



# Geothermal Technologies Office: Quarterly Update

December 19, 2024





GHP system, Caribou Weather Forecast Office; NOAA. Photo by John Porter, NREL pix 12708

## AGENDA

- U.S. Department of Energy (DOE) and Office of Energy Efficiency and Renewable Energy (EERE) Updates
- Geothermal Technologies Office (GTO) News and Updates
- GTO and Geothermal in the News
- Upcoming and Recent Events
- GTO Program and Project Updates
- Q&A

Enter questions in the Q&A box throughout the webinar!

# DOE/EERE Updates





About ▼

Our Mission ▼

New Horizons ▼

Topics ▼

Consumer Savings ▼

Services & Opportunities ▼

**New DOE logo and website!**

**Powering today,  
Transforming tomorrow.**

# DOE/EERE NEWS AND UPDATES

- New Deputy Assistant Secretary for Renewable Energy in EERE
- [2024 EERE Investment Snapshot Released](#)
- [Applications Open for Connected Communities 2.0 Partnership Intermediary Agreement](#)
- [DOE Welcomes 37 New Communities to Peer-Learning Cohorts to Advance Local Energy Efforts](#)
- [EnergyTech University Prize Returns with \\$545K in Funding for Students and Faculty](#)
- [Newest SBIR Topics Provide Opportunities for Geothermal](#)



# STAY INFORMED ABOUT DOE AND EERE!



## WEEKLY JOLT

- Get the latest clean energy news by signing up for the [Weekly Jolt newsletter](#): your one-stop-shop for the latest articles, announcements, and upcoming events from EERE
- Sign up for the [EERE Funding Listserv](#) to get updates on new funding opportunities across the office

### Stay in the Know!

- Follow DOE, Secretary Granholm, and EERE on social media



[@energy](#)

[@secgranholm](#)



[@energygov](#)

[@SecGranholm](#)

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[@u-s--department-of-energy](#)

[@eeregov](#)



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Use #GeothermalEverywhere



# GTO Updates



# NEWS AND UPDATES

- [Geothermal Power is Vying to be a Major Player in the World's Clean-Energy Future](#) | Nature
- [Fervo and FORGE Report Breakthrough Test Results, Signaling More Progress for Enhanced Geothermal](#) | Journal of Petroleum Technology
- [Mazama Energy, Inc. Begins New Geothermal Demonstration Project at Newberry Volcano](#) | Business Wire
- [Sandia Research Highlights Superior Drill Bits for Cost-Effective Geothermal Drilling](#) | ThinkGeoEnergy
- [Odd Lots: Tim Latimer on Solving the Financing Problem for Geothermal](#) | Bloomberg Odd Lots

## ***New Reports***

- [Next-Generation Geothermal: Considerations and Opportunities for Responsible Development](#) | World Resources Institute Issue Brief
- [The Future of Geothermal Energy](#) | International Energy Agency Report





## RECENT EVENTS

- Geothermal Rising Conference
- National Academies Advancing Geothermal Energy
- National Association of Regulatory Utility Commissioners Annual Meeting
- DC EcoWomen
- NY-GEO 2024 Brooklyn
- Deploy24
- Geological Society of America and Geological Society of Africa's *Energy Transition I: Geothermal Energy*
- World Resources Institute's *Geothermal's New Frontier*
- Infocast Mountain West: The Opportunities for Geothermal Energy Development in the West
- MIT Energy Initiative Future Energy Systems Center Fall Workshop

***Next up...***

***50<sup>th</sup> Anniversary!***

[Stanford Geothermal Workshop](#)  
February 2025

**Stanford** | Doerr | Geothermal Program  
School of Sustainability | Energy Science & Engineering



# External Affairs

Elisabet Metcalfe



## GHP CASE STUDIES

- Goal to help new entities, communities, and individuals get background on existing installations and what went into them
- Features **19 networked and individual geothermal heat pump installations** nationwide
- Includes fast facts and statistics on energy use, cost savings, and project funding
- Features dedicated web pages and printable PDF versions

[energy.gov/eere/geothermal/geothermal-heat-pump-case-studies](https://energy.gov/eere/geothermal/geothermal-heat-pump-case-studies)



# SUCCESS

# STORIES

## Geothermal Success Stories

Clean, domestic geothermal resources have the potential to contribute substantially to generating electricity and producing heating and cooling for U.S. homes. The U.S. Department of Energy's (DOE) Geothermal Technologies Office (GTO) funds research, development, and demonstration of innovative geothermal technologies to realize that goal.

View the success stories below to learn how GTO is stimulating the growth of the geothermal industry and the renewable energy sector—and helping the nation usher in a clean energy future.

### 2024

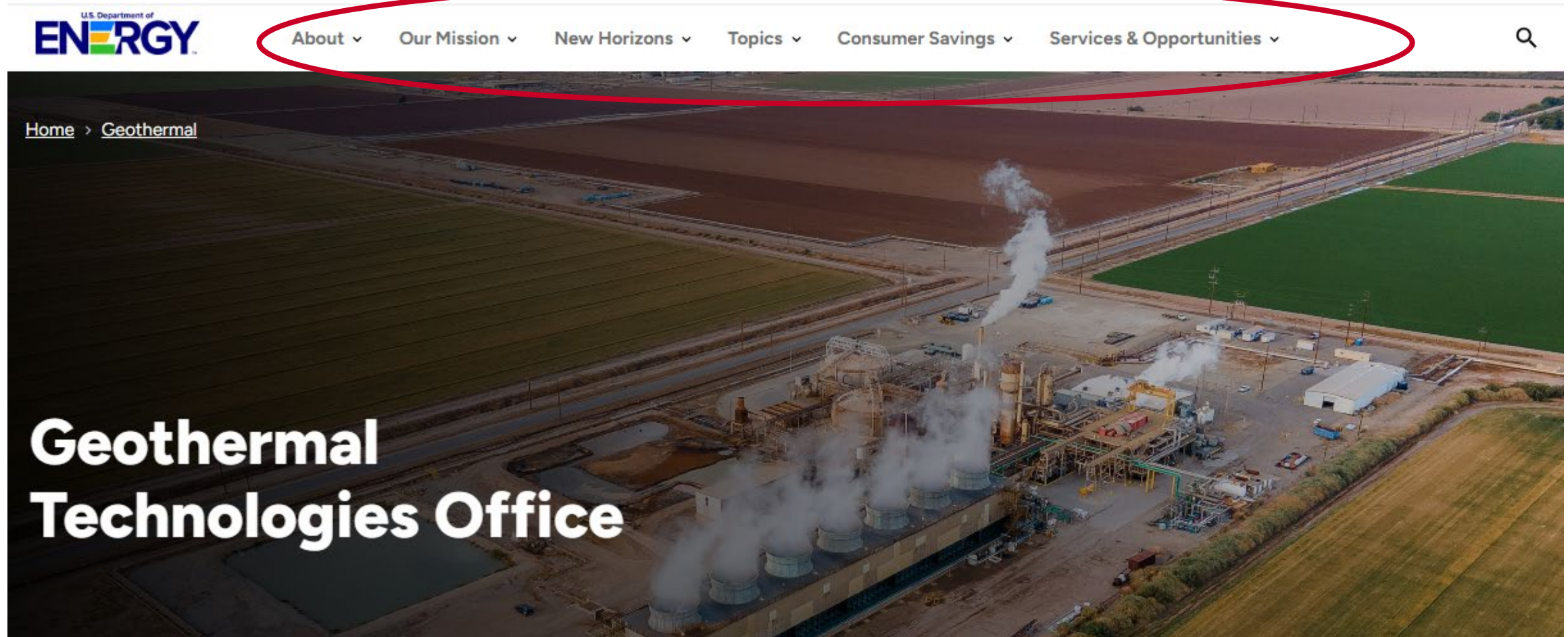
#### Learn More:

- [Geothermal Basics](#)
- [Geothermal FAQs](#)
- [Geothermal Energy News](#)
- [The Drill Down](#)
- [GTO Funding Opportunities](#)
- [Technical Resources](#)

- [Geothermal Team Honored for Creating Domestic Lithium Pathways](#)
- [New Virtual Assistant Increases Accessibility to Geothermal Data](#)
- [Fostering the Geothermal Workforce](#)
- [Geothermal Collegiate Competition Helps Communities Explore Clean Energy](#)
- [Hidden Systems Exploration Uncovers Geothermal Energy Potential](#)
- [Microseismicity Findings Point to Improved Geothermal Extraction](#)
- [Geothermal Scores Big at the “Super Bowl of the Energy Sector”](#)
- [Geothermal is Keeping Communities Warm \(and Cool!\) Nationwide](#)
- [FORGE: Building Relationships and Geothermal Understanding in Beaver County](#)

# UPDATED GTO WEBSITE

Top menu is for **DOE's** website, not GTO's pages.



## Our Role at DOE

The U.S. Department of Energy's (DOE) Geothermal Technologies Office (GTO) works to reduce costs and risks associated with geothermal development by supporting innovative technologies that address key exploration and operational challenges.

[About GTO](#)

[GTO News](#)

[Geothermal Everywhere: GTO Initiatives](#)

[Funding Opportunities](#)

[Contacts](#)

[Subscribe to GTO Emails](#)



**Geothermal energy, which comes from the heat beneath our feet, is more vital than ever.**

**RENEWABLE** – It supplies renewable power around the clock, emits little or no greenhouse gases, and has a small environmental footprint.

**RELIABLE** – Geothermal energy provides baseload power and delivers a high capacity factor—typically ~90%—meaning that geothermal power plants can operate at maximum capacity nearly all the time. This high capacity factor allows geothermal power generation to balance intermittent sources of energy like wind and solar, making it a critical part of the national renewable energy mix.

## Highlights



Register for GTO's Quarterly Webinar on Dec. 19



Blazing New PATHs: \$3 Million Prize to Power the Geothermal Workforce



AskGDR and You Shall Receive: Geothermal Data Accessibility

## Geothermal Basics

Learn about geothermal energy, its benefits and growth potential, and how GTO advances geothermal technologies.

[Geothermal Basics](#)

[Geothermal FAQs](#)

[Electricity Generation](#)

[Geothermal Heat Pumps](#)

[Tax Credits, Incentives, and Technical Assistance for Geothermal Heat Pumps](#)

[Geothermal Heating & Cooling](#)

## GTO Program Areas

[Data, Modeling, and Analysis](#)

[Enhanced Geothermal Systems](#)

[Hydrothermal Resources](#)

[Low Temperature and Coproduced Resources](#)

## Data, Modeling, and Analysis

[GTO's Data, Modeling, and Analysis \(DMA\) program](#) supports data compilation and collaboration needs by collecting, analyzing, and disseminating data related to geothermal energy.

[Geothermal Resources' Value in Implementing Decarbonization \(GRID\)](#)

[GeoVision Report](#)

[Geothermal Data Repository \(GDR\)](#)

[U.S. Energy Information Administration \(EIA\)](#)

[Permitting for Geothermal Power Development Projects](#)

[Geothermal Publications](#)

[All Data, Tools, and Other Technical Resources](#)



## Subscribe to The Drill Down

The monthly GTO e-newsletter, *The Drill Down*, brings funding opportunities, events, publications, and activities directly to your inbox.

Email

[Subscribe](#)



## GCC DEADLINE

- Teams of three or more collegiate students—undergraduate and/or graduate—and ***all majors*** welcome and encouraged to participate
- Opportunity to gain real-world geothermal experience and work with communities
- Two tracks: Technical and Policy

Submissions due  
TOMORROW



**Geothermal**  
Collegiate Competition

U.S. DEPARTMENT OF ENERGY

### This year's prizes:

- First place: \$10,000 and national recognition
- Second place: \$6,000
- Third place : \$2,000
- Bonus award: \$2,000 for an outstanding submission from a team of all Tribal and/or community college students.



## 2025 INDIGENOUS GEOTHERMAL CULTURAL EXCHANGE

### Aims to

- Elevate indigenous leadership in energy decision making
- Support Native Hawaiians by connecting them with the Māori of New Zealand, who have successfully developed geothermal energy to benefit their people

### Pathways

- Virtual learning platform
- Direct exchange

[Applications](#) close January 17, 2025

# GEOBRIDGE PORTAL

[Click for  
Webinar  
Recording](#)

 Open energy information, data and resources



**GeoBridge**

Basic Geothermal

Get Connected

Work in Geothermal

Heat Pumps

STEM

## Connecting people to **geothermal communities, information, and opportunities**

GeoBridge provides answers to some of the most pressing questions in geothermal, covering everything from home heat pump installation to careers in geothermal, educational tools, and cost savings opportunities for businesses.

**What is Geothermal?**

**Geothermal for Home and Business**







# Data, Modeling, and Analysis

Alex Prisjatschew

## AskGDR AND YOU SHALL RECEIVE

For more than ten years, every GTO-funded project has uploaded its data to the GDR for public use

[Click to read  
the GTO  
Success Story](#)



<https://gdr.openei.org/>

15,703,752

TOTAL DOWNLOADS



287 TB

OF DATA



# GTO GRID FUNDING OPPORTUNITY

*Up to \$7 million to better understand and quantify the value of the unique services geothermal provides to the electricity grid*



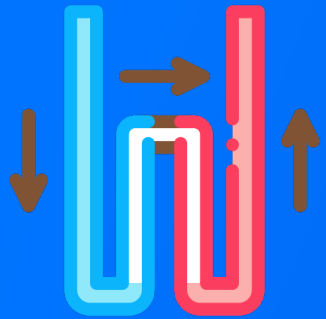
Applications under review



# UPDATES ON COMPETITIVE SOLICITATIONS

- DOE Funding Opportunity Announcements (FOAs) are now **Notices of Funding Opportunity** (NOFOs)
- Past announcements and existing FOAs will not change or require action
- Learn more about NOFOs in OMB's revision to the [2024 Uniform Grants Guidance](#)

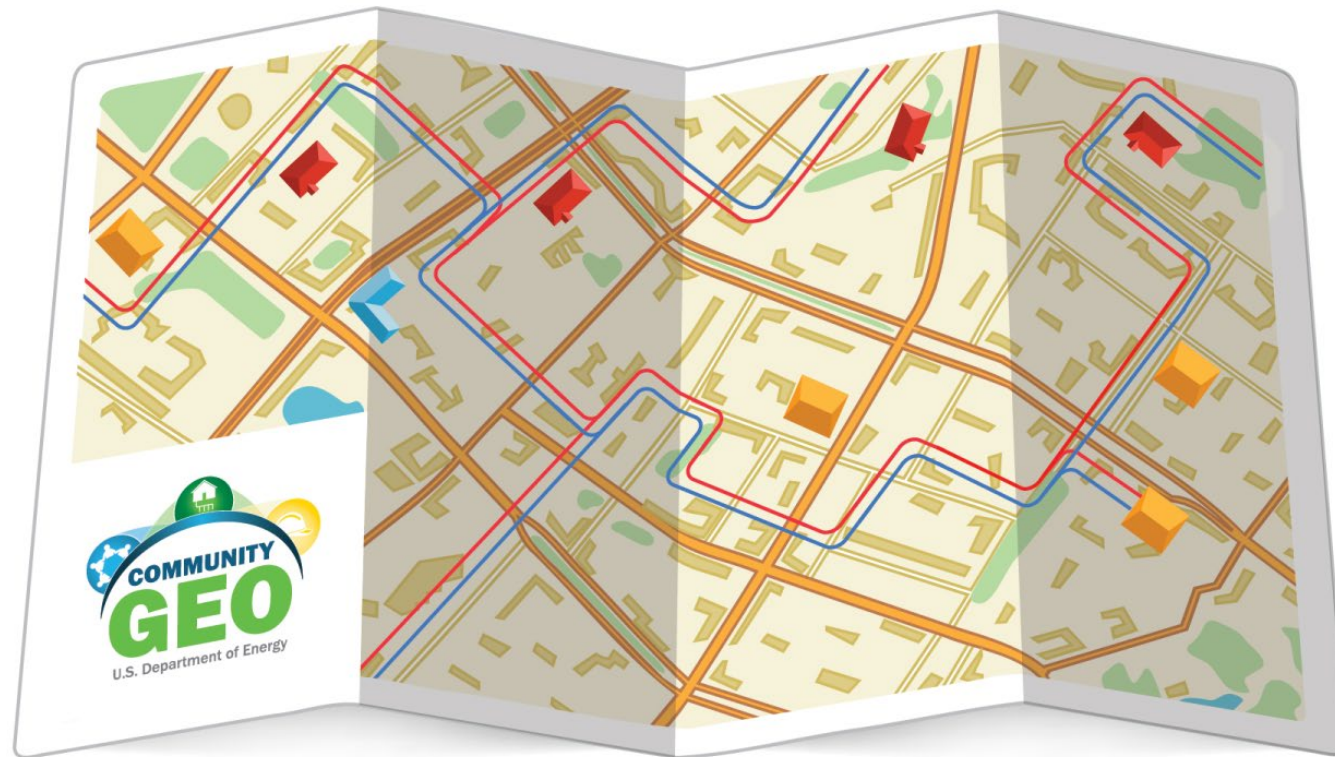
Visit [eere-exchange.energy.gov/](https://eere-exchange.energy.gov/) to learn more about **Enhanced Identity Proofing** logins on EERE Exchange



# Low Temperature and Coproduced Resources

Alexis McKittrick

# COMMUNITY GEOTHERMAL HEATING AND COOLING



Five projects selected to move to the next phase and install their systems:

Ann Arbor, MI  
Chicago, IL  
Framingham, MA  
Hinesburg, VT  
Shawnee, OK

[energy.gov/eere/geothermal/community-geothermal-heating-and-cooling-initiative](https://energy.gov/eere/geothermal/community-geothermal-heating-and-cooling-initiative)



# GHP PATHS PRIZE

\$3 million prize  
to catalyze  
partnerships to  
improve GHP  
workforce  
pipeline  
development



**AMERICAN  
MADE**  
U.S. DEPARTMENT OF ENERGY

**GHP PATHs Prize**  
Partnerships to Accelerate Training &  
Hiring for **Geothermal Heat Pumps**

U.S. Department of  
**ENERGY** | Office of Energy Efficiency  
& Renewable Energy  
Geothermal Technologies Office

## GHP PATHs Prize

*Partnerships to Accelerate Training & Hiring for Geothermal Heat Pumps*

**\$3 MILLION**  
PRIZE POOL

PHASE

**1**

**CONNECT**

Competitors describe their vision for building a sustainable pathway to training and hiring the next generation of geothermal heat pump workers.

- 3 Months
- Up to 20 Winners
- \$40,000 Each

PHASE

**2**

**ENGAGE**

Competitors propose a workforce development program.

- 4 Months
- Up to 8 Winners
- \$150,000 Each

PHASE

**3**

**EXECUTE**

Competitors share their program's results including number of workers trained, new hires, and long-term local GHP industry impacts.

- 5 Months
- To Be Determined
- \$100,000 – \$400,000



Informational Webinar Recording Available at: [www.herox.com/GHPPATHS/resources](http://www.herox.com/GHPPATHS/resources)

# PATHWAYS TO COMMERCIAL LIFTOFF: GEOTHERMAL HEATING & COOLING

- Cross-office collaborative DOE report
- **Anticipated early 2025 release** of Lifftoff Report focused on **Geothermal Heating and Cooling** systems
- More at: [lifftoff.energy.gov](https://lifftoff.energy.gov)







# Hydrothermal Resources

Alexis McKittrick

## REGIONAL DATA PARTNERSHIPS

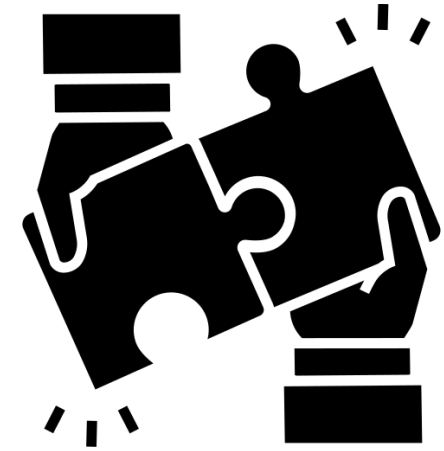
- [Releasing Partnership Intermediary Agreement in January 2025](#) to facilitate discovery and development of new U.S. geothermal resources through field data collection, including geophysics and exploratory drilling
- Goal is to support data collection for geothermal resource assessment, exploration, and development across multiple projects

**[Click to visit the ConnectWerx website to join the Network and Teaming List](#)**

# REGIONAL DATA PARTNERSHIPS

## Partner organizations could include:

- State Geological Surveys or natural resource agencies
- Geothermal developers (established and startups)
- State Energy Offices
- Energy utilities
- Local governments
- Mining, oil and gas, or other firms involved in subsurface exploration (e.g., drilling, geophysical surveying)



- Landowners (both public and private) and permitting authorities
- Tribes, Native Corporations, and other organizations representing Indigenous peoples
- Large energy users
- Institutions of higher learning
- Community and ratepayer groups
- Military Installations
- New or existing consortia of the above



# TEAM HONORED FOR CREATING LITHIUM PATHWAYS

- Team received the Lawrence Berkeley National Laboratory's 2024 Director's Award for Societal Impact for work characterizing lithium in geothermal brines in the Salton Sea region
- Award recognizes outstanding research that furthers solutions to large social problems or pressing societal questions

[Click to read  
the GTO  
Success Story](#)



Members of the "Characterizing the Geothermal Lithium Resource at the Salton Sea" report team receive the Directors Award for Societal Impact. Left to Right: Eric Sonnenthal, Jennifer Stokes-Draut, Margaret Busse, Christina Procopiou, Will Stringfellow, Dev Millstein, Patrick Dobson, Susan Sprinkle, and Bill Collins (Associate Lab Director)  
Photo Credit: © The Regents of the University of California, Lawrence Berkeley National Laboratory





# Enhanced Geothermal Systems

Kevin Jones

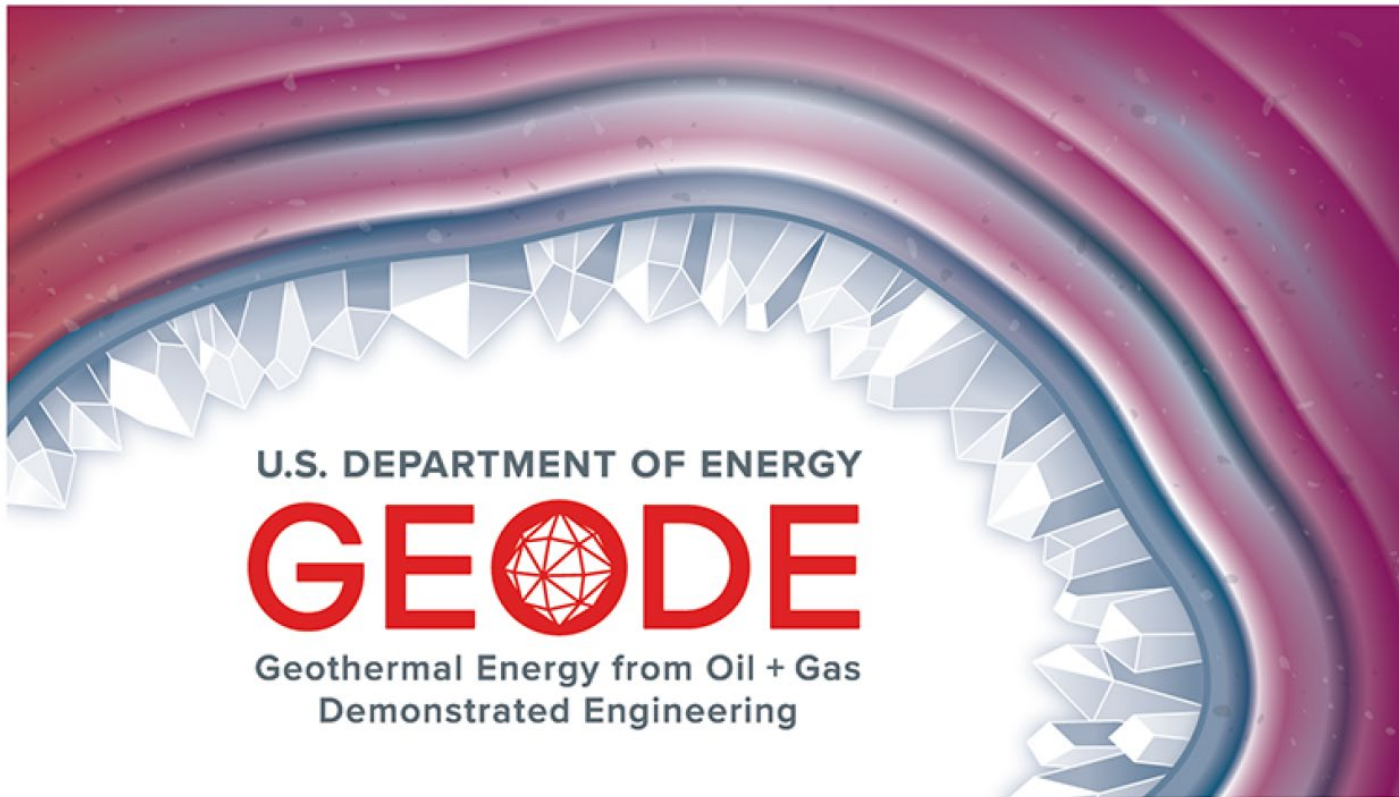
# UTAH FORGE



DOE Undersecretary Crane, Assistant Secretary Marootian, and Deputy Undersecretary Biddle visit FORGE. Photo courtesy Utah FORGE team.

- Assessing data and results from full-scale 30-day circulation test
- Hosted DOE officials at the site
- Continuing educational activities and outreach
- Produced [technical webinar](#) on surface expressions
- **Looking forward to more successes in 2025!**

# GEODE UPDATES



- Working groups underway on roadmapping activities
- Geothermal Capability Mapping and Analysis Request for Information Open

- Success story featuring six of the 24 interns selected for the second cohort
- Highlights the students' research interests and the benefits they are getting from the INTERN program

[Click to read  
the GTO  
Success Story](#)

## WHERE GREAT MINDS MEET: FOSTERING THE GEOTHERMAL WORKFORCE



*Six of the 2024 Geothermal INTERNs. (Left to right) Porraket Dechdacho, Tyler Hickey, Lauren Terry, Hugo Zazueta, Seungmin Lee, and Feaze Ghazvini.*



# BIPARTISAN INFRASTRUCTURE LAW: EGS PILOT DEMOS

**EGS Proximal Demonstrations:** Using existing infrastructure, proximal to existing geothermal/hydrothermal development

**EGS Green Field Demonstrations:** Sites with no existing geothermal development and potential near-term electrical power production potential.

**Super-hot / Supercritical EGS Demonstrations:** Well-characterized sites with near-term electrical power production potential.

**Eastern U.S. EGS Demonstrations:** Well-characterized eastern U.S. site, with existing wells in place and near-term electrical power/heat production potential.



# More Resources and Thank You!

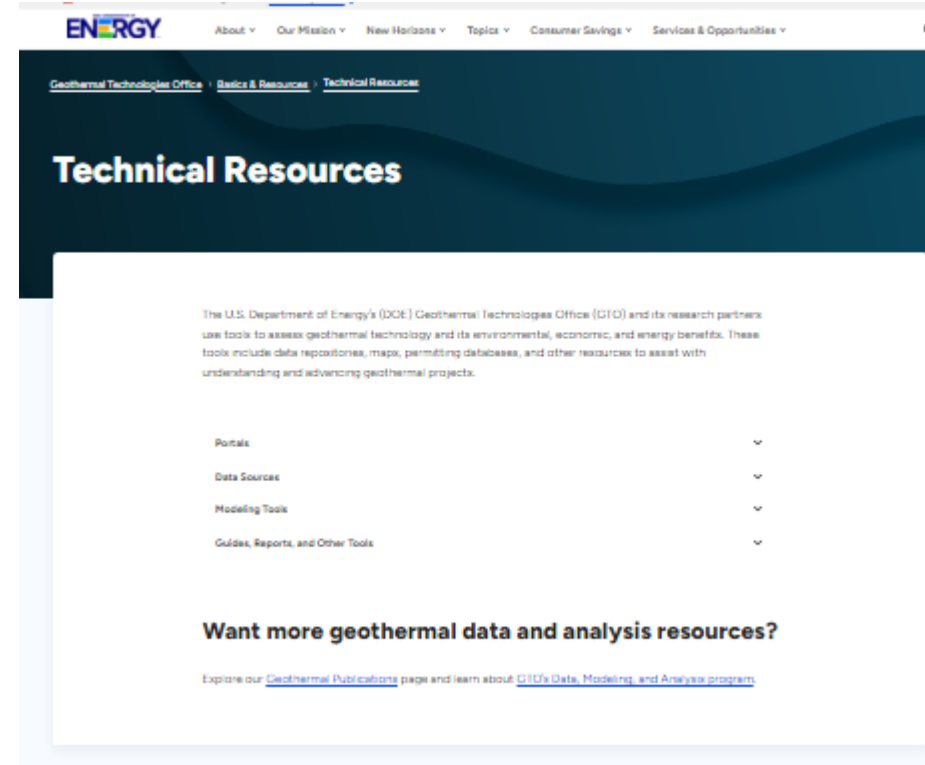
GTO has additional tools and resources available to learn about geothermal energy, find funding opportunities, and more.



- Project and R&D Information
- The Drill Down Newsletter
- Geothermal Publications
- Permitting for Geothermal Projects
- Technical Resources
- And more!

Get the hottest geothermal news from *The Drill Down*, GTO's monthly newsletter!

Sign up today: [geothermal.energy.gov](https://geothermal.energy.gov)



# Questions?

Enter questions in the Q&A box in Zoom.



# Thank you!

Interested in serving as a merit reviewer for  
GTO RD&D projects?

Send us your resume or CV:  
[doe.geothermal@ee.doe.gov](mailto:doe.geothermal@ee.doe.gov)

