

A man with a beard and a light-colored shirt is looking towards a yellow robotic arm in a factory setting. The arm is positioned over a yellow worktable with various components. The background shows industrial equipment and a blue banner with some text.

# GEOHERMAL MANUFACTURING PRIZE

## INFORMATIONAL WEBINAR

MAY 27, 2020



U.S. DEPARTMENT OF ENERGY

# Agenda

1 American-Made Challenges and Network Overview

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2 Geothermal Manufacturing Prize Overview

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3 Ready! Contest Submission Elements

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4 Eligibility

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5 Using HeroX

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6 Questions

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# Housekeeping

- This webinar is being recorded and will be made available later
- There will be a Q&A session at the end of the presentation
  - To submit a question, type it into the “Question” tab within the GoToWebinar tool
- If you experience technical issues, please check your audio settings under the “Audio” tab
  - If you continue experiencing issues, contact GoToWebinar support: +1 (833) 851-8340.

# AMERICAN-MADE CHALLENGES AND NETWORK OVERVIEW

# PURPOSE



## **Energize American ingenuity**

*in geothermal innovation and manufacturing*



## **Empower innovators**

*with knowledge, resources, and access to rapidly transform ideas into prototypes*



## **Network-powered pathway to disruptive innovation**

*so ideas can become real products in months, not years*



# American-Made Challenges

## Accelerator for U.S. Domestic Energy and Global Business Opportunities

The American-Made Challenges incentivize the nation's entrepreneurs to strengthen American leadership in energy innovation and domestic manufacturing. These new challenges seek to lower the barriers U.S.-based innovators face in reaching manufacturing scale by accelerating the cycles of learning from years to weeks, while helping to create partnerships that connect entrepreneurs to the private sector and the network of DOE's National Laboratories across the nation.



## Our Prize Challenges



### Geothermal Manufacturing

\$3.25 million in prizes

[open](#)  
enter by 08/26/2020



### ITEAM Prize

\$75,000 in prizes

[open](#)  
enter by 05/15/2020



### Water Resource Recovery Prize

\$1 million in prizes

[open](#)  
enter by 05/28/2020

# Grants vs. Prizes

## Financial Award Process

Write and submit  
concept papers

Concept paper review

Applicants write and  
submit full applications

Full applications review

Selections and  
negotiations

Begin performing

Prepare and submit  
reimbursement request

Request reviewed and  
reimbursement issued

## Prize Award Process

Begin Performing

Achieve predefined goal

Complete submission  
package

Judges score submissions

Winners receive  
payment





# American-Made NETWORK



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130+ Network  
members plus  
17 national laboratories

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-  Connectors
-  Power Connectors

# GEOHERMAL MANUFACTURING PRIZE OVERVIEW

# What is the Geothermal Manufacturing Prize?



**\$4.65 million prize  
competition**

Ready!, Set!, Make!, and Geo! Contests



**National Network of  
support organizations**

American-Made Network

# Prize Goal



Incentivize driving additively manufactured geothermal innovations from concept to prototype testing in two years through an accelerated schedule.

# Why is This Prize Important?

## Catalyze

Catalyzes manufacturing innovation in the U.S. geothermal industry by harnessing the rapid advances additive manufacturing (AM) can provide in tool design, fabrication, and functionality.

## Incentivize

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 U.S.

## Transform

Transforms innovative research and ideas into early-stage concepts and then build prototypes ready for testing.

## Enable

Enables the rapid development of technology and builds critical connections for new avenues of technology commercialization.

# Why Additive Manufacturing?

By leveraging the rapid innovations that additive manufacturing can enable, the U.S. geothermal industry can:

- Reduce design and manufacturing lead times
- Save money and materials
- Improve performance necessary for geothermal environments.

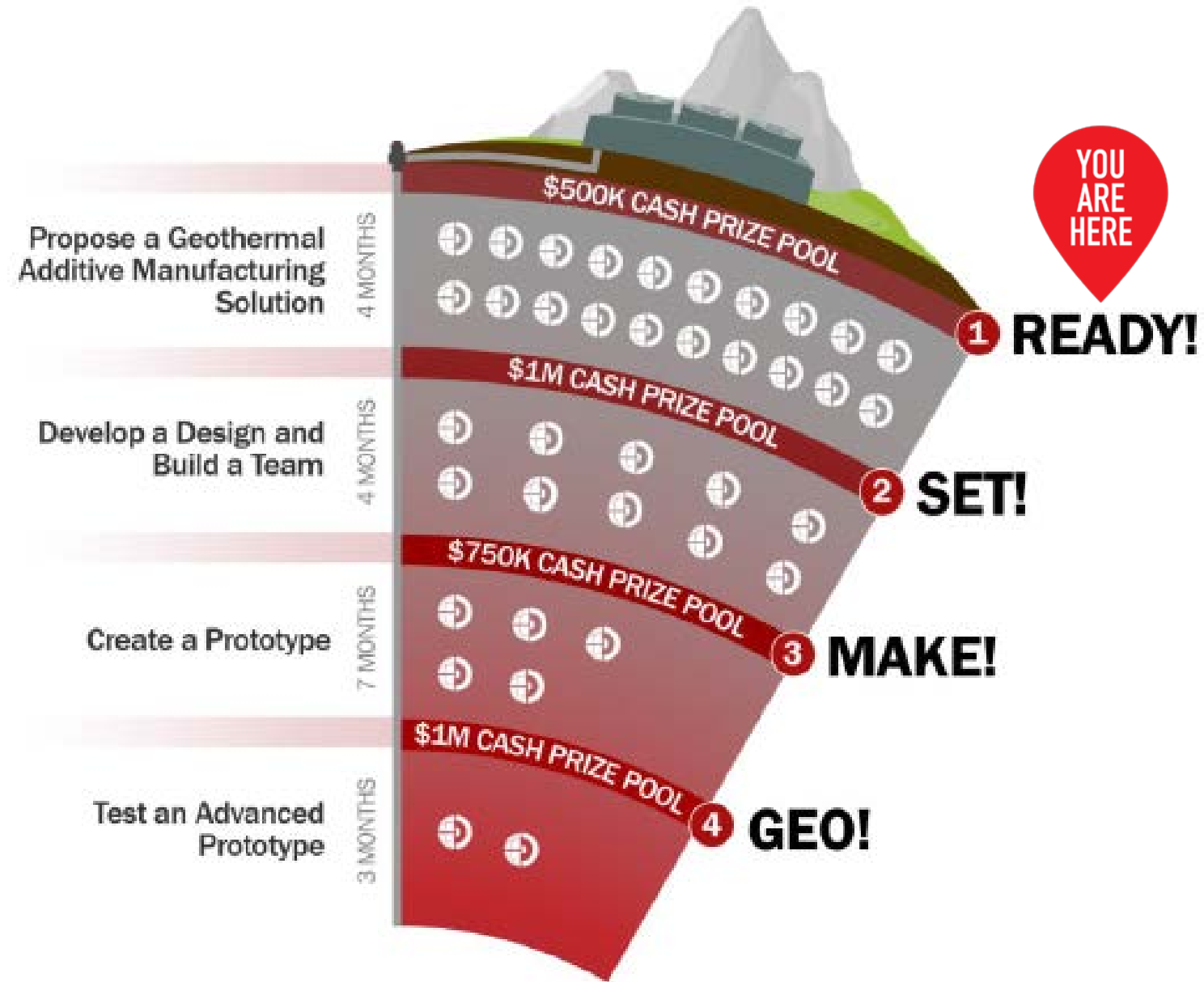
# What are The Technical Focuses?

Geothermal environments are harsh on tool, equipment, and component lifecycles:

- Elevated temperatures (175 °C and greater)
- Challenging fluid chemistries (high TDS, elevated gas constituents, low pH)
- High rock compressive strengths (30 MPa and greater).



# Prize Contests



# 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

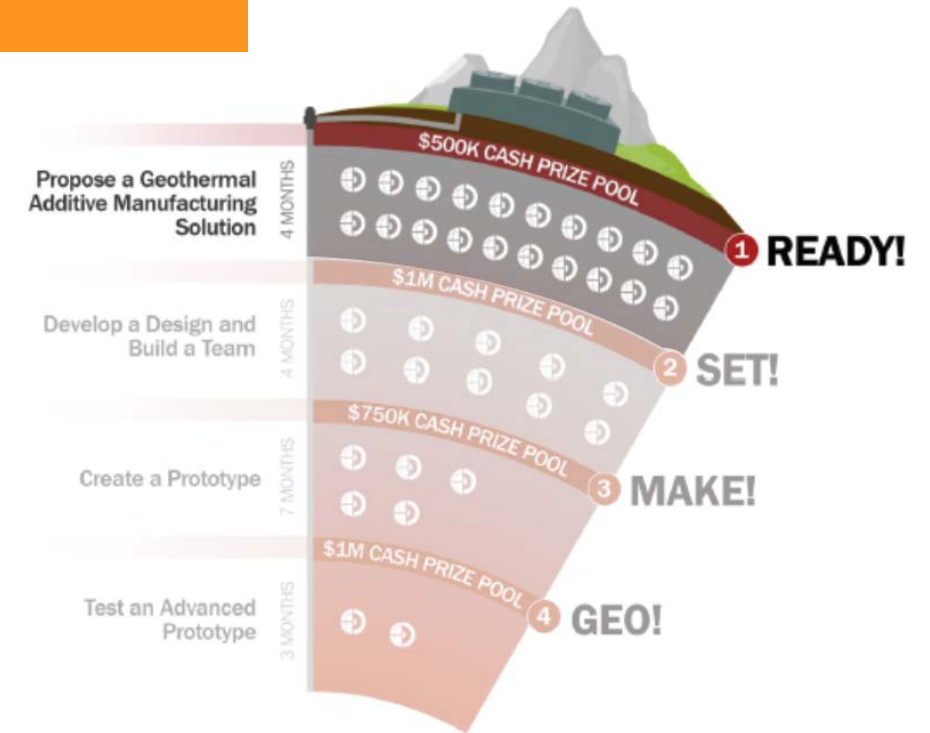
# READY! CONTEST OVERVIEW

# Ready! (Concept Development)

In the Ready! Contest, 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.
- Propose a path to design, prototype, and test a proof of concept.

Contest dates: April 29—Aug. 26, 2020



Winners will receive up to \$50,000 cash prize and will have the opportunity to participate in an in-person design\* for AM workshop and one-on-one feedback sessions with ORNL Manufacturing Demonstration Facility (MDF) experts

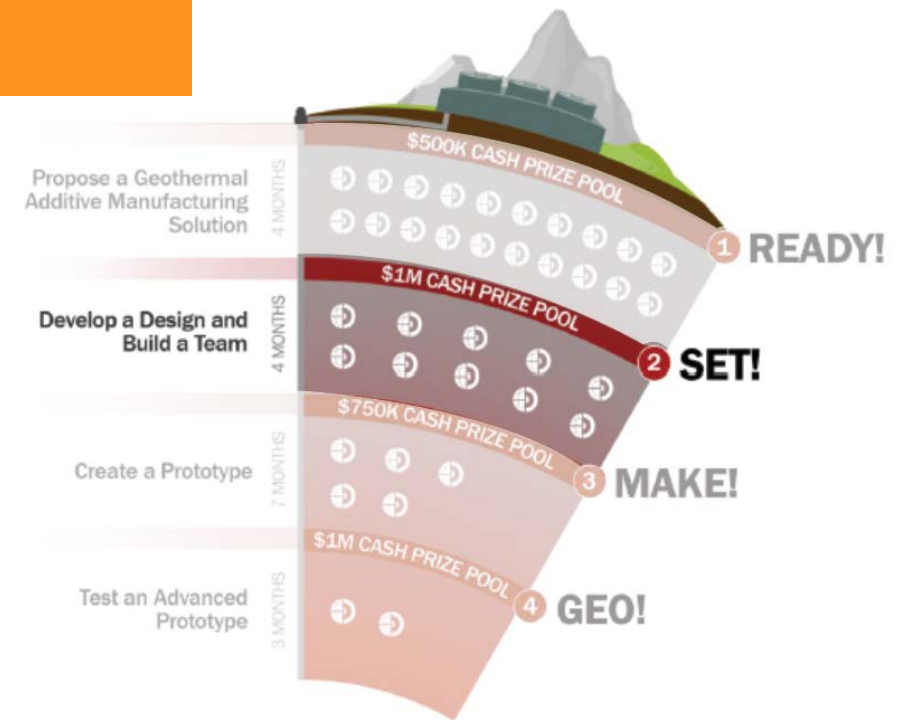
*\*Pending COVID 19 Travel Restrictions, may be virtual*

# Set! (Design)

In the Set! Contest, 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.
- Make significant progress in teaming and partnerships capable of building and testing a functioning prototype.

Anticipated contest dates:  
November 2020—May 2021



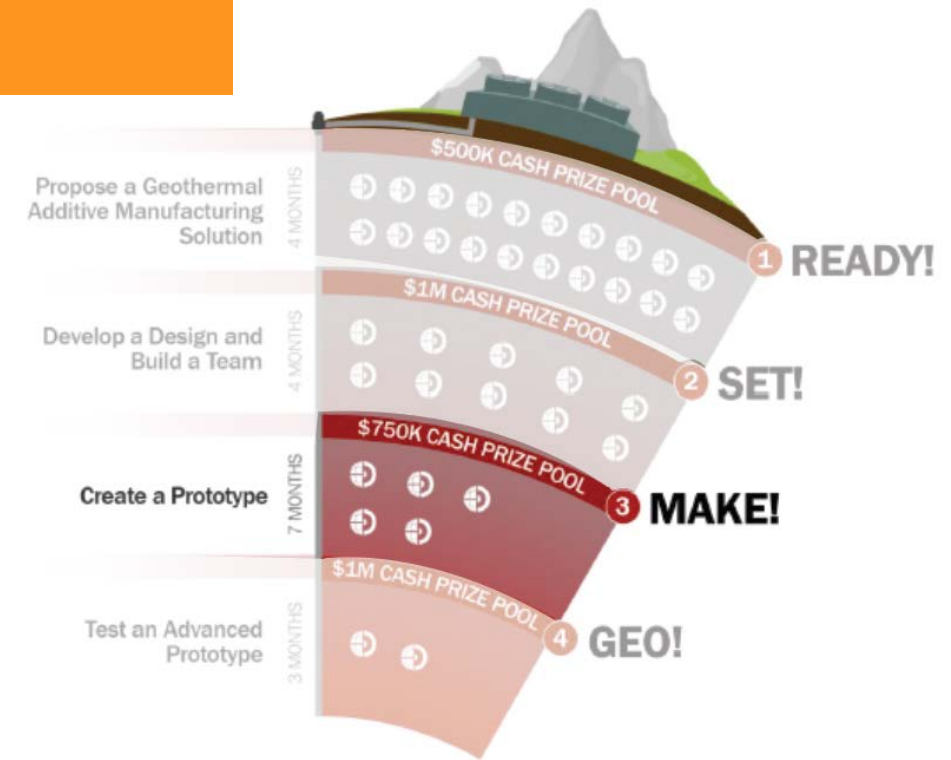
In addition to winning up to \$100,000 in cash prizes, Set! Contest competitors receive \$75,000 in vouchers that may be redeemed at national laboratories, and/or other qualified facilities within the Network.

# Make! (Prototype)

In the Make! Contest, competitors will:

- Fabricate AM prototypes based on their Set! design at a qualified fabrication facility.
- Will participate in a demo day event to pitch their idea and demonstrate their progress to a live panel of expert reviewers.

Anticipated contest dates:  
May 2021—January 2022



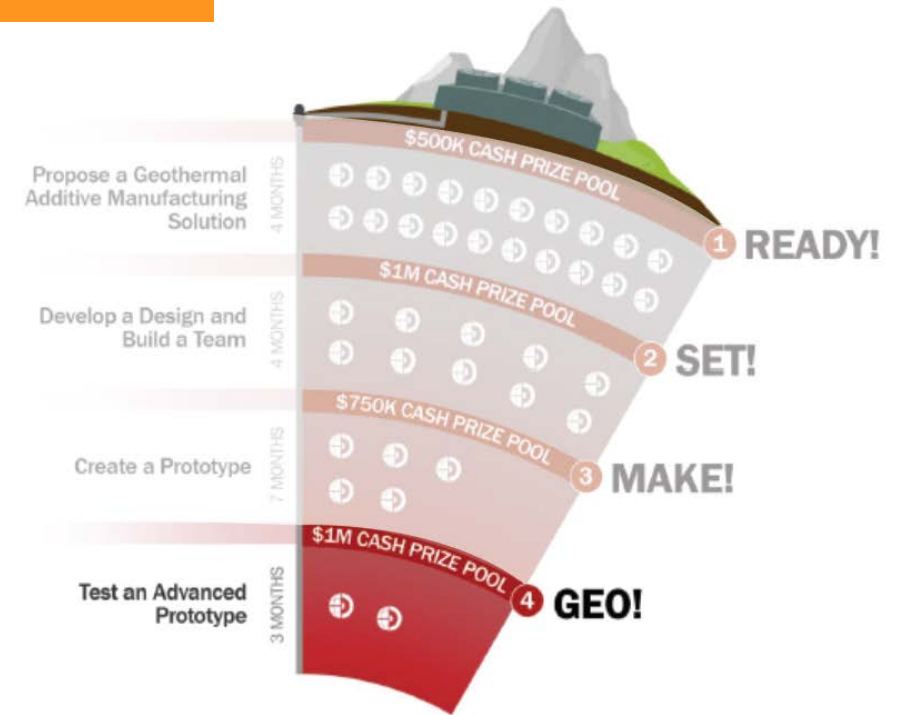
In addition to winning up to \$250,000 in cash prizes, Make! Contest winners will receive an additional \$50,000 in vouchers.

# Geo! (Test)

In the Geo! Contest, competitors will:

- Manufacture an advanced functional prototype with all AM components fully incorporated
- Perform testing for the tool, component, or equipment-specific for geothermal environments
- Will participate in a demo day event to pitch their final innovation to live panel of expert reviewers.

Anticipated contest dates:  
January—April 2022



Winners will receive \$500,000 in cash prizes, as well as up to \$200,000 in field-testing costs covered for eligible teams.

**ELIGIBILITY**

# WHO?

Any U.S.-based individual or team  
with a desire to transform ideas  
into impactful new solutions

## CAN COMPETE



**Scientists**



**Students &  
Faculty**



**Entrepreneurs**



**Anyone with a  
BIG! idea**

# Eligibility

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 U.S. 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.

**You are strongly encouraged to review the eligibility requirements in the rules document.**

**READY! CONTEST SUBMISSION ELEMENTS**

# READY! GOAL

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



# Important Dates for the Ready! Contest

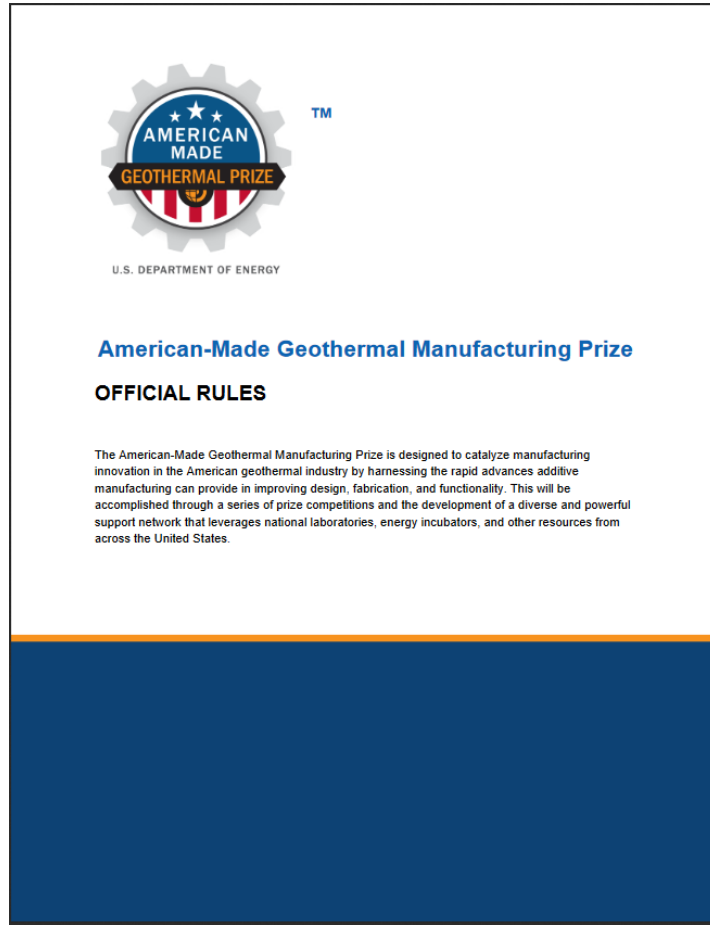
**Ready! Contest submission opened:**  
April 29, 2020

**Ready! Contest submission deadline:**  
August 26, 2020 3 p.m. ET

**Ready! Contest winners announced:**  
November 4, 2020 (anticipated)



# Read the Rules



Official Rules of the  
American-Made Geothermal  
Manufacturing Prize  
are available online

[https://americanmadechallenges.org/geothermalmanufacturing/Geothermal\\_Manufacturing\\_Prize\\_Official\\_Rules.pdf](https://americanmadechallenges.org/geothermalmanufacturing/Geothermal_Manufacturing_Prize_Official_Rules.pdf)

or

[Geothermal HeroX Page](#) > Resources Tab

# Ready! Contest Submission Elements

- 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).

# Innovation in 90 Seconds

## Suggested content

- The geothermal-relevant challenge you wish to tackle
- How you will incorporate AM into your solution and why it's transformational
- Who you are and why you have a competitive edge
- Creative content that conveys your submission in exciting and interesting ways

## Tips

- Be creative and focus on content
- Ask others for help
- Get feedback before you post online.



# Technical Assistance Request

Submit a technical assistance request as part of your Ready! Contest to 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.



# Technical Narrative: 4 Questions

## 1. PROBLEM

What is the problem and why is solving it important?

## 2. Innovation

What is your solution and why will it be successful?

## 3. TEAM

What have you done to date and what qualities give you a competitive edge?

## 4. PLAN

What is your plan to achieve your goals?

# Narrative Content + Judging

Narrative	
Question 1: <i>Problem</i> —What is the problem and why is solving it important?	
<b>Suggested content you provide</b> <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>	<b>Each statement scored on a 1–6 scale</b> <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>

\*[1 = Strongly Disagree, 2 = Disagree, 3 = Slight Disagree, 4 = Slightly Agree, 5 = Agree, 6 = Strongly Agree]

# Submission Form on HeroX & Template in Resources Tab

<

Create Submission

Save & Preview

Title \*

Give your submission idea a catchy title that describes the idea and gets people interested.

Short description

Provide a brief description of your idea. Be clear and concise.

Image

Upload image

Tp: An image boosts your message by illustrating your solution. For best results, ensure your image contains the following items: an actor/ess (person), artifact (tool they're holding), action (what they're doing), and atmosphere (setting where they are). Ensure your image is at least 650 pixels wide by 360 pixels tall for clarity.

Link to your 90 second video \*

Post your publicly accessible video online (e.g. YouTube, Vimeo, etc.). Be creative and produce a video that conveys the required information in exciting and interesting ways but do not focus on time consuming activities that only improve production values (e.g. technical elements such as décor, lighting, and cinematic techniques). Assistance from others with experience in this area may be helpful. The American-Made Network may be able to help you with creating your video.

Cover Page \*

Choose File no file selected

List basic information about your submission, such as: project name, innovation tagline, URL address from HeroX showing the proposed ideation problem you plan to address (if applicable), and key project members.

A template is provided in the Resources tab (<https://www.herox.com/SolarPrize/resources>).

Narrative answers to four questions about the problem, solution, team, and plan \*

Choose File no file selected

You should answer each of the four questions. The content bullets are only suggestions to guide your responses. You 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 five supporting images, figures, or graphs. The judges will score the questions based on the content you have provided.

A template is provided in the Resources tab (<https://www.herox.com/SolarPrize/resources>). Use the template pages 3-6 to answer each of the four questions and upload your answers here.

See the full rules document for the questions and suggestions.

Technical assistance request (public) \*

Choose File no file selected

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.



## American-Made Geothermal Manufacturing Prize SUBMISSION FOR READY!

### PROJECT NAME

Innovation tagline (e.g., your mission in a few words)

*Keyword tags*

### TEAM

Names, geographic locations, contact info, and LinkedIn profiles

### PARTNERS AND AMERICAN-MADE NETWORK SUPPORT

Key project partners and organizations (if any)

The Connectors (up to 3) that significantly helped you advance your solution and the major items they helped with (if applicable)

[Link to your 120-second video](#)

# Assessment & Announcement

1. Expert Reviewers will score submissions based on the judging criteria (judges will sign an NDA)
2. The final score from an individual Expert Reviewer for a submission package equals the total sum of the scores for all the bullets.
3. All Expert Reviewer's scores will then be averaged for a final score for the submission package.
4. Approximately 60 days after the contest closes, the Prize Administrator notifies and announce winners
5. Compete in the Set! Contest



# Connectors

Remember to list the American-Made Network Connectors who helped you in the Ready! Contest.

Connectors are eligible to cash awards for supporting competitors!

## Partners and American-Made Network

Key Project Partners, Affiliates, or Connectors \*

Normal text ▼ **B** *I* U ~~ABC~~  $x_2$   $x^2$

List and rank any Key Project Partners, Affiliates, or Connectors that you worked with and the major items they helped with. Connectors are specific national labs, accelerators, incubators, universities, industry organizations, and other entities who help competitors navigate the innovation process. You can find the complete list of Connectors here:

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

If you did not work with other partners or organizations, just enter N/A.

For more information regarding Network Connector awards, please see the rules document: (INSERT RULE LINK)

# Connectors are Rewarded

Connectors earn Recognition Rewards for validated contribution to innovators' success

Anticipated Number of Awards	Dollar Amounts	Details
Up to 20	\$50,000 pool	Distributed to Connectors for recruiting a winning competitor into in the Ready! Contest.
Up to 10	\$75,000 pool	Distributed to Connectors that mentor competitors and facilitate partnership agreements of Set! and Make! Contest winners.

USING HEROX

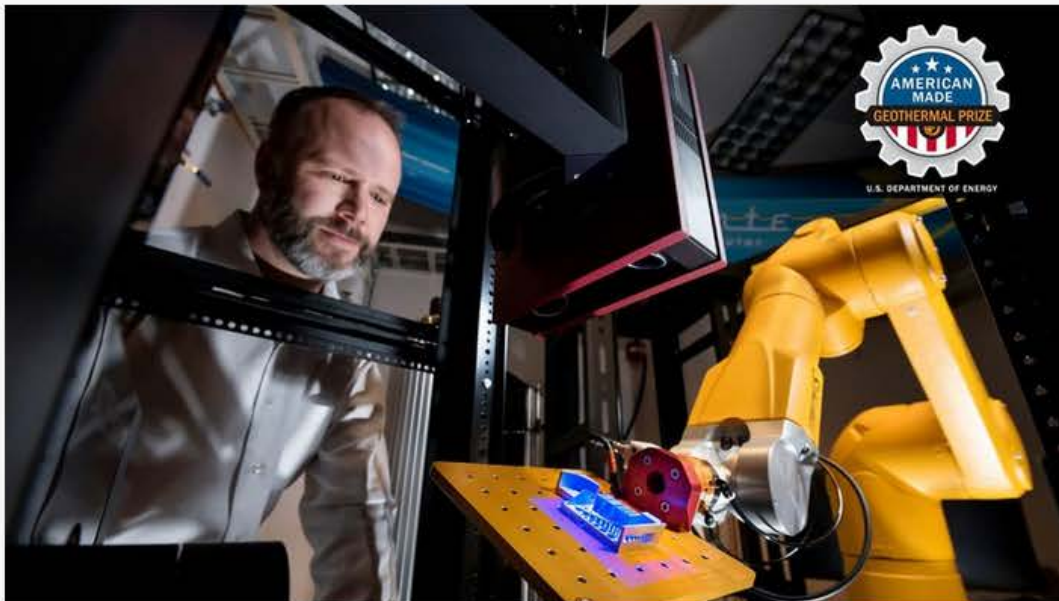


## American-Made Challenges

4,442

Share

Following (118)



## Geothermal Manufacturing Prize

Catalyze geothermal manufacturing innovation by harnessing the rapid advances in additive manufacturing.

Energy, Environment & Resources

Engineering

Technology

Stage:  
Enter

Prize:  
\$4,650,000 in total prizes

BEGIN ENTRY

Legal agreement

Leave challenge

Create a team

Overview

Guidelines

Timeline

Updates

2

Forum

2

Community

118

Resources

FAQ

# Join us at NOMCON!

June 4, 2-6 p.m. ET

## Three Sessions:

- Geothermal 101: Pulling Energy from the Earth
- Industrial Additive Manufacturing 101: Creating Solutions from the Bottom Up
- Identifying Opportunities and Geothermal Prize Teaming




## GEOTHERMAL MANUFACTURING PRIZE

**| SUBMIT BY AUGUST 26, 2020**


**A \$4.65 MILLION COMPETITION**

that harnesses advancements in additive manufacturing for geothermal in tool design, fabrication, and functionality.



U.S. DEPARTMENT OF ENERGY

### NOMCON: American-Made Challenges Sessions

 Thu Jun 4, 2020 2:00 pm - 6:30 pm EDT  Online

DESCRIPTION





**NATION OF MAKERS**



U.S. DEPARTMENT OF ENERGY

**GRAB YOUR TICKETS NOW!**

SHARE THIS EVENT



Join the Nation of Makers on June 4 during [NOMCON](#) for a series of online sessions supporting the new [American-Made Geothermal Manufacturing Prize!](#)

RSVP: <https://www.tickettailor.com/events/nationofmakers/374898>

# QUESTIONS?

Email: [Geothermal Prize@nrel.gov](mailto:GeothermalPrize@nrel.gov)



U.S. DEPARTMENT OF ENERGY

[americanmadechallenges.org/geothermalmanufacturing](http://americanmadechallenges.org/geothermalmanufacturing)

# GET STARTED

Visit our website to learn more and  
apply!

[americanmadechallenges.org/geothermalmanufacturing](https://americanmadechallenges.org/geothermalmanufacturing)

**American-Made Challenges**  
**Geothermal Manufacturing Prize**

The American-Made Geothermal Manufacturing Prize (Geothermal Prize) is designed to spur innovation and address manufacturing challenges fundamental to operating in harsh geothermal environments. This prize further supports the ability of the geothermal industry to reach the target of 60 GWe of geothermal capacity by 2050 as outlined in the recently released GeoVision study.

[Join the Challenge](#)

**Geothermal Manufacturing Prize**

Catalyze geothermal manufacturing innovation by harnessing the rapid advances in additive manufacturing.

Energy, Environment & Resources Engineering Technology

Stage: **Enter** Prize: **\$4,850,000 in total prizes**

[BEGIN ENTRY](#)

[Legal agreement](#) [Leave challenge](#)

[Create a team](#)

[Overview](#) [Guidelines](#) [Timeline](#) [Updates](#) [Forum](#) [Community](#) [Resources](#) [FAQ](#)

**Challenge Resources**

**Resources** [+ Add resource](#)

- [Geothermal Ready! Cover Page and Technical Narrative Template](#) [Edit](#) [Delete](#)  
May 18, 2020  
[Leave a comment](#)
- [Geothermal Manufacturing Prize Prize Rules and Criteria](#) [Edit](#) [Delete](#)