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(1.08.09.13)

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



RECIPIENT: EERE DOE GTO

STATE: Mult

PROJECT TITLE : Geothermal Lithium Extraction Prize - Phase 2

 Funding Opportunity Announcement Number
 Procurement Instrument Number
 NEPA Control Number
 CID Number

 GFO-GeoLithiumPrize-001
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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 authorize the administration of a prize competition (American-Made Geothermal Lithium Extraction Prize, or "Prize") to de-risk and increase market viability for direct lithium extraction from geothermal brines. The Prize would be administered by the Geothermal Technologies Office (GTO) in partnership with the National Renewable Energy Lab (NREL). The Prize is a three-phase competition designed to incentivize the creation of innovations that improve upon current state-of-the-art technology by identifying, developing, and testing disruptive solutions to improve the profitability of direct lithium extraction from geothermal brines.

Phase 1 of the Prize was launched in April of 2021. The 15 competitors listed below have been selected as semifinalists to compete in Phase 2. During Phase 2, semifinalists are meant to work under the mentorship of Industry Advisory Panel (IAP) members to substantially advance their proposed tool, component, chemical process, or other advancement concept by designing the proposed concepts identified in Phase 1. At the end of Phase 2, semifinalists are expected to explain how they have advanced a solution to the technical challenge identified in Phase 1, demonstrate what progress they have made, and develop a plan for how the design would be fabricated and tested in Phase 3. Semifinalists will also need to develop a plan to test their innovation using a real geothermal brine during Phase 3. At the conclusion of Phase 2, up to five finalists would be selected to compete in Phase 3. Phase 3 would have up to three winners with a first-, second-, and third-place prize.

- · Lithium from Home Massachusetts Institute of Technology
- Freeman Lab The University of Texas at Austin
- SelectPureLi University of Illinois Urbana-Champaign
- Nanoporous Graphene Membrane Massachusetts Institute of Technology
- LiSED Rice University
- Team TELEPORT University of Virginia
- University of Utah The University of Utah
- Ellexco The George Washington University
- · Lirix-nano Sengupta University of Massachusetts Dartmouth
- Espiku Oregon State University
- Pober-Strauss Boston University
- Miami Solution University of Miami
- · University of Wyoming Team Goldilocks University of Wyoming

• Bruce Parkinson's Team – University of Wyoming

• Tech Desal – Texas Tech University

Activities associated with Phase 2 are limited to information gathering, data analysis, dissemination, and laboratory operations such as computer modeling, nanofilter and membrane fabrication, and lithium extraction testing. Activities would occur within existing facilities/laboratories designed for the types of activities proposed using existing equipment; therefore, no modifications, new permits, additional licenses and/or authorizations would be necessary. No ground disturbing activities, no changes in the operation of existing facilities, and no installation of equipment outdoors would occur for Phase 2 activities. Semifinalists would be working with small volumes of geothermal brines that may contain corrosive salts and heavy metals. All such handling would occur in university laboratory settings with dedicated proper non-hazardous material handling and disposal practices to ensure the activities would pose no risk to the public. All non-hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Based on a review of the Prize Official Rules and anticipated Phase 2 activities submitted by each semifinalist, DOE has determined that no adverse impacts to resources of concern are expected as a result of Phase 2 activities.

Finalists selected to advance to Phase 3 of the competition would be awarded a cash prize to build, test, and validate their planned innovation. Until such time as Phase 3 finalists and activities have been identified and defined, there is insufficient information available to complete a meaningful review of Prize activities subsequent to the conclusion of Phase 2. At the time finalists are selected and before the commencement of any Phase 3 activities, the Technology Office Prize Manager will be required to submit additional information for NEPA review. Phase 3 activities are restricted until further NEPA review is completed.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Phase 2

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Phase 3

Notes:

Geothermal Technologies Office

At the time Phase 2 finalists are selected and before the commencement of any Phase 3 activities, the Technology Office Prize Manager must submit additional information for NEPA review. Phase 3 activities are restricted until further NEPA review is completed.

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:

Signed By: Casey Strickland

Date: 12/30/2021

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:

Field Office Manager

Date: