



U.S. Department of Energy

Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: National Renewable Energy Laboratory -- Incorporating Record-Breaking Catalysts in Electrospun Bipolar Membranes for Low-Cost Carbon Capture via Salt Splitting

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Golden, Colorado; Lancaster, New York; Chattanooga, Tennessee; Eugene, Oregon

Proposed Action Description:

Funding will support the project team's small-scale research and development of advanced electro dialysis systems incorporating novel bipolar membranes (BPM) to drive salt- (e.g., NaCl) and water- splitting electrochemically, using carbon-free electricity, reducing energy and emissions expended to regenerate sorbents used in capturing carbon dioxide (CO₂) from the environment. Specifically, the project team will (1) develop and test catalysts, (2) design and test new small-scale BPMs, (3) combine components into electrochemical stacks for testing and further refining, (4) design and assemble equipment for larger-scale fabrication of BPM material, (5) fabricate and test larger-scale BPMs, and (6) fabricate larger-scale stacks to validate performance in an industrial setting. If successful, this project will result in a more efficient CO₂ capture system, directly reducing CO₂ in the atmosphere, while reducing combustion of fossil fuels and greenhouse gas emissions. Project activities will be conducted at existing facilities at National Renewable Energy Laboratory (NREL) (Golden, CO), Electrosynthesis Company, Inc. (Lancaster, NY), eSpin Technologies, Inc. (Chattanooga, TN), and University of Oregon (Eugene, OR) designed for the applicable activities. 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. NREL has not obtained all necessary permits and approvals applicable to proposed actions and is prohibited from commencing project work under Milestones 4.5 and 4.6 until those permits are obtained. Per the terms of the award, a permits certification and, if necessary, an amended NEPA Determination, are required prior to the conduct of applicable project work.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

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:

Approved via email

Date Determined: 09/23/2022

(This form will be locked for editing upon signature)