

PMC-ND
(1.08.09.13)

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



RECIPIENT:Optimized Thermal Systems, Inc.

STATE: MD

PROJECT TITLE : Advanced Serpentine Heat Exchangers to Minimize the Number of Joints and Leakage in HVAC&R Systems

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA0001383	DE-EE0007680	GFO-0007680-001	GO7680

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 federal funding to Optimized Thermal Systems, Inc. (OTS) to develop prototype serpentine heat exchangers that use surface enhancements to achieve equivalent or better performance than current state-of-the-art air conditioning tube-fin heat exchangers while reducing the potential for leakage. Project work would occur at the facilities of OTS in Maryland, Heat Transfer Technologies (HTT) in Illinois, and United Technologies Research Center (UTRC) in Connecticut.

Project activities include design, optimization, tooling development, prototyping, testing, and commercialization planning for the prototype heat exchangers. Testing of the heat exchangers would involve using water as refrigerant at OTS facilities. This testing would not involve moving parts, but would include piping equipment that would be exposed to relatively high water flow rates and pressures. Staff involved in the testing will be trained in the use of standard laboratory safety equipment. The project also involves benchtop testing of brazing methods, assembly of coils using brazing methods, and physical testing of coils using cyclic testing and other forms of analysis. Benchtop brazing and some assembly would be conducted at HTT facilities. Physical testing would occur at OTS and will be covered by the same safety requirements as above. HTT would ensure the health of all employees working on the project through training and proper protective equipment. Once the prototype system is complete, OTS and UTRC would test a conventional baseline system and the modified system to compare capacity, efficiency, and cost. Project activities do not require any modifications to existing facilities, ground disturbing activities, or installation of equipment outdoors. There would be no change in the use, mission, or operation of any of the existing facilities involved in this project. Waste would be recycled to the extent possible and if not recyclable, would be disposed of in accordance with governing regulations of the state and county where the project work is occurring. Any refrigerants used in the project would be reclaimed and recycled in accordance with regulations. DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not

connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Building Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Casey Strickland 08/09/16

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____


NEPA Compliance Officer

Date: _____

8/11/2016

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____

Field Office Manager

Date: _____