



U.S. Department of Energy Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: Pacific Northwest National Laboratory -- High Performance Adaptive Deep-Reinforcement-Learning-based Real-time Emergency Control (HADREC) to Enhance Power Grid Resilience in Stochastic Environment

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Los Angeles, CA; Mountain View, CA; Portland, OR; Richland, WA

Proposed Action Description:

Funding will support the project team's information gathering and analysis efforts to construct an intelligent, real-time emergency control system to help safeguard the U.S. electric grid by providing effective and fast control actions to system operators in response to large contingencies or extreme events. Specifically, the project team will (1) design and develop a deep meta-reinforcement learning (DMRL) algorithm capable of providing post-contingency adaptive corrective emergency control to the operators; (2) develop a parallel algorithm and platform architecture design for training and testing; (3) develop emergency control schemes, collect real-world power system models and forecasting information; and (4) finalize hybrid emergency control method integrating commercial tools and new algorithms. If successful, the project team will demonstrate an open platform and scalable DMRL algorithms capable of reducing the grid emergency control action time by 98%.

Project activities will be conducted at existing facilities at Pacific Northwest National Laboratory (Richland, WA), V&R Energy (Los Angeles, CA), Google (Mountain View, CA), and PacifiCorp (Portland, OR) designed for the applicable activities. The proposed project activities under this award are limited exclusively to intellectual, academic, or analytical activities. The project team will not conduct physical experiments, prototype fabrication, demonstration projects, or similar activities under this award.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

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)

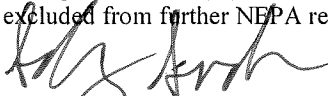
The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

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: 
(This form will be locked for editing upon signature)

Date Determined: 05/21/2019