

PMC-ND  
(1.08.09.13)

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



**RECIPIENT:** The Curators of the University of Missouri on Behalf of Missouri University of Science and Technology

**STATE:** MO

**PROJECT TITLE:** Modeling and Optimizing Pumped Storage in a Multi-stage Large Scale Electricity Market under Portfolio Evolution

**Funding Opportunity Announcement Number**    **Procurement Instrument Number**    **NEPA Control Number**    **CID Number**  
DE-EE0008781    DE-EE0008781    GFO-0008781-001

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.)

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Missouri University of Science and Technology (MUST) to develop and analyze a pumped storage hydro (PSH) model.

The goals of the proposed project would be to develop an enhanced PSH model and include economic analysis and planning of the model for stochastic (randomly distributed) optimization. MUST would initially optimize a day ahead large scale security constrained unit commitment (SCUC) model. This prototype model would be developed using HIPPO software, a high performance computer based DA SCUC software developed by research partner Midcontinent Independent System Operator (MISO). A Forward Reliability Assessment Commitment and a Look Ahead Commitment forecast would be completed for Day Ahead/Real Time simulations using PLEXOS software, also developed by MISO. Finally MUST would complete a PSH optimization in longer term economic planning study to incorporate price forecasting into the models.

All work would be limited to intellectual, academic, and analytical activities, including computer modeling, economic analysis, and data analysis. Work would be completed at the existing research office facilities of MUST and MISO as well as by Ross Baldick Educational and Consulting Services and Stevens Institute of Technology. No changes to existing facilities would be required.

**NEPA PROVISION**

DOE has made a final NEPA determination.

Notes:

This NEPA determination does NOT require a tailored NEPA provision.  
Water Power Technology Office  
NEPA review completed by Roak Parker 6/26/19

**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: \_\_\_\_\_

  
NEPA Compliance Officer

Date: 6/27/2019

**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: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_