Solar Energy Technologies Office (SETO) in partnership with the National Renewable Energy Lab (NREL).

The Prize is a four-contest program designed to accelerate the commercial development of thermal desalination systems powered by low-cost solar-thermal energy. The contests provide innovators a pathway from initial concept to technical design to prototype to field-tested systems. Each successive phase of the competition will be more challenging than the last, with larger prizes and fewer competitors advancing.

Round 1 of the Solar Desal Prize was launched in April of 2020. The eight teams listed below have been selected as semifinalists to compete in the third phase (Design Contest). During the Design Contest, teams are meant to develop their concept into a mature design ready for prototyping. While they're completing detailed designs of their systems in the third phase, teams must also obtain the permitting and approval documentation necessary to build them. Semifinalists have up to three years to submit their design for consideration. At the conclusion of this phase, approximately four teams would be selected to compete in the fourth phase (Test Contest), after which one (or possibly two) team(s) would be declared the Grand Prize Winner of \$1,000,000.

- BrineZero: Brine Concentration with Managed Salt Precipitates (Hopewell, NJ)
- Connecticut Center for Applied Separations Technology: Membrane Distillation with Ceramic Membranes (Storrs, CT)
- Espiku: Selective Condensation and Evaporation Using Precise Temperature Regulation (Corvallis, OR)
- Greenblu: Zero Discharge Multi-effect Adsorption Distiller (Trenton, NJ)
- Katz Water Technologies: X-VAP—Self-Contained Distillation (Houston, TX)

- Solar Desalt: Sorption-Based ZLD Technology (Houghton, MI)
- STREED: Resonant Energy Exchange Desalination (Houston, TX)
- The Hard Ion Team: Switchable Solvent Water Extraction from Brine (Rohnert Park, CA)

Activities associated with the Design Contest are limited primarily to desktop-based engineering, design, and project planning. Some teams may assemble bench-scale prototypes in existing laboratories. Based on a review of the Prize Official Rules and individual environmental questionnaires submitted by each team, DOE has determined that no adverse impacts to sensitive resources are to be expected as a result of the Design Contest. 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.

Teams selected to advance to the fourth and final phase (Test Contest) of the competition would be awarded a cash prize of \$750,000 and a \$100,000 voucher that can be redeemed at a National Laboratory and/or qualified partner facilities to build their systems, demonstrate their operation, and validate key performance metrics. Until such time as Test Contest winners and host sites have been identified, there is insufficient information available to complete a meaningful review of Prize activities subsequent to the conclusion of the Design Contest. At the time Design Contest winners are selected and before the commencement of any Test Contest activities, the Technology Office Prize Manager will be required to submit additional information for NEPA review. Test Contest activities are restricted until further NEPA review is completed.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Round 1 - Design Contest

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Round 1 - Test Contest

Include the following condition in the financial assistance agreement:

At the time Design Contest winners are selected and before the commencement of any Test Contest activities, the Technology Office Prize Manager will be required to submit additional information for NEPA review. Test Contest activities are restricted until further NEPA review is completed.

Notes:

Solar Energy Technologies Office

This NEPA determination requires a tailored NEPA Provision.

NEPA review completed by Whitney Doss Donoghue, 10/13/2021

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Kristin Kerwin Date: 10/13/2021
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