

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Brayton Energy**STATE:** NH

PROJECT TITLE: Development of Integrated Thermal Energy Storage Heat Exchangers for Concentrating Solar Power Applications

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001697	DE-EE0008382	GFO-0008382-002	GO8382

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 is proposing to provide federal funding to Brayton Energy to design a full-scale integrated thermal energy storage heat exchanger and related test articles. During the project Brayton Energy (Brayton) would demonstrate a heat exchanger technology that can be integrated with fixed-position thermal energy storage (TES) media.

The project would be completed over two Budget Periods (BP). A NEPA Determination was completed for all project activities in August 2018 (GFO-0008382-001; CXs: A9, B3.6). Since that time, the Statement of Project Objectives for BP2 has been restructured and all task work has been revised. BP2 tasks no longer include heat exchanger component fabrication or heat exchanger performance testing. BP2 tasks have been modified to focus on material selection/testing and conceptual design work. Since the task work for BP2 has been substantially changed, the previous review is no longer pertinent for BP2 activities. This NEPA Determination applies to the restructured BP2.

Proposed project activities for BP2 would include material characterization and analysis, computer modeling, component selection, conceptual design work, and techno-economic analysis. Thermal storage and phase change materials (e.g. molten salts) would be analyzed and selected for a conceptual heat exchanger design. Material samples would be subjected to stress tests (e.g. corrosion testing, freeze thaw testing). Data gathered would inform the development of conceptual designs of thermal heat exchanger systems.

All project activities would be performed by Brayton at its manufacturing facility in Hampton, NH. No ground disturbing activities, facility modifications, or changes to the use, mission, or operation of existing facilities would be required. No additional permits or authorizations would be required.

Project work would involve the use and handling of industrial tools/equipment and high temperature materials (e.g. molten salts). All such handling would be performed indoors, in controlled laboratory environments. In order to mitigate potential hazards associated with project work, Brayton would adhere to established corporate health and

safety policies and procedures. All personnel would be trained to perform required tasks. Any hazardous materials produced would be handled, stored, and disposed of in accordance with established waste management policies. Brayton would adhere to 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, 11/11/2020

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

NEPA Compliance Officer

Date: 11/12/2020

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: _____