



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: University of Washington - Optimal Operation and Management of Energy Storage Systems Based on Real Time Predictive Modeling and Adaptive Battery Management Techniques

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Seattle, WA; Poulsbo, WA; Golden, CO

Proposed Action Description:

Funding will support the project team's small-scale, research and development activities to develop a self-learning Battery Management System (BMS). Specifically, the project team will: (1) develop, validate and demonstrate algorithms for self-learning BMS; (2) develop preliminary prototype design to implement BMS on low-cost hardware; (3) develop and demonstrate prototype with self-learning BMS with multiple chemistries and multiple cells in series. If successful, the system will predict optimal charging and discharging profiles of a battery in real-time, enhancing battery performance and improving battery safety, charge-rate, and usable capacity.

Project tasks will be conducted on a small-scale basis in dedicated laboratory and testing facilities at University of Washington (Seattle, WA); National Renewable Energy Laboratory (Golden, CO); and Battery Informatics Inc. (Poulsbo, WA). Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements. No modifications will be made to the existing facilities to accommodate the proposed work.

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)

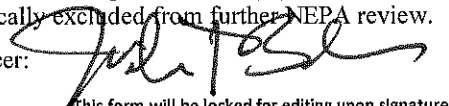
The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

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: 07/07/2016



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: University of Washington - Optimal Operation and Management of Energy Storage Systems Based on Real-Time Predictive Modeling and Adaptive Battery Management Techniques

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Seattle, WA; Golden, CO

Proposed Action Description:

University of Washington, in conjunction with NREL, will perform research to develop a battery management system for electric vehicle batteries capable of accurately predicting a battery's charge and health in order to make control decisions that improve battery safety, charging rate, useful capacity, and battery lifetime. Specifically, the project team members will (1) develop baseline physics models for the battery management; (2) optimize the baseline physics models to meet established performance objectives; (3) integrate the baseline physics models into a hardware controller; and (4) test and validate the developed physics models and hardware to ensure both meet established performance objectives.

Development and optimization of the baseline physics models and testing and validation of the developed models and hardware will take place at the National Renewable Energy Laboratory's facilities in Golden, CO. All other project work will be performed at University of Washington facilities in Seattle, WA.

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 1021.21 I 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: 03/09/2015



U.S. Department of Energy

Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: (0675-1570) Washington University in St. Louis - Optimal Operation and Management of Energy Storage Systems Based on Real-Time Predictive Modeling and Adaptive Battery Management Techniques

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): St. Louis, MO; Golden, CO

Proposed Action Description:

Funding will support efforts to develop a battery management system for electric vehicle batteries capable of accurately predicting a battery's charge and health in order to make control decisions that improve battery safety, charging rate, useful capacity, and battery lifetime.

Proposed work will consist of: (1) development of baseline physics models for the battery management; (2) optimization of the baseline physics models to meet established performance objectives; (3) integration the baseline physics models into a hardware controller; and (4) testing and validation the developed physics models and hardware to ensure both meet established performance objectives.

Development and optimization of the baseline physics models and testing and validation of the developed models and hardware will take place at the National Renewable Energy Laboratory's facilities in Golden, CO. All other project work will be performed at Washington University in St. Louis' facilities in St. Louis, MO.

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.

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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: 09/07/2012