U.S. Department of Energy
Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: Princeton University - Electricity System Capacity Expansion and Operational Modeling for Evaluation and Optimization of Flexible Carbon Capture and Sequestration Systems

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Princeton, NJ

Proposed Action Description:

Funding will support the project team's information gathering and analysis efforts to will improve and apply the existing GenX configurable electricity system planning model (GenX) to evaluate the value of fossil-fueled power plants with CCS technology in future electricity grids under a range of possible future scenarios, including high shares of variable renewable energy sources. Specifically, the project team will: (1) evaluate several designs and strategies to achieve flexible operation of fossil-fueled power plants with carbon capture systems; (2) evaluate subcomponents and specific costs, flexibility, and efficiency parameters; and (3) further improve the GenX codebase and release the model as an open source software tool, along with accompanying documentation and training materials. If successful, the project team will improve the GenX codebase and release the model as an open source software tool, along with accompanying documentation and training materials. These price series can be used by project teams in the first phase of the ARPA-E FLECCS program to optimize CCS system designs for a range of demanding future market conditions.

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: Geoffrey Goode Digitally signed by Geoffrey Goode Date: 2020.05.07 05:18:36 -04'00' Date Determined:

(This form will be locked for editing upon signature)