



U.S. DEPARTMENT OF ENERGY

# American-Made Geothermal Manufacturing Prize

## OFFICIAL RULES

The American-Made Geothermal Manufacturing Prize is designed to catalyze manufacturing innovation in the American geothermal industry by harnessing the rapid advances additive manufacturing can provide in improving design, fabrication, and functionality. This will be accomplished through a series of prize competitions and the development of a diverse and powerful support network that leverages national laboratories, energy incubators, and other resources from across the United States.

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# I. PROGRAM SUMMARY

## 1. Introduction: A Two-Pronged Approach

The American-Made Geothermal Manufacturing Prize, administered under the authority of the America COMPETES Reauthorization Act of 2010, consists of two parallel and integrated features: the Ready! Set! Make! Geo! **Contests** and the **American-Made Network**.

Competitors in the Ready!, Set!, Make!, and Geo! Contests participate in four escalating challenges. The contests provide a total of \$4.65 million in incentives—\$3.25 million in cash prizes, \$1 million in vouchers, and \$400,000 in field testing costs—to incentivize driving additively manufactured geothermal innovations from concept to prototype testing in two years through an accelerated schedule.

The American-Made Network continues to flourish in support of this and other American-Made Challenges by amplifying competitors' efforts through connections with: (1) the U.S. Department of Energy's (DOE's) national laboratories and their world-class research facilities and expertise; and (2) a private-sector stakeholder community that actively assists entrepreneurs with bringing innovative ideas and concepts to market. This community includes incubators, investors, philanthropists, fabrication facility managers, and seasoned industry leaders, all of whom provide technical insight, marketing expertise, product validation, and other support. Throughout the competition, these diverse experts are labeled "Connectors" and comprise key components of the network.

## 2. Background

Geothermal environments pose significant challenges for manufacturing tools, components, and equipment because they require materials that can withstand harsh geothermal conditions, including variable subsurface stresses resulting from high temperatures, high rock strengths, and corrosive working fluids. Consequently, these environmental conditions necessitate manufacturing with high-grade materials and specialized geometries. However, the U.S. geothermal market is small, so the industry does not require large production volumes of equipment. This, combined with the reduced lifetime of these tools because of the harsh geothermal conditions, results in prohibitively high manufacturing costs.

Moving beyond this paradigm and achieving the 60 gigawatts electric of projected geothermal capacity by 2050 highlighted in the *GeoVision: Harnessing the Heat Beneath Our Feet* report<sup>1</sup> will require significant technical innovations, such as those underway in the additive manufacturing (AM) community, whose innovations benefit a multitude of American industries. Growth in AM applications

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<sup>1</sup> U.S. Department of Energy (DOE). 2019. *GeoVision: Harnessing the Heat Beneath Our Feet*. <https://www.energy.gov/sites/prod/files/2019/06/f63/GeoVision-full-report-opt.pdf>.

across the entire domestic manufacturing sector has been explosive in the last decade: the annual sales of commercial metal printing systems has grown from zero in 2000 to more than 1,800 systems in 2017<sup>2</sup>, driven by a 50% decrease in the costs of industrial-scale systems over the same timeframe<sup>3</sup>.

Importantly, the AM industry is now supporting the demanding requirements of the automotive, aerospace, and clean energy industries with high-grade metal and alloy printing capabilities. Some of these metals and alloys—such as nickel superalloy, titanium, tungsten-carbide, and certain high-grade steel alloys—are the same materials required for geothermal tool and component manufacturing. The opportunity exists to leverage the rapid innovations that AM enables with the U.S. geothermal industry’s ongoing need for manufacturing innovation through:

- **Reducing design and manufacturing lead times**
- **Saving money and materials**
- **Improving performance necessary for geothermal environments.**

The American-Made Geothermal Manufacturing Prize, also known as the Geothermal Prize, is designed to spark innovation and take advantage of this opportunity.

Spearheaded by the [Geothermal Technologies Office](#) (GTO) and the [Advanced Manufacturing Office](#) (AMO) within the Office of Energy Efficiency and Renewable Energy and in partnership with the [National Renewable Energy Laboratory](#) (NREL) and [Oak Ridge National Laboratory](#) (ORNL), the Geothermal Prize spurs creativity and addresses the manufacturing challenges of operating in geothermal environments. The Geothermal Prize comprises four progressive competitions that catalyze manufacturing innovation in the U.S. geothermal industry by harnessing the rapid advances AM can provide in tool design, fabrication, and functionality. In addition, it incentivizes the nation’s innovators and entrepreneurs to rapidly discover, research, iterate, and deliver new AM solutions with enhanced performance while maintaining AM prowess in the United States. This new initiative focused on rapid prototype development not only provides cash prizes, but also engages America’s energy incubators, investors, universities, 17 national laboratories, and others to help participants achieve their goals.

The Geothermal Prize adapts the successful program structure used for other American-Made Challenges: a series of prize competitions combined with the use and expansion of the American-Made Network. The unique American-Made Network takes a structured approach to bring diverse sources of support—such as DOE’s national laboratories, business incubators, and prototype fabrication facilities—together under one umbrella. This network approach is designed to be flexible, scalable, and extend across numerous technology domains and sectors.

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<sup>2</sup> Wohlers Associates, Inc, 2018. *Wohlers Report 2018*,

<sup>3</sup> Bloomberg NEF. 2018. *3D Printing: Manufacturing’s New Dimension*.

The Geothermal Prize is designed to bring together the world's best-in-class research base with its unparalleled entrepreneurial support system consisting of pioneering maker spaces, dozens of energy incubators, universities, and 17 national laboratories to create a sweeping portfolio of innovations primed for demonstrating the promise that AM holds for revolutionizing approaches for engineering for extreme environments. This will simultaneously enable the rapid development of technology and strengthen critical connections for commercialization.

The program will make it faster and easier for our nation to transform innovative research and ideas into early-stage concepts and then build prototypes ready for testing. Competitors are eligible to win cash prizes and other benefits, as well as connect with mentoring, training, and receive other services from the American-Made Network community, positioning participants to make a long-term impact on the U.S. manufacturing sector.

### 3. Contests: Ready! – Set! – Make! – Geo!

The Ready!, Set!, Make!, and Geo! Contests will fast-track efforts to identify, develop, and test disruptive AM solutions to meet geothermal industry needs. Each stage will include a contest period when participants will work to rapidly advance their solutions. DOE invites anyone, individually or as a team, to compete to transform a conceptual solution into prototype reality.

**Ready! Contest (Concept Development):** Competitors will demonstrate that they have identified and developed an impactful idea or solution that will partially or wholly incorporate AM into a geothermal tool, component, or equipment. They will also propose a path to design, prototype, and test a proof of concept.

- Ready! Contest competitors will be evaluated by a panel of experts from industry, national labs, and government. Winners will receive up to \$50,000 in cash and will then be eligible to compete in the Set!, Make!, and Geo! Contests.<sup>4</sup>
- Winners will have the opportunity to participate in an in-person design for AM workshop with ORNL Manufacturing Demonstration Facility (MDF) experts, as well as the opportunity to receive concept design feedback in one-on-one sessions with MDF staff prior to the Set! Contest submission date.<sup>5</sup>

**Set! Contest (Design):** Competitors will work to substantially advance their AM-focused geothermal tool, component, or equipment concept by demonstrating their design's promise in meeting engineering and operational requirements outlined by the team. Additionally, it is expected that competitors make significant progress in teaming and partnerships capable of building and testing a functioning prototype.

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<sup>4</sup> See Ready! eligibility requirements under Section II.7.

<sup>5</sup> See Section VI.2 for more information.

- Set! Contest competitors will be evaluated by a panel of experts from industry, national labs, and government. Winners will receive up to \$200,000 in cash and \$75,000 in vouchers that may be redeemed at preselected Power Connectors, as well as national labs and qualified fabrication facilities within the American-Made Network<sup>6</sup> to further develop their solution.

**Make! Contest (Prototype):** Competitors will fabricate AM prototypes based on their Set! design at a qualified fabrication facility. Make! Contest competitors will be evaluated by a panel of experts during a live demo day event, using—in part—engineering and technical performance criteria previously submitted by each team. Winners will receive up to \$250,000 in cash and an additional \$50,000 in vouchers redeemable with preselected Power Connectors, as well as national labs and qualified fabrication facilities.

**Geo! Contest (Test):** Competitors will manufacture an advanced functional prototype with all AM components fully incorporated. Testing will use tool, component, or equipment-specific performance criteria relevant for geothermal environments submitted with the Geo! Contest application package. Overall contest winners will be chosen by a panel of experts during a live demo day event and receive \$500,000 in cash, as well as up to \$200,000 in field-testing costs covered for eligible teams.

This set of four contests offers a total of \$4.65 million in incentives—\$3.25 million in cash prizes, \$1 million in vouchers, and \$400,000 in field testing costs.

Contest Funding:

Contest	Winners	Prizes
1. Ready!	Up to 20	\$500,000 distributed equally, with cash prizes ranging from \$25,000 to \$50,000 per winner
2. Set!	Up to 10	\$1,000,000 in cash prizes and \$750,000 in vouchers, with each winner receiving between \$100,000 to \$200,000 in cash and between \$75,000 and \$150,000 in vouchers
3. Make!	Up to 5	\$750,000 in cash prizes and \$250,000 in vouchers, with each winner receiving between \$150,000 and \$250,000 in cash and \$50,000 in vouchers
4. Geo!	2	\$500,000 each in cash prizes and up to \$200,000 for field-testing per eligible winner

To learn more and sign up go to <https://www.herox.com/GeothermalManufacturing>.

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<sup>6</sup> If a facility is not already part of the American-Made Network, it can request to join once by using the following link: <https://americanmadechallenges.org/network.html>.

## 4. American-Made Network

The American-Made Network aims to cultivate resources and build connections that enhance, accelerate, and amplify the efforts of the competitors. The objective is to link participants with ideas, people, resources, financing, and relevant industry expertise, all of which are necessary for long-term success.

The network is composed of the following elements:

1. **Prize and Network Administrator: the National Renewable Energy Laboratory:** DOE has partnered with NREL to administer the Geothermal Prize. As the administrator, NREL helps competitors locate and leverage the vast array of national lab resources. NREL also connects elements of the network with the competitors, as described below.
2. **Prize Technical Resource: DOE's Manufacturing Demonstration Facility at Oak Ridge National Laboratory:** The MDF at Oak Ridge National Laboratory provides technical resources and advising throughout the prize competition. Specifically, Ready! winners have the opportunity to participate in design for AM workshops with MDF experts, as well as the opportunity for one-on-one technical advising and feedback with MDF staff on their respective concept designs.
3. **Vouchers:** Winners of the Set! and Make! Contests receive vouchers that they may use to fund work at national laboratories and other facilities to accelerate the production, testing, improvement, or validation of prototypes.
4. **Connectors:** Connectors are entities capable of helping competitors navigate the innovation process and identify, recruit, and support contest participants. Connectors can be from incubators, universities, think tanks, industry or any group seeking to help competitors win by performing support activities such as:
  - Attracting a diverse range of talented individuals to become contest competitors;
  - Helping competitors connect with design, prototyping, and manufacturing experts and facilities, as well as mentors and relevant industry partners;
  - Providing in-kind resources, tools, and facilities to fabricate, test, and refine AM solutions

Connectors who support participants that go on to win any of the Ready!, Set!, Make!, or Geo! Contests will be financially rewarded based on the table below.



## Connector Funding:

Anticipated Number of Awards	Dollar Amounts	Details
Up to 20	\$50,000 pool	Distributed to Connectors for recruiting or mentoring a winning competitor into in the Ready! Contest.
Up to 15	\$75,000 pool	Distributed to Connectors that mentor competitors and facilitate partnership agreements of Set! and Make! Contest winners.

The Connector Guidelines with details on the Recognition Awards can be found at the following site:

[https://americanmadechallenges.org/geothermalmanufacturing/docs/Geothermal\\_Manufacturing\\_Prize\\_Connector\\_Guidelines\\_for\\_Connector\\_Recognition\\_Rewards.pdf](https://americanmadechallenges.org/geothermalmanufacturing/docs/Geothermal_Manufacturing_Prize_Connector_Guidelines_for_Connector_Recognition_Rewards.pdf)

Entities interested in participating as a Connectors can visit the following site for details:

<https://americanmadechallenges.org/network.html>.

5. **Power Connectors:** A subset of Connectors play a more substantial role in the competition and receive funds to expand and amplify prize activities. Power Connectors are eligible to receive a contract with NREL valued at up to \$50,000. Not only will these stakeholders work to identify talent and support participants in the Ready!, Set!, Make!, and Geo! Contests, Power Connectors can also collaborate as preferred prototyping and testing partners for eligible competitors to use. Power Connectors will be rewarded for efforts that:

- Increase the number of new, high-quality competitors;
- Expand the network of partners, resources, and tools;
- Provide AM and technological resources for prize competitors.

Entities interested in participating as Power Connectors can visit the following site for details:

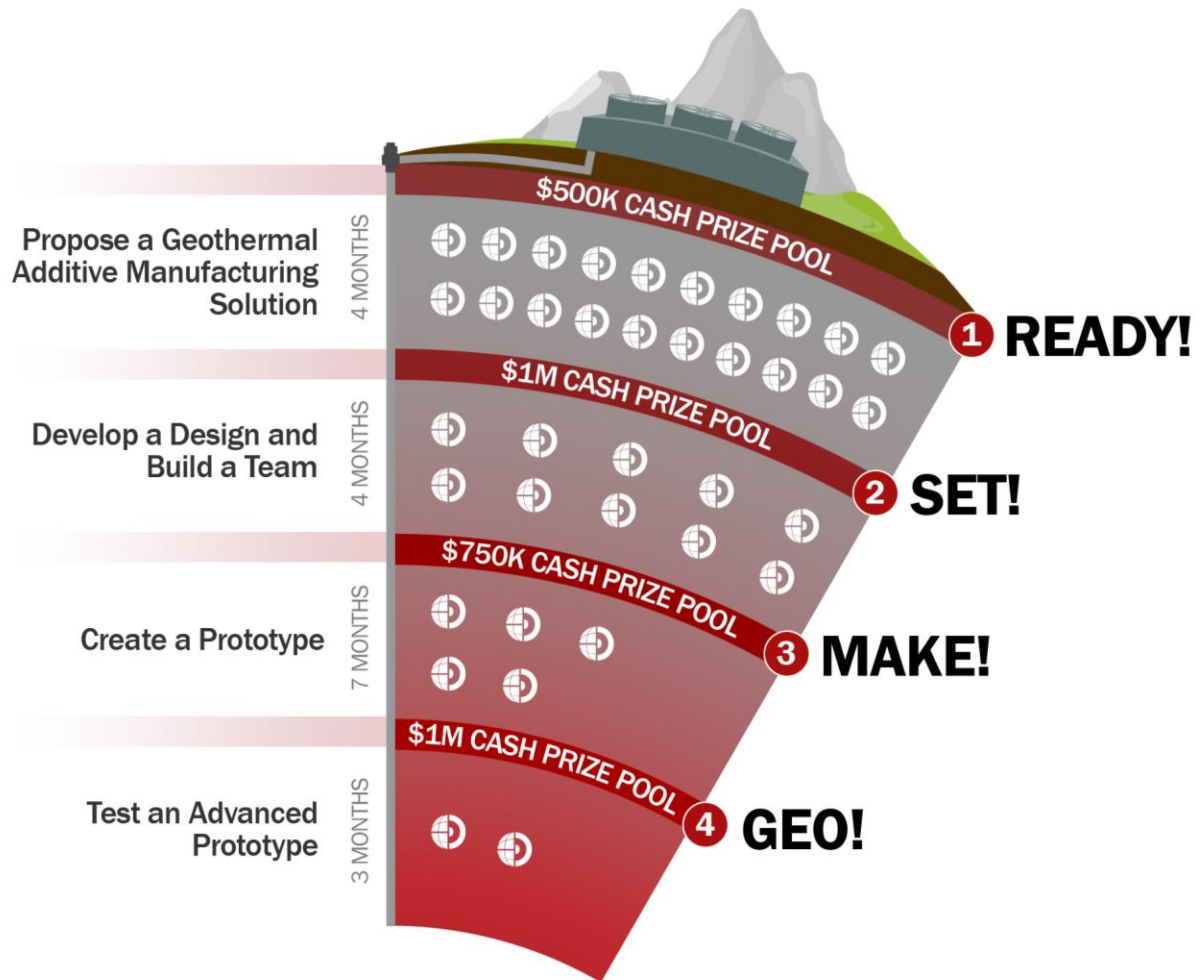
<https://americanmadechallenges.org/network.html>.

## 5. Important Dates

- **Ready!**
  - Ready! Contest submission opens: **April 29, 2020**
  - Ready! Contest submission deadline: **August 26, 2020 3 p.m. ET**
  - Ready! Contest winners announced and Set! Contest begins: Expected **November 4, 2020**

- **Set!**
  - Set! Contest submission opens: Expected **November 4, 2020**
  - Set! Competitor AM design workshop at the ORNL MDF: Expected **November 2020**
  - Set! Contest submission deadline: Expected **March 2021**
  - Set! Contest winners announced and Make! Contest begins: Expected **May 2021**
  
- **Make!**
  - Make! Contest submission opens: Expected **May 2021**
  - Make! Contest submission deadline: Expected **November 2021**
  - Make! Contest winners announced at live demo day and Geo! Contest begins: Expected **January 2022**
  
- **Geo!**
  - Geo! Contest submission opens: Expected **January 2022**
  - Geo! Contest submission deadline: Expected **May 2022**
  - Geo! Contest winners announced at live demo day: Expected **July 2022.**

All dates are subject to change, including contest openings, deadlines, and announcements. Sign up for updates at <https://americanmadechallenges.org/geothermalmanufacturing/>.



**Figure 1.** The Geothermal Prize offers four escalating rounds and substantial cash and other benefits to spark innovation and invigorate AM geothermal manufacturing.

## II. READY! CONTEST RULES

### 1. Introduction

The Ready! Contest is the first contest of the Geothermal Manufacturing Prize’s four-contest series, with a total of \$500,000 in cash prizes. Any eligible entity can compete in the Ready! Contest. **The following rules are for competitors in the Ready! Contest. “You” and “your” reference competitors in the contest.**

Ready! Contest Prizes
<ul style="list-style-type: none"><li>• Up to 20 winners</li><li>• \$500,000 distributed equally among each winner with cash prizes ranging from \$25,000 to \$50,000 per winner</li><li>• Conceptual design consultation opportunity with ORNL MDF experts</li></ul>

### 2. Goal

Competitors will propose an innovative design concept wholly or partially incorporating AM approaches for a geothermal tool, component, or equipment.

### 3. Prizes to Win

The Ready! Contest offers up to 20 cash prizes between \$25,000 and \$50,000. \$500,000 in cash prizes will be divided equally by the number of winners not exceeding 20, with a \$50,000 maximum prize, even if the number of winners is less than 20.

Ready! Contest winners will have the opportunity to participate in an in-person design for AM workshop with ORNL MDF experts, as well as the opportunity to receive concept design feedback in one-on-one sessions with MDF staff. The final date of this workshop will be publicized at the start of the Set! Contest. Only Ready! Contest winners are eligible to receive ORNL MDF design consultation (see Section VI.2 for more information).

### 4. How to Enter

Complete a submission package online at <https://www.herox.com/GeothermalManufacturing> before the contest closing date.

## 5. What to Submit

The following items constitute the submission package and must be submitted through the HeroX platform:

- Up to 90-second video (to be made public, not scored)
- Cover page content (to be made public, not scored)
- One PowerPoint slide (to be made public, not scored)
- Technical assistance request (to be made public, not scored)
- Technical narrative about the problem, innovation, team, and plan (not public, scored)
- Letters of commitment or support (optional).

<b>Online Public Video—What is your innovation</b>	
<b>Suggested content you provide</b> <ul style="list-style-type: none"><li>• The geothermal-relevant challenge you wish to tackle</li><li>• How you will incorporate AM into your solution and why it's transformational</li><li>• Who you are and why you have a competitive edge</li><li>• Creative content that conveys your submission in exciting and interesting ways.</li></ul>	<b>Required submission format</b> <ul style="list-style-type: none"><li>• Ensure that your video is posted publicly online (e.g., YouTube, Vimeo)</li><li>• The video should not exceed 90 seconds.</li></ul>
<b><u>The American-Made Network may be able to help you with creating your video.</u></b>	

### Cover Page—List basic information about your submission

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Project name</li><li>• Innovation tagline (e.g., your mission in few words)</li><li>• Link to your 90-second video online</li><li>• Key project members (names, contacts, and links to their LinkedIn profiles).</li></ul> | <ul style="list-style-type: none"><li>• Keywords that best describe your solution (e.g., tool, component, equipment focus, type(s) of AM categories to be used)</li><li>• Your city and state</li><li>• The Connectors<sup>7</sup> (up to 3) that significantly helped you advance your solution and the major items they helped with (if applicable)</li><li>• Other partners (if any).</li></ul> |
|--|--|

### Submission Summary Slide (will be made public)

Make your own public-facing one-slide submission summary that contains technically specific details but can be understood by most people. There is no template, so feel free to present the information as you see fit. Please make any text readable in a standard printout and conference room projection.

### Technical Assistance Request (2 pages, including images, will be made public)

Provide a two-page description of the unique challenges and needs a national lab, private facility, and/or member of the American-Made Network could potentially help you resolve. The Prize Administrator will make this request broadly available so members of the American-Made Network can understand your needs and assist you through the voucher program or otherwise.

## Scored Items: Technical Narrative

Each statement for the Technical Narrative will be scored based on a 1–6 scale:

1	2	3	4	5	6
strongly disagree	disagree	slightly disagree	slightly agree	agree	strongly agree

You should answer each of the following four questions. The content bullets are organized by suggested content to guide your responses, but you must decide where to focus your answers. The individual answers to the four questions do not have a word limit; however, the aggregate response to these four questions must not exceed 2,500 words. You may also include up to 10 supporting

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<sup>7</sup> See description of Connector in Section I. Program Summary.

images, figures, or graphs. The expert reviewers will score the questions based on the content you have provided that conforms to the limits described previously.

Narrative	
<b>Question 1: <i>Problem</i></b> —What is the problem and why is solving it important?	
<p><b>Suggested content you provide</b></p> <ul style="list-style-type: none"> <li>Describe the problem, quantify its significance with metrics, and explain the specific relevance to geothermal applications.</li> <li>Explain how AM can enhance existing fabrication approaches for your innovation.</li> <li>Show how you know this is a significant problem for the geothermal industry using evidence-based validation (e.g., interviews with users, case studies, literature).</li> </ul>	<p><b>Each statement scored on a 1–6 scale</b></p> <ul style="list-style-type: none"> <li>The competitor identifies a critical geothermal-focused problem using compelling analysis.</li> <li>There is clear linkage and relevance to geothermal applications.</li> <li>The competitor’s assessment shows a strong understanding of current manufacturing approaches for their proposed tool, component, or equipment.</li> </ul>
<b>Question 2: <i>Innovation</i></b> —What is your solution and why will it be successful?	
<p><b>Suggested content you provide</b></p> <ul style="list-style-type: none"> <li>Propose a new design concept wholly or partially incorporating AM into the fabrication of a geothermal tool, component, or equipment.</li> <li>Describe your innovation’s unique value proposition and how it will demonstrate a promising new geothermal industry manufacturing approach.</li> <li>Define the design approach and characteristics you plan to improve using AM, including your due diligence to date in determining one or more AM categories to incorporate.</li> <li>Specify expected performance improvement goals and metrics relevant to your tool, component, or equipment for design, prototyping, and testing (<b>see special instructions below</b>).</li> </ul>	<p><b>Each statement scored on a 1–6 scale</b></p> <ul style="list-style-type: none"> <li>The competitor shows a strong understanding of how incorporating AM can provide a solution pathway for addressing the problem identified in Question 1.</li> <li>The solution represents an innovative approach incorporating AM into a geothermal tool, component, or equipment, built on reasonable assumptions, valid technical foundations, and lessons learned from other notable efforts in this space.</li> <li>The competitor is pursuing an innovative and impactful solution that will demonstrate promising new geothermal industry manufacturing approaches.</li> <li>The planned design approach is reasonably ambitious and validates critical assumptions needed to advance the proposed solution.</li> <li>Performance improvement goals and metrics are verifiable, and aggressive but attainable.</li> </ul>

**Question 3: *Team***—What have you done to date and what qualities give you a competitive edge?

**Suggested content you provide**

- Introduce your team, explain how it came together, and highlight the knowledge and skills that make it uniquely capable of achieving success.
- Highlight your team’s experience in AM and how you have applied it to your specific innovation.
- Describe what drives your team to realize this solution.
- Explain why winning the Ready! Contest will substantively change the likely outcome for the proposed solution.
- Describe your efforts to advance your solution concept since the announcement of the prize contest or prior and highlight key milestones achieved.

**Each statement scored on a 1–6 scale**

- The team’s track record demonstrates notable entrepreneurial qualities such as adaptability, creativity, decisiveness, and resourcefulness.
- The team’s drive, knowledge, and complementary skill sets provide a strong competitive edge toward realizing this solution in the near future.
- Winning the Ready! Contest will significantly increase the team’s chances of creating a viable AM-focused prototype.
- A considerable amount of high-quality effort was put into defining and advancing the proposed concept.



**Question 4: *Plan***—What is your plan to achieve your goals?

**Suggested content you provide**

- Describe where you stand in your AM-focused solution’s development cycle and define goals for Set!, Make!, and Geo! Phases (based on the schedule listed in Section I.5) (**see special instructions below**).
- Describe your team’s readiness to meet your goals; what resources provided by the contest will help meet your goals?
- Provide a high-level budget and project management plan to meet your goals between the conclusions of the Ready! and Make! Contests, including how you will leverage program resources or other entities (include references to letters of support/commitment if applicable).

**Each statement scored on a 1–6 scale**

- The stated goals are ambitious, reduce risks and show a commitment to an accelerated development cycle.
- Meeting the stated goals will demonstrate critical progress toward designing, fabricating, testing, and validating the functionality of this innovation.
- The proposed plan is appropriate and logical in order to achieve the stated goals.
- The proposed plan effectively uses resources available in-house or through this program to advance the innovation.

**Special Instructions for Question 2 and 4**

- Use only specific, measurable, achievable, relevant, and timely (SMART) outcome-based goals—not activity-based—so that a neutral third party can validate them (if possible).
  - For example: Demonstrate a definitive achievement of progress (e.g., achieve X% efficiency or X letters of interest signed); do **not** describe how you spent your time (e.g., provide a report, talk to customers, or perform experiments).
- Performance criteria can discuss planned improvements for tool, component, or equipment functionality, reductions in cost and manufacturing lead times, among other improvements as compared to the state of the art. All criteria cited should reflect input from international standards (e.g., ISO), peer-reviewed literature, or other verifiable benchmarking methods.
- In defining your SMART goals, include quantified, risk-reducing, meaningful, practical, and testable interim milestones
- SMART goals submitted for each phase application package should not be static. Teams should plan to assess and updates goals based on their own efforts and through relevant stakeholder feedback (e.g., possible investors, customers, and experts in the solution space).
- The American-Made Network may be able to help you to formulate your SMART goals.

### Letters of Commitment or Support (Optional)

Attach one-page letters (of support, intent, or commitment) from other relevant entities (e.g., potential users of the proposed innovation) to provide context. Letters of support from partners or others that are critical to the success of your proposed solution will likely increase your score. General letters of support from parties that are not critical to the execution of your solution will likely not factor into your score. Please limit letters of support to one page each.

Please read and comply with additional requirements about your submission in [Section VI](#).

COMPETITORS THAT DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

## 6. How We Score

The Prize Administrator screens all completed submissions, and in consultation with DOE, will assign completed submissions to a qualified panel of expert reviewers, composed of subject matter experts who will score submissions according to the applicable judging criteria defined in Section II.5 What to Submit. In order to be involved in the scoring of submissions, subject matter experts may not have personal or financial interests in, or be an employee, officer, director, or agent of any entity that is a registered participant in this contest, or have a familial or financial relationship with an individual who is a registered competitor.

The scoring of submissions will proceed as follows:

**Scoring Weights:** Each review criteria bullet for the Technical Narrative submission questions has equal weight. The score from an individual reviewer for the Technical Narrative will be the total sum of the scores for all the bullets. All reviewers' scores will then be averaged for a final score for the submission package.

**Interviews:** GTO and AMO, at their sole discretion, may decide to hold a short interview with a subset of the Ready! Contest competitors. The interviews would be held prior to the announcement of winners and would serve to help clarify questions the reviewers may have. Attending interviews is not required and interviews are not an indication of winning.

**Final Determination of Winners:** The Directors of GTO and AMO are the judges of the competition, and will make the final determination. This determination will take reviewer scores, any interview findings, and program policy factors listed in Section VI.14 into account.

**Announcement:** The Prize Administrator will work as quickly as possible and winning teams should be notified within 1 to 2 months after the contest closes, where the Prize Administrator will request the necessary information to distribute cash prizes. The Prize Administrator will then publicly announce winners. After winning the Ready! Contest prize, competitors will develop their solutions in accordance with their plan to compete in the Set! Contest.

## 7. Who Can Win

To win the Ready! Contest, competitors must comply with the following eligibility requirements. By uploading a submission package, a competitor certifies that they comply with the eligibility requirements below. Eligibility is subject to verification before prizes are awarded. As soon as the Prize Administrator becomes aware that a competitor is not eligible to win the Ready! Contest, the competitor may be disqualified.

- Individuals can compete alone or as a group. A representative of a private entity can also register the entity to compete.
  - An individual prize competitor (who is not competing as a member of a group), must be a U.S. citizen or a permanent resident.
  - A group of individuals, competing as one competitor, may win, provided that the online account holder of the submission is a U.S. citizen or a permanent resident.
- Private entities must be incorporated in and maintain a primary place of business in the United States with majority domestic ownership and control.
- If an entity seeking to compete does not have domestic ownership and control, but otherwise meets the eligibility requirements, EERE may consider issuing a waiver of that eligibility requirement where the entity submits a compelling justification. Entities seeking a waiver should include a justification along with their submission. EERE may require additional information before making a determination on the waiver request. There are no rights to appeal DOE's decision on the waiver request. See Section VI.16 for more information on the waiver process.
- DOE employees and DOE support service contractors, individuals who have been employed by DOE, or working for DOE as a support service contractor within six months prior to the submission deadline of the Ready! Contest are not eligible to participate in any prize contests in this program.
- Non-DOE federal entities and federal employees are also not eligible to win any prize contests in this program.
- Employees of an organization that cosponsors this program are not eligible to participate in any prize contest in this program.
- NREL and ORNL employees involved in administration of this prize are not eligible to participate in any prize contest in this program; however, NREL, ORNL, and other national lab employees including laboratory researchers may participate. They can also win a prize contest, provided they are not competing in their official capacity.

- Entities and individuals publicly banned from doing business with the U.S. government such as entities and individuals debarred, suspended, or otherwise excluded from or ineligible for participating in Federal programs are not eligible to compete;
- Entities identified on a Department of Homeland Security (DHS), Binding Operational Directives (BOD) as an entity publicly banned from doing business with the United States government are not eligible to compete. See <https://cyber.dhs.gov/directives/>;
- Entities and individuals using “covered telecommunications equipment or services”, as defined in Section 889 of Pub. L. 115-232, National Defense Authorization Act of 2019<sup>8</sup> are not eligible to compete. In limited circumstances, DOE may waive this eligibility requirement where the entity provides a compelling justification to support a waiver request;
- Entities and individuals identified as a restricted party on one or more screening lists of Department of Commerce, State and the Treasury are not eligible to compete. See [Consolidated Screening List](#)
- The Geothermal Manufacturing Prize is expected to positively impact U.S. economic competitiveness and the geothermal industry. Participation in a foreign government talent recruitment program<sup>9</sup> could conflict with this objective by resulting in unauthorized transfer of

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8 Pub. L. 115-232, Section 889 (f) provides the following definitions:

(f) Definitions. In this section:

....

(3) Covered telecommunications equipment or services. The term "covered telecommunications equipment or services" means any of the following:

(A) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(B) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(C) Telecommunications or video surveillance services provided by such entities or using such equipment.

(D) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

<sup>9</sup> In general, foreign government talent recruitment programs include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working or educated in the United States. These recruitment programs are often part of broader whole-of-government strategies to reduce costs associated with basic research while focusing investment on military development or dominance in emerging technology sectors.

Distinguishing features of a foreign government talent recruitment program include:

scientific and technical information to foreign government entities. Therefore, individuals participating in foreign government talent recruitment programs of foreign countries of risk<sup>10</sup> are not eligible to compete. Further teams that include individuals participating in foreign government talent recruitment programs of foreign countries of risk are not eligible to compete.

As part of your submission to the Geothermal Manufacturing Prize, you will be required to sign the following statement:

I am submitting this submission package as part of my participation in the Geothermal Manufacturing Prize. I certify under penalty of perjury that the named competitor meets the eligibility requirements for this prize competition and complies with all other rules contained in the Official Rules document. I understand false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.

## 8. Program Goal Requirements

Only submissions relevant to the goals of this program are eligible to compete. The Prize Administrator must conclude that all of the following statements are **true** when applied to your submission:

- The proposed AM solution is responsive to the needs of the geothermal energy industry.
- All activities that are described in and support the submission package are performed in the United States.
- The proposed solution represents an innovation that will move the AM and geothermal industries beyond their respective current states.

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a) Compensation provided by the foreign state to the targeted individual in exchange for the individual transferring their knowledge and expertise to the foreign country. The compensation can take several forms, such as cash, research funding, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration.

b) Recruitment in this context refers to the foreign-state-sponsor's active engagement in attracting the targeted individual to join the foreign-sponsored program and transfer their knowledge and expertise to the foreign state. The targeted individual may be employed and located in the U.S., or in the foreign state. Recruitment would not necessarily include any invitation for engagement extended by the foreign state, for example, an invitation to attend or present work at an international conference.

c) Many, but not all, programs aim to incentivize the targeted individual to physically relocate to the foreign state. Of particular concern are those programs that allow for continued employment at U.S. research facilities or receipt of DOE research funds while concurrently receiving compensation from the foreign state.

<sup>10</sup> Currently, the list of countries of risk includes Russia, Iran, North Korea, and China.

- The proposed solution is not dependent on new, pending, or proposed federal, state, or local government legislation, resolutions, appropriations, measures, or policies.
- The proposed solution does not involve the lobbying of any federal, state, or local government office.
- The proposed solution is based on fundamental technical principles and is realistic in scope and budget for the incentives provided in this program.
- The submission content sufficiently confirms the competitor's intent to bring an AM-focused geothermal tool, component, or equipment concept to an advanced prototype stage by the conclusion of the program.

## 9. Find Help

Visit <https://americanmadechallenges.org/network.html> to review and contact the members of the American-Made Network that have signed up to help you succeed.

## 10. Additional Requirements

Please read and comply with additional requirements in [Section VI](#). Competitors that do not comply with these requirements in Section VI may be disqualified.

**MORE DETAILS ON RULES FOR EACH CONTEST WILL BE PROVIDED PRIOR TO THE OPENING OF EACH SUBSEQUENT STAGE.**

# III. SET! CONTEST RULES

## 1. Introduction

The Set! Contest is the second contest of the Geothermal Manufacturing Prize's four-contest series and offers a total \$1 million in cash prizes, as well as \$750,000 in vouchers. Any eligible entity may compete in the Set! Contest regardless of whether they were a competitor in the Ready! Contest. However, winning the Set! Contest is required to compete in the Make! and Geo! Contests.

### Set! Contest Prizes

- Up to 10 winners
- \$1,000,000 in total cash prizes and \$750,000 in total vouchers. Each winner will receive between \$100,000 to \$200,000 in cash and between \$75,000 and \$150,000 in vouchers.

Ready! Contest winners competing in Set! will have the opportunity to participate in an in-person design for AM workshop with ORNL MDF experts, as well as the opportunity to receive concept design feedback in one-on-one sessions with MDF staff. The final date of this workshop will be publicized at the start of the Set! Contest. Set! competitors who did not participate in the Ready! Contest are not eligible to receive ORNL MDF design consultation.

## 2. Goal

Competitors will undertake rigorous design steps toward establishing an effective prototype fabrication and testing approach using their Ready! or independent concept.

## 3. Prizes to Win

The Set! Contest offers up to 10 cash prizes between \$100,000 and \$200,000. One million dollars in cash prizes will be divided equally by the number of winners, not exceeding 10, with a \$200,000 maximum prize (even if the number of winners is less than five).

Competitors will also each win \$75,000 in vouchers. Winners will negotiate the scope of work to be performed under a voucher and can choose one of the pre-identified Power Connectors who have streamlined agreements available, or a separate national lab and/or private facility to perform the work. More details on vouchers will be provided prior to the opening of Make! and Geo! Contests.

## 4. Important Dates

- Expected Set! Contest submission opens: **November 4, 2020**
- Expected AM design workshop at the ORNL MDF for Ready! winners competing in Set!: **November 2020**
- Expected Set! Contest submission deadline: **March 2021**
- Expected Set! Winner notification: **May 2021**

## IV. MAKE! CONTEST RULES

### 1. Introduction

The Make! Contest is the third of the Geothermal Manufacturing Prize's four-contest series offering a total of \$750,000 in cash prizes and \$250,000 in vouchers. The Make! Contest begins at the announcement of the Set! Contest winners, and includes a live demo day where all Make! competitors must present to a panel of expert reviewers their prototype. Winning the Set! Contest is required to be eligible to compete in the Make! Contest.

### Make! Contest Prizes

- Up to 5 winners
- \$750,000 in total cash prizes and \$250,000 in total vouchers. Each winner will receive a cash prize between \$150,000 to \$250,000 as well as \$50,000 in vouchers

### 2. Goal

Competitors fabricate prototypes of their AM designs, identify Geo! partner(s), and use continual customer and stakeholder feedback to substantially advance their prototype.

### 3. Prizes to Win

The Make! Contest offers up to 5 cash prizes between \$150,000 and \$250,000 from a cash prize pool of \$750,000. Prizes will be divided equally by the number of winners not to exceed 5, with a \$250,000 maximum prize (even if the number of winners is fewer than 5).

Competitors also each win \$50,000 in vouchers. Winners negotiate the scope of work to be performed under a voucher and can choose one of the pre-identified Power Connectors who have streamlined agreements available, or a separate national lab and/or private facility to perform the work. Additional information regarding vouchers will be released prior to the relevant Contest.

### 4. Important Dates

- Expected Make! contest submission opens: **May 2021**
- Expected Make! contest submission deadline: **November 2021**
- Expected Make! Winner notification: **January 2022**



# V. GEO! CONTEST RULES

## 1. Introduction

The Geo! Contest is the fourth and final contest in the Geothermal Manufacturing Prize offering a total of \$1 million in cash prizes and up to \$400,000 in covered field-testing costs. The Geo! Contest begins at the announcement of the Make! Contest winners. Winning the Make! Contest is required to be eligible to compete in the Geo! Contest.

### Geo! Contest Prizes

- 2 winners
- Each winner will receive \$500,000 in cash and up to \$200,000 in covered field-test costs.

## 2. Goal

Competitors will test their fully fabricated AM prototypes using Geo! partner(s) facilities, and use continual customer and stakeholder feedback to substantially advance their prototype.

## 3. Prizes to Win

The Geo! Contest offers two \$500,000 cash prizes and up to up to \$200,000 in field-testing costs covered.

To be eligible for field-testing cost coverages, the competitor must submit a field test plan and budget as part of the Geo! phase application for expenses up to \$200,000.

## 4. Important Dates

- Expected Geo! contest submission opens: **January 2022**
- Expected Geo! contest submission deadline: **May 2022**
- Expected Geo! Winner notification: **July 2022**

# VI. ADDITIONAL TERMS AND CONDITIONS

## 1. Universal Contest Requirements

Your submission for the Ready!, Set!, Make!, and Geo! Contests is subject to following terms and conditions:

- You must post the final content of your submission or upload the submission form online at <https://www.herox.com/GeothermalManufacturing> before the Ready!, Set!, Make!, and Geo! Contests close. Late submissions or any other form of submission do not qualify.
- The video submission, cover page, summary slide, and the technical assistance request will be made public.
- The technical narrative and letters of commitment/support are not intended to be made public; however, see Section VI.11 regarding the Freedom of Information Act.
- All submissions that you wish to protect from public disclosure must be marked according to the instructions in Section VI.11. Unmarked or improperly marked submissions will be deemed to have been provided with unlimited rights and may be used in any manner and for any purpose whatsoever as provided in these Rules and Section VI.5., Submission Rights.
- You agree to release your submission video under a Creative Commons Attribution 4.0 International License (see <http://creativecommons.org/licenses/by/4.0/>).
- You must include all the required submission's elements. The Prize Administrator may disqualify your submission after an initial screening if you fail to provide all required submission elements. Competitors may be given an opportunity to rectify submission errors due to technical challenges.
- Your submission must be in English and in a format readable by Microsoft Word. Scanned handwritten submissions will be disqualified.
- Submissions and competitors will be disqualified if any engagement with the Geothermal Manufacturing Prize – included but not limited to the submission, the HeroX forum, or e-mails to the prize administrator – contains any matter that, in the sole discretion of DOE or NREL, is indecent, obscene, defamatory, libelous, lacking in professionalism, or demonstrates a lack of respect for people or life on this planet.
- If you click "Accept" on the HeroX platform and proceed to register for any of the contests described in this document, these rules will form a valid and binding agreement between you and the U.S. Department of Energy and is in addition to the existing HeroX Terms of Use for all purposes relating to these contest. You should print and keep a copy of these rules. These provisions only apply to the contests described here and no other contests on the HeroX platform or anywhere else. To the extent that these rules conflict with the HeroX Terms of Use, these rules shall govern.

- The Prize Administrator, when feasible, may give competitors an opportunity to fix nonsubstantive mistakes or errors in their submission packages.

## 2. ORNL MDF Design Consult Support Incentives

ORNL will provide consulting opportunities and incentives for Ready! Contest winners through two planned approaches: an in-person workshop to be held at the MDF as well as individual team collaboration with ORNL MDF experts. Through these forums, ORNL will advise competitors on:

- Current AM processes
- Challenges to features of interest based on proposed manufacturing methodology
- Design for AM best practices and prospective process methodologies that are suitable for producing their parts
- Designs that enable contestants to develop the geometries and material properties of interest for their application
- Recommendations for manufacturing features, such as support structures
- Market availability for the AM technologies, relative production rates, and other information that would have impact on manufacturing practicality and cost.

The competitor will be responsible for the final geometry of the component and finalizing the method of construction. ORNL can enter into a nondisclosure agreement to protect design features and/or geometries and their application that are sensitive to the competitor.

Set! competitors who did not participate in the Ready! Contest are not eligible to receive ORNL MDF design consultation. Further details about ORNL MDF support, including planned workshop dates and location, will be available at the beginning the Set! Contest on the Prize website: <https://www.herox.com/GeothermalManufacturing>.

## 3. Verification for Payments

The Prize Administrator will verify the identity and the role of a participant potentially qualified to receive the prizes. Receiving a prize payment is contingent upon fulfilling all requirements contained herein. The Prize Administrator will notify winning competitors using provided email contact information after the date that results are announced. Each competitor (or parent/guardian if under 18 years of age), will be required to sign and return to the Prize Administrator, within 30 days of the date the notice is sent, a completed NREL Request for ACH Banking Information form, and a completed W9 form (<https://www.irs.gov/pub/irs-pdf/fw9.pdf>). In the sole discretion of the Prize Administrator, a winning competitor will be disqualified from the competition and receive no prize funds if: (i) the person/entity cannot be contacted; (ii) the person/entity fails to sign and return the required documentation within the required time period; (iii) the notification is returned as undeliverable; (iv) the submission or person/entity is disqualified for any other reason.

## 4. Teams and Single-Entity Awards

The Prize Administrator will award a single dollar amount to the designated primary submitter, whether consisting of a single or multiple entities. The primary submitter is solely responsible for allocating any prize funds among its member competitors as they deem appropriate. The Prize Administrator will not arbitrate, intervene, advise on, or resolve any matters between team members or between teams.

## 5. Submission Rights

The public videos in this contest must be submitted and released to the public by the competitor under a Creative Commons Attribution 4.0 International License (see <http://creativecommons.org/licenses/by/4.0/>).

By making a submission, and thereby consenting to the rules of the contest as described in Section VI.1., a competitor is granting to DOE, the Prize Administrator, and any other third parties supporting DOE in the contest a license to display publicly and use all parts of any submission for any other government purpose. The technical narrative, letters of commitment/support, and portions of submissions properly marked as protected, will not be made public according to Section VI.11. This license includes posting or linking to the public portions of the submission on the Prize Administrator or HeroX applications, including the contest website, DOE websites, and partner websites, and the inclusion of the submission in any other media, worldwide. The submission may be viewed by the DOE, Prize Administrator, and reviewers for purposes of the contests, including but not limited to screening and evaluation purposes. The Prize Administrator and any third parties acting on their behalf will also have the right to publicize competitor's name and, as applicable, the names of competitor's team members and organization, which participated in the submission on the contest website indefinitely.

By entering, the competitor represents and warrants that:

1. Competitor's entire submission is an original work by competitor and competitor has not included third-party content (such as writing, text, graphics, artwork, logos, photographs, dialogue from plays, likeness of any third party, musical recordings, clips of videos, television programs or motion pictures) in or in connection with the submission, unless (i) otherwise requested by the Prize Administrator and/or disclosed by competitor in the submission, and (ii) competitor has either obtained the rights to use such third-party content or the content of the submission is considered in the public domain without any limitations on use;
2. Unless otherwise disclosed in the submission, the use thereof by Prize Administrator, or the exercise by Prize Administrator of any of the rights granted by competitor under these rules, does not and will not infringe or violate any rights of any third party or entity, including, without limitation patent, copyright, trademark, trade secret, defamation, privacy, publicity, false light, misappropriation, intentional or negligent infliction of emotional distress, confidentiality, or any contractual or other rights;

3. All persons who were engaged by the competitor to work on the submission or who appear in the submission in any manner have:
  - a. Given competitor their express written consent to submit the submission for exhibition and other exploitation in any manner and in any and all media, whether now existing or hereafter discovered, throughout the world;
  - b. Provided written permission to include their name, image, or pictures in or with the submission (or if a minor who is not competitor's child, competitor must have the permission of their parent or legal guardian) and competitor may be asked by Prize Administrator to provide permission in writing;
  - c. Not been and are not currently under any union or guild agreement that results in any ongoing obligations resulting from the use, exhibition, or other exploitation of the submission.

## 6. Copyright

Each competitor represents and warrants that the competitor is the sole author and copyright owner of the submission; that the submission is an original work of the applicant or that the applicant has acquired sufficient rights to use and to authorize others, including DOE, to use the submission, as specified throughout the rules; that the submission does not infringe upon any copyright or upon any other third party rights of which the applicant is aware; and that the submission is free of malware.

## 7. Contest Subject to Applicable Law

All contests are subject to all applicable federal laws and regulations. Participation constitutes each participant's full and unconditional agreement to these Official Contest Rules and administrative decisions, which are final and binding in all matters related to the contest. This notice is not an obligation of funds; the final awards are contingent upon the availability of appropriations.

## 8. Resolution of Disputes

The U.S. Department of Energy is solely responsible for administrative decisions, which are final and binding in all matters related to the contest.

Neither the U.S. Department of Energy nor the prize administrator will arbitrate, intervene, advise on, or resolve any matters between team members or among competitors.

## 9. Publicity

The winners of these prizes (collectively, "winners") will be featured on the DOE and NREL websites.

Except where prohibited, participation in the contest constitutes each winner's consent to DOE's and its agents' use of each winner's name, likeness, photograph, voice, opinions, and/or hometown and

state information for promotional purposes through any form of media, worldwide, without further permission, payment, or consideration.

## 10. Liability

Upon registration, all participants agree to assume and, thereby, have assumed any and all risks of injury or loss in connection with or in any way arising from participation in this contest, development of any submission. Upon registration, except in the case of willful misconduct, all participants agree to and, thereby, do waive and release any and all claims or causes of action against the federal government and its officers, employees and agents for any and all injury and damage of any nature whatsoever (whether existing or thereafter arising, whether direct, indirect, or consequential and whether foreseeable or not), arising from their participation in the contest, whether the claim or cause of action arises under contract or tort.

## 11. Records Retention and the Freedom of Information Act

All materials submitted to DOE as part of a submission become DOE records and are subject to the Freedom of Information Act. The following applies only to portions of the submission not designated as public information in the instructions for submission. If a submission includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the Government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the application. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act. Without assuming any liability for inadvertent disclosure, DOE will seek to limit disclosure of such information to its employees and to outside reviewers when necessary for review of the application or as otherwise authorized by law. This restriction does not limit the Government's right to use the information if it is obtained from another source.

Submissions containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

The submission must be marked as follows and identify the specific pages containing trade secrets, confidential, proprietary, or privileged information:

### **Notice of Restriction on Disclosure and Use of Data:**

Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. [End of Notice]

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: "Contains Trade Secrets, Confidential, Proprietary, or Privileged

Information Exempt from Public Disclosure.” In addition, each line or paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets.

Competitors will be notified of any Freedom of Information Act requests for their submissions in accordance with 29 C.F.R. § 70.26. Competitors may then have the opportunity to review materials and work with a FOIA representative prior to the release of materials.

## 12. Privacy

If you choose to provide HeroX with personal information by registering or completing the submission package through the contest website, you understand that such information will be transmitted to DOE and may be kept in a system of records. Such information will be used only to respond to you in matters regarding your submission and/or the contest unless you choose to receive updates or notifications about other contests or programs from DOE on an opt-in basis. DOE and NREL are not collecting any information for commercial marketing.

## 13. General Conditions

DOE reserves the right to cancel, suspend, and/or modify the contest, or any part of it, at any time. If any fraud, technical failures, or any other factor beyond DOE's reasonable control impairs the integrity or proper functioning of the contests, as determined by DOE in its sole discretion, DOE may cancel the contest.

Although DOE indicates in the Ready!, Set!, Make!, and Geo! Contests that it will select up to several winners for each contest, DOE reserves the right to only select competitors that are likely to achieve the goals of the program. If, in DOE's determination, no competitors are likely to achieve the goals of the program, DOE will select no competitors to be winners and will award no prize money.

**ALL DECISIONS BY DOE ARE FINAL AND BINDING IN ALL MATTERS RELATED TO THE CONTEST.**

## 14. Program Policy Factors

While the scores of the reviewers will be carefully considered, it is the role of the Prize Administrator to maximize the impact of contest funds. Some factors outside the control of competitors and beyond the independent reviewers scope of review may need to be considered to accomplish this goal. The following is a list of such factors. In addition to the reviewer's scores the below program policy factors may be considered in determining winners:

- Geographic diversity and potential economic impact of projects in a variety of geothermal environments
- Whether the use of additional DOE funds and provided resources continue to be, nonduplicative, and compatible with the stated goals of this program and the DOE mission generally

- Entity diversity, from individuals, to teams, small businesses, and corporations
- The degree to which the submission exhibits technological or programmatic diversity when compared to the existing DOE project portfolio and other competitors
- The level of industry involvement and demonstrated ability to accelerate commercialization and overcome key market barriers
- The degree to which the submission is likely to lead to increased employment and manufacturing in the United States or provide other economic benefit to U.S. taxpayers
- The degree to which the submission will accelerate transformational technological, financial, or workforce advances in areas that industry by itself is not likely to undertake because of technical or financial uncertainty
- The degree to which the submission supports complementary DOE efforts or projects, which, when taken together, will best achieve the research goals and objectives
- The degree to which the submission enables new and expanding market segments
- Whether the project promotes increased coordination with nongovernmental entities for the demonstration of technologies and research applications to facilitate technology transfer.

## 15. Return of Funds

As a condition of receiving a prize, competitors agree that if the prize was made based on fraudulent or inaccurate information provided by the competitor to DOE, DOE has the right to demand that any prize funds or the value of other non-cash prizes be returned to the government.

## 16. Request to Waive the “Domestic Ownership and Control” Eligibility Requirement

If an entity seeking to compete does not have domestic ownership and control, but otherwise meets the eligibility requirements, EERE may consider issuing a waiver of that eligibility requirement where the entity submits a compelling justification. Entities seeking a waiver should include a justification along with their submission. EERE may require additional information before making a determination on the waiver request. There are no rights to appeal DOE’s decision on the waiver request.

The justification must address the following waiver criteria and content requirements:

### Waiver Criteria

Entities seeking a waiver must demonstrate to the satisfaction of EERE that its participation: (1) has a high likelihood of furthering the objectives of this prize competition; and (2) aligns with the best interest of the U.S. industry, and U.S. economic development.



## Content for Waiver Request

A waiver request must include the following information:

- a. Entity's name and place of incorporation;
- b. The location of the entity's primary place of business;
- c. A statement describing the extent the entity is owned or control by a foreign government, agency, firm, corporation, or person who is not a citizen or permanent resident of the U.S., including the applicable percentage of ownership/control;
- d. A compelling justification that addresses the waiver criteria stated above;
- e. A description of the project's anticipated contributions to the U.S. economy;
- f. A description of how the entity has benefitted U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.; and
- g. A description of how the entity has promoted domestic manufacturing of products and/or services.

## 17. Definitions

**Additive Manufacturing (AM)**, also known as 3D printing, is a process that facilitates the creation of physical, three-dimensional objects directly from a computer design file. Materials used for AM can include polymer composites, metals, ceramics, as well as other exotic materials. Of particular interest for this competition will be AM tools, components, and equipment designed for operation in the high-temperature subsurface geothermal environment.

**Geothermal Energy** is a renewable energy resource derived from the Earth's heat used for a spectrum of applications including direct-use and electricity generation, spanning temperature ranges from low (e.g., 100°C) to high (e.g., 300°C+). AM applications sought in this competition will help advance tools, components, and equipment designed to drill, interrogate, monitor, and function in harsh subsurface (e.g., 200°C+) environments during geothermal operations. Surface equipment associated with power generation, including pipeline infrastructure, turbines, and other power plant components are not considered responsive AM applications for purposes of this competition.

**Prize Administrator** means both the Alliance for Sustainable Energy operating in its capacity under the Management and Operating Contract for the National Renewable Energy Laboratory (NREL), and the U.S. Department of Energy Geothermal Technologies Office (GTO) and Advanced Manufacturing Office (AMO). When the Prize Administrator is referenced in this document, it refers to staff from both the Alliance for Sustainable Energy and GTO/AMO staff. Ultimate decision-making authority regarding contest matters rests with the directors of the GTO and AMO.

**Connector or Connector Organization** means an entity that seeks to support the efforts of the competitors. These must be U.S.-based organizations that have the capacity to connect competitors to mentoring, business resources, manufacturing resources, or introduce them to possible sources of funding. This definition is intentionally broad so that many different types of entities are able to participate. Connectors will earn recognition rewards based upon their support of the competitors. Further details can be found at: <https://americanmadechallenges.org/network.html>.

**Power Connector** means a subset of Connectors that receive contracts from the Alliance for Sustainable Energy to play a more substantial role in the competition and receive funds to expand and amplify the Geothermal Prize. Not only will these stakeholders work to identify talent and support participants in the Ready!, Set!, Make!, and Geo! Contests, each Power Connector will be a preferred prototyping and testing partner with streamlined agreements available for competitors to use in funding prototype or testing activities during prize phases.

**Voucher Funding:** vouchers are part of the prizes for the Make! and Geo! Contests. In the case of a national laboratory, the funds will be provided directly to the lab on behalf of the winner to conduct a mutually agreed upon scope of work between the lab and the winner. When vouchers are used at a non-national laboratory facility, the winners will be reimbursed after the voucher work is complete. More details on vouchers will be provided prior to the opening of Make! and Geo! Contests.