

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



RECIPIENT: Various (5 Competitors)

STATE: DC

PROJECT TITLE : Geol Contest of the American-Made Geothermal Manufacturing Prize

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
		GFO-GTOPrize2020-002	

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.)
A11 Technical advice and assistance to organizations	Technical advice and planning assistance to international, national, state, and local organizations.
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 (The American-Made Geothermal Manufacturing Prize, or "Prize") designed to catalyze manufacturing innovation in the American geothermal industry by harnessing the rapid advances additive manufacturing (AM) can provide in improving design, fabrication and functionality. The Prize would be administered by the Geothermal Technologies Office (GTO) and the Advanced Manufacturing Office (AMO) in partnership with the National Renewable Energy Lab (NREL) and Oak Ridge National Laboratory (ORNL). Through the proposed Prize, DOE would progressively award federal funding in the form of cash prizes to competitors and collaborating organizations. Additional funding may be provided to two grand prize winners for field testing their tools.

As part of the Prize program, administrators facilitate collaboration between competitors and participating organizations known as American-Made Network "Connectors." These organizations range from American energy incubators, investors, universities, DOE national laboratories, and others who would contribute their own respective expertise and resources (e.g., tools, equipment, and facilities) in support of Prize competitors. Connectors would be eligible for receiving recognition awards in the form of cash from the prizes if they help competitors advance through the competition, or build partnerships with testing facilities for the needs of contest activities.

The Prize includes a set of four escalating contests: Ready! Set! Make! and Geo! (hereinafter "READY" "SET" "MAKE" and "GEO"). In addition to receiving a monetary award, the winners of each contest would then be eligible to compete in the subsequent contest. A previous NEPA Determination (GFO-GTOPrize2020-001; CXs A9, A11; 6/25/2020) reviewed initial contest activities. Competitors first submitted an idea/concept in the READY contest, after which they proposed a design of their concept for the SET contest. During the MAKE contest, ten teams fabricated AM prototypes based on their SET design at a qualified fabrication facility. Since that time, the MAKE contest has concluded and five GEO contest competitors would continue to prototype and test their proof of concept at geothermal conditions (i.e., mimicking the geothermal environment). This NEPA Determination reviews activities associated with the GEO contest.

GEO contest prototyping activities continued from the MAKE contest would involve materials research and testing

(e.g., powder alloys), prototype printing at full-scale using prototyping partner printing resources, as well as thermal and mechanical testing to evaluate structural properties of printed prototypes. Testing activities would involve advanced mechanical/thermal testing to demonstrate the quality of fabricated technology in geothermal conditions. While the range of technologies to be prototyped (drilling, zonal isolation, logging, and production technologies) are known, the specific scope of each competitor's prototyping activities would be refined once each team establishes an agreement with their national lab or private partner. A mix of national laboratories (ORNL, SNL, PNNL) as well as private companies (Trumpf, Xometry, Star Precision) have been partnered with for the prototyping activities. All activities would be funded through the Geothermal Manufacturing Prize administrative budget in the form of redeemable vouchers.

The anticipated Geo contest activities would not include deployment in field environments, and all work would occur within enclosed laboratory and fabrication spaces at purpose-built commercial and DOE national labs that have standard environment, safety and health practices. Based on a review of the Prize Official Rules, DOE has determined that no adverse impacts to sensitive resources are to be expected as a result of activities associated with the GEO contest. Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

The Prize program intends to award two grand prize winners cash and funding towards field testing proposed by competitors as part of their GEO contest submission in July 2022. As such, grand prize field testing has not yet been defined and there is insufficient information available at this time to complete a meaningful review of Prize activities subsequent to the GEO contest submission deadline. The responsible Technology Office Prize Manager will be required to submit additional information for NEPA review prior to the start of any proposed field-based activities related to the Prize. Grand prize field testing is 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:

[Geo! Contest of the American-Made Geothermal Manufacturing Prize](#)

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

[Grand Prize Field Testing](#)

Include the following condition in the financial assistance agreement:

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

Notes:

[Geothermal Technologies Office \(GTO\)](#)
[Review completed by Whitney Donoghue on 04/01/2022](#)

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.

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:  **Electronically Signed By: Casey Strickland** Date: 4/4/2022
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