

PMC-ND

(1.08.09.13)

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



RECIPIENT: University of Washington

STATE: WA

PROJECT TITLE: Acoustophoretic Additive Manufacturing for Scalable 3D Battery Electrodes

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001980	DE-EE0009112	GFO-0009112-001	G09112

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 University of Washington (UW) for the design, development, fabrication and testing of acoustic nozzles and chamber hardware based on piezoelectric actuators to fabricate Lithium-ion battery electrodes. The project would be completed over two Budget Periods (BPs). This NEPA determination is applicable to both BPs.

Proposed project activities by location, are listed below:

UW, Cobb Lab - Seattle, WA

- Design, development, fabrication and testing of acoustic nozzles and chamber hardware based on piezoelectric actuators, Lithium-ion battery inks, and Lithium-ion battery cells

UW, Molecular Analysis Facility within the Molecular Engineering and Sciences Building - Seattle, WA

- Assessment of Lithium-ion battery samples utilizing a scanning electron microscope, profilometer, and X-ray diffraction for optical measurements

UW, Washington Clean Energy Testbeds - Seattle, WA

- Extended testing of Lithium-ion battery cells and optical measurement of samples

University of California, Begley Lab –Santa Barbara, CA

- Design, development, fabrication and testing of acoustic nozzles and chamber hardware based on piezoelectric actuators

University of California, Materials Research Laboratory – Santa Barbara, CA

- Physical property characterization including microscopy and rheological measurements on test materials for battery slurries

The project would require the use and handling of various hazardous materials including industrial solvents, polymer precursors, and glass particles measuring at least 5 microns in diameter. Handling of hazardous materials would occur in purpose-built laboratories and would be managed in accordance with Federal, state, and local environmental regulations, with training and proper personal protective equipment. Additional policies and procedures will be

implemented as necessary as new health and safety risks are identified. No modifications, new permits or change in the use, mission, or operation of any facility would be required.

**NEPA PROVISION**

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office  
This NEPA determination does not require a tailored NEPA Provision  
NEPA review completed by Diana Heyder, 8/17/2020

**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 Date: 8/17/2020  
NEPA Compliance Officer

**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: \_\_\_\_\_ Date: \_\_\_\_\_  
Field Office Manager