



U.S. Department of Energy Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: Massachussets Institute of Technology - Advanced Thermo-Adsorptive Battery Climate Control System (ATB)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Cambridge, MA; Boston, MA; Dearborn, MI

Proposed Action Description:

Funding will support efforts to build a working prototype of the advanced thermo-adsorptive battery (ATB) to provide both cooling and heating in an electric vehicle, with minimal use of the electric battery. This work will build on prior efforts that included: (1) synthesis and characterization of adsorption bed components; (2) assembly and testing of an adsorption bed prototype; (3) design, fabrication, and testing of thermal battery components other than the components of the adsorption bed, including the evaporator, condenser/reservoir, and adsorbent bed housing; (4) assembly of a thermal battery system without the adsorption bed; (5) integration of the adsorption bed into the thermal battery system and testing of the integrated thermal battery prototype; and (6) computer design and modeling of thermal battery integration in an electric vehicle and drafting of business assessments and commercialization studies. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local requirements.

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: 03/12/2015



U.S. Department of Energy

Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: (0471-1627) Massachusetts Institute of Technology - Advanced Thermo-Adsorptive Battery Climate Control Systems (ATB)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Cambridge, MA; Los Angeles, CA; Austin, TX; Dearborn, MI

Proposed Action Description:

Funding will support development of advanced thermal batteries using adsorption-based heating and cooling for climate control in electric vehicles.

Proposed work will consist of indoor, laboratory-based (1) synthesis and characterization of adsorption bed components; (2) assembly and testing of an adsorption bed prototype; (3) design, fabrication, and testing of thermal battery components other than components for the adsorption bed; (4) assembly of a thermal battery system without the adsorption bed; (5) integration of the adsorption bed into the thermal battery system and testing of the integrated thermal battery prototype; and (6) computer-based design, modeling, and analytical studies.

Proposed synthesis and characterization of adsorption bed components will take place at the University of California - Los Angeles campus in Los Angeles, CA and the Massachusetts Institute of Technology campus in Cambridge, MA. Proposed assembly and testing of the adsorption bed and integrated thermal battery prototypes will also take place at the Massachusetts Institute of Technology campus in Cambridge, MA. Proposed design, fabrication, and testing of thermal battery components and assembly of the thermal battery system without the adsorption bed will take place at the University of Texas - Austin campus in Austin, TX. Proposed computer-based design, modeling, and analytical studies will take place at Ford Motor Company's Dearborn Research & Innovation Center in Dearborn, MI.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

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:

Digitally signed by Matthew Dunne
DN: cn=Matthew Dunne, o=ARPA-E, ou=Office of Chief Counsel,
email=matthew.dunne@hq.doe.gov, c=US
Date: 2011.11.15 15:42:37 -0500

Date Determined: 11/15/2011