

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** GE Research**STATE:** NY

**PROJECT TITLE:** Near-Net-Shape Hot Isostatic Press Manufacturing Modality for sCO<sub>2</sub> CSP Capital Cost Reduction

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0002064	DE-EE0008996	GFO-0008996-001	

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 provide funding to GE Research (GE) to fabricate turbine components for Condensed Solar Power (CSP) applications using powder metallurgy, near-net-shape (NNS) hot isostatic pressed (HIP) technology. Specifically, a turbine nozzle ring, turbine case, and cylindrical structure would be fabricated as a demonstration of the technology's viability. The technology would be developed so as to reduce manufacturing costs, as compared to current technologies. The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP.

BP1 activities would focus on the development, fabrication and testing of two component parts, a prototype nozzle ring and prototype turbine casing. BP2 would then build on the previous effort and optimize the design of the turbine casing, based on the knowledge acquired in the previous BP. During BP2, a dual-alloy pipe would also be fabricated and tested. Throughout both BPs, project activities to be performed would include material characterization (e.g. alloy powder assessment), data collection, component design, component fabrication (e.g. prototype nozzle ring, casing, and dual-alloy pipe), validation testing (e.g. microstructural analysis), and cost modeling.

All project activities would be coordinated by GE and performed at existing, purpose-built facilities. Engineering analysis and NNS HIP research would be performed at GE's research facilities in Niskayuna, NY. Component fabrication would be performed by project partner Synertech, at its manufacturing facility in Garden Grove, CA. Synertech would also perform additional engineering and design work. Research and design at both locations would involve the use of existing HIP furnaces and equipment, currently installed at both project locations. No construction of new facilities, ground disturbing activities, or any changes to the use, mission, or operation of existing facilities would be required. Likewise, no additional permits or authorizations would be required for the performance of project activities.

Project work would involve the use and handling of metallic powders and high-powered equipment. This handling would occur in controlled, research/manufacturing facilities that regularly perform work similar in nature to that

included in the scope of this project. Both GE and Synertech would adhere to established corporate environmental, health, and safety policies and procedures. GE and Synertech would observe all applicable Federal, state, and local health, safety, and environmental regulations.

## 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, 01/24/2020

## 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:



Casey Strickland

NEPA Compliance Officer

Date: 1/24/2020

## 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: