



# U.S. Department of Energy Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: University of Maryland (UMD) - Compressive Thermoelastic Cooling

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): College Park, MD; Richland, WA; East Hartford, CT

Proposed Action Description:

This award is a continuation and expansion of research performed by UMD under DE-AR00000131 to develop an energy-efficient, thermoelastic cooling (TC) system that eliminates the need for synthetic refrigerants.

Proposed work will include: (1) screening candidate alloys (TC materials) and (2) design, fabrication, and testing of TC system components, multiple 1-kW TC cooling system prototypes, and a single 1-ton TC system prototype.

Pacific Northwest National Laboratory will carry out the proposed screening of candidate alloys at its Combinatorial Alloy Laboratory in Richland, WA. United Technologies Research Center will carry out testing of the 1-ton TC system prototype at its Equipment Testing Laboratory in East Hartford, CT. All other project work will be carried out by UMD at its laboratory facilities in College Park, MD.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

Date Determined: 09/25/2012



# U.S. Department of Energy

## Categorical Exclusion Determination Form

Program or Field Office: Advanced Research Projects Agency- Energy

Project Title: (0289-1604) University of Maryland - Thermoclastic Cooling

Location: \*- Multiple States - Maryland, New York, and Washington

Proposed Action or Project Description:

American Recovery and Reinvestment Act:

Funding will support laboratory-scale research and development to demonstrate the commercial viability of solid state thermoelastic shape memory alloy for space cooling using a 0.01-ton prototype intended to replace conventional vapor compression cooling technology. The proposed work is consistent with the goal of BEETIT to develop new approaches and technologies for cooling in buildings to dramatically improve energy efficiency and reduce the use of refrigerants and their impact on climate change.

Proposed work consists entirely of RD&D work to be completed in laboratories and facilities at the University of Maryland, the Pacific Northwest National Laboratory, and GE Global Research. The work performed will be limited to in-lab activities including prototype design, fabrication, testing, and analysis.

Categorical Exclusion(s) Applied:

X - B3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects

\*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21 [Click Here](#)

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:



Date Determined: Aug 10, 2010

Comments:

Webmaster:

