

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Proactive Hybrid Nuclear with Load forecasting – Brigham Young University

SECTION B. Project Description

Brigham Young University proposes to develop advanced tools for proactively managing nuclear hybrid energy systems (NHESs). The tasks associated with this project are (1) Create GEKKO/RAVEN interface for dispatch/size optimization, OPTIONS/RAVEN interface for nuclear design optimization, and improve forecast models; (2) Test dispatch optimization with GEKKO/RAVEN and validate benefits of dispatch optimization; and (3) Characterize approximate electrical and heat loads for other systems. Existing equipment and laboratory facilities will be used. Validation of the thermal storage code development can in part be accomplished using a thermal storage heat exchanger experiment which has been developed for a separate research program. This heat exchanger, which is a 2 ft high by 1 ft in diameter cylinder, is essentially a shell in tube heat exchanger, with 7 electrically heated rods in lieu of tubes. A series of 26 thermocouples are installed in the shell side of the exchanger, including on the surface of the heated rods, in order to ascertain a temperature profile throughout the storage medium.

SECTION C. Environmental Aspects / Potential Sources of Impact

The university has procedures in place to handle any waste that will be generated through this project. The action would not create additional environmental impacts above those already permitted at the university.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) 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; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial development.

Justification: The activity consists of university-scale research activities to develop and test tools for proactive management of NHESs.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on 08/1/2019