

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Oregon State University**STATE:** OR

PROJECT TITLE: Microchannel-based Membrane-less Extraction of Li from Unconventional Lithium Sources

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002322	DE-EE0009436	GFO-0009436-001	G09436

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 federal funding to Oregon State University (OSU) to develop a process to extract lithium (Li) from produced water (i.e., water generated from oil and gas exploration). As part of the project, a prototype extraction and separation platform would be developed and tested, the Membraneless Phase Separation & Extraction – Advanced Li eXtraction device (MPSE-ALiX). The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. This NEPA Determination is applicable to both BPs.

Proposed project activities would include conceptual design work, data analysis, computer modeling, coating characterization/selection, MPSE-ALiX device fabrication, performance testing, and process development. These will be discussed below.

A single, pilot MPSE-ALiX device would be fabricated as part of the project. The device would consist of a set of interchangeable metal plates contained within a housing structure. The plates, would be coated with hydrophobic and hydrophilic hydrogel films by project partner University of Pittsburg (Pitt), at laboratory facilities at its campus in Pittsburgh, PA. The housing structure would include an inlet and exit port through which feed streams (i.e., produced water streams) would pass. Fabrication would be performed by OSU at machining facilities within its Advanced Technology and Manufacturing Institute in Corvallis, OR, or by a qualified third party vendor.

Once fabricated, the device's performance capabilities would be tested via Li extraction experiments. The device would be used to extract Li from both synthesized blends simulating produced water and from actual produced water samples. Extraction experiments would be conducted utilizing an existing fluidic characterization test loop located at OSU's campus in Corvallis, OR. The test loop would be modified for the purposes of the project to include additional controllers, regulators, analytical instruments, the MPSE-ALiX device, and sampling and disposal vessels, tubing, valves, and connectors. No physical modifications to existing facilities, ground disturbance, or changes to the use, mission, or operations of existing facilities would be required. No additional permits or authorizations would be required.

Samples of produced water would be obtained from a qualified vendor. These would consist of produced water from shale extraction. Shale extraction would not occur as part of the project, but rather samples would be obtained from routine extraction activities performed as part of the vendor's regular course of business. Approximately 50 gallons of

produced water would be used over the life of the project.

Project work would involve the use and handling of trace metals, polymer resins, hydrogels, and industrial solvents. All such handling would occur in controlled laboratory environments. Potential hazards would be mitigated through adherence to established institutional health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, engineering controls, monitoring, and regular internal assessments. Laboratory work would be performed under fume hoods to control and filter any emissions produced. All waste materials, including produced water, would be collected, properly labeled, and disposed of through institutional Environmental Health and Safety (EHS) collection services. OSU and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Jonathan Hartman, 06/29/2021

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:



Casey Strickland

NEPA Compliance Officer

Date: 6/30/2021

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: