

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



RECIPIENT: [GE Vernova Research](#)

STATE: [NY](#)

PROJECT TITLE : [sCO2 Power Block Optimization for Particle-Based CSP](#)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
<a href="#">DE-SOL-0002630</a>	<a href="#">DE-EE0010318</a>	<a href="#">GFO-0010318-001</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:

**[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.

**[B5.15 Small-scale renewable energy research and development and pilot projects](#)**

Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located 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 funding to General Electric (GE) Vernova Research for the design of a power block in a concentrated solar power facility and testing on gas bearings. Project activities would include computer design, analysis, and simulation, as well as bearing testing.

Computer analysis work, including thermodynamic cycle studies, electromagnetic and aerodynamic design, and cost modeling would occur at the GE Vernova Research Center in Niskayuna, NY. The bearing test apparatus that would be used in the gas bearing testing is also located at the GE Vernova Research Center. Conceptual designs and cost modeling of dry coolers and plant piping systems would occur at the Southwest Research Institute in San Antonio, TX. Computer simulation of the solid particle thermal system would occur at the Sandia National Laboratory in

Albuquerque, NM.

All project activities would be completed in existing, purpose-built facilities. No new permits or licenses would be needed to perform award activities. Facility modifications would be limited to upgrades to the liquid carbon dioxide lines in the bearing test apparatus. Potential hazards include the use of liquid and super critical carbon dioxide for the bearing tests. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Existing corporate and government health, safety, and environmental policies and procedures would be followed at all facilities, including personnel training, proper personal protective equipment, engineering controls, monitoring, and internal assessments.

DOE has considered potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate adverse impacts on these resources. Carbon dioxide emissions would be anticipated as a result of gas bearing testing; GE has an Air Title V Permit with the New York State Department of Environmental Conservation.

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 Technology Office (SETO)  
NEPA review completed by Andrew McClellan, 14 June 2023

#### **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: Andrew Montano  
NEPA Compliance Officer

Date: 6/15/2023

**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: \_\_\_\_\_