

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



RECIPIENT: The Regents of the University of Colorado

STATE: CO

PROJECT TITLE : Metal Chelate Flow Battery System Manufacturing

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002453	DE-EE0009794	GFO-0009794-001	GO9794

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.)

**B3.6 Small-
scale
research and
development,
laboratory
operations,
and pilot
projects**

Siting, construction, modification, operation, and decommissioning of facilities for smallscale 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 deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the Regents of the University of Colorado (CU) to design, build, and test two flow battery system prototypes that use manufactured electrolyte material. Electrolyte system development, fabrication, and prototype testing would be carried out in parallel with reactor and stack scale-up.

CU (Boulder, CO) would carry out chemical synthesis, battery assembly, and battery testing. Otoro Energy, Inc. (Otoro) (Boulder, CO) would test and evaluate materials in addition to chemical synthesis. Raytheon Technologies Research Center (RTRC) (Hartford, CT) would construct, test, and validate prototypes, cells, and stacks, and complete a system scale-up.

This project would take place over two budget periods (BPs) and would be comprised of laboratory scale research completed in existing, purpose-built facilities. BP1 would include production of electrolytes and the scale-up of the reactor. BP2 would continue the electrolyte and reactor scale-up, and would also include the assembly and demonstration of a reactor stack and prototype. The location of the electrolyte manufacturing and scaled-up prototype testing activities are yet to be determined. However, electrolyte manufacturing would be carried out by a competent Contract Research Organization (CRO) with the appropriate skills and experience to produce the required electrolyte, and would take place in a facility that is already equipped to carry out this type of activity. The scaled-up prototype testing would be carried out in a national laboratory.

The handling of potentially hazardous materials would occur, including metals, battery solutions, compressed gases, uncompressed gases, and industrial solvents. All such handling would occur in-lab, with proper hazardous material handling and disposal practices. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations.

No physical modifications to existing facilities, ground disturbing activities, or changes in the use, mission, or operation of existing facilities would be required for the completion of the project activities reviewed. No new permits or licenses would be required. Due to the anticipated project locations and nature of the activities, DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office (AMO)
Review completed by Alex Colling on 09/01/2022.

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: _____

 Electronically Signed By: Casey Strickland
NEPA Compliance Officer

Date: 9/13/2022

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: _____