PMC-ND
(1.08.09.13)

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

RECIPIENT: United Technologies Research Center (UTRC) **STATE:** CT

PROJECT TITLE: Buildings Energy Efficiency Frontiers & InnovationTechnologies (BENEFIT) - 2018

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DOE-FOA-0001825	DE-EE0008673	GFO-0008673-001	

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 United Technologies Research Center (UTRC) to develop and demonstrate a heating, ventilation and air-conditioning (HVAC) system that would integrate novel electrochemical looping heat pump (ELHP) technology. UTRC would develop new working fluids and electrochemical cells for use in the system. A demonstration of the technology, anticipated to be at Technology Readiness Level 4 (TRL-4), would also be performed in order to verify the performance of the system. The project would be divided into two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP.

Proposed project activities would include computer modeling of ELHP system configurations and working fluids requirements (including both electro-active working fluid (EWF) and electro-active sorbent material (ESM) candidates), materials characterization and down-selection of EWF/ESM candidates, down-selection of ELHP-system options, development of novel ELHP cells, and completion of a market transformation plan. Project activities would largely have the same focus in both BP1 and BP2. However, BP2 would build on findings from BP1 and would integrate down-selected materials and ELHP system options into the analysis and laboratory work.

All project activities would be completed by UTRC and its project partners at established, purpose-built facilities. UTRC would perform testing of electrochemical cells at its laboratory facility in Hartford, CT. Purdue University would perform testing of a prototype ELHP system, as well as electrochemical cells at a laboratory facility at its campus in Lafayette, IN. University of Illinois Urbana-Champaign (UIUC) would develop and synthesize working fluids at a laboratory facility at its campus in Urbana, IL.

The project would involve the use and handling of various industrial chemicals with the potential to be flammable and/or toxic. All handling of these materials would be performed in controlled laboratory settings. UTRC and its project partners would adhere to established health and safety policies and procedures in order to mitigate any risks associated with the handing of project materials. Protocols would include employee training, the use of personal protective equipment, engineering controls, monitoring, and internal assessments. All project materials would be

disposed of in accordance with established university environmental, health and safety policy. UTRC and its project partners would observe all relevant Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Building Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Jonathan Hartman on 3/19/2019

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: Casey Strickland Date: 3/19/2019

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