

# Quarterly Stakeholder Script (September 25, 2024)

1:00-1:01 pm ET

## Log-in period

1:01-1:02

## Welcome – David

**Slide 1:** Hello everybody and welcome to the GTO Quarterly Webinar! My name is David Wang and I'm an engineer and geoscientist with our Low-Temperature and Coproduced Resources team here at GTO. My background is in geochemistry research, drilling operations, and project development & operations for renewable power plants, and as you might be able to tell, I recently joined the team here at GTO. Currently I'm helping to support projects within the geothermal heating and cooling sector.

On behalf of the GTO team, I'd like to thank you for joining us. Our quarterly webinars are an important part of our work, giving us the opportunity to share updates about GTO research, news at the Department of Energy, funding notices, and news in geothermal energy more broadly. It's an exciting time to be in geothermal—which means we also know how busy everyone is, and we appreciate you taking the time to be here.

1:02-1:03

## Agenda Overview – David

**Slide 2:** Here is our agenda for today. We'll start with several updates from the Department of Energy and its Office of Energy Efficiency and Renewable Energy, of which GTO is a part. Then I'll go over GTO updates including upcoming and recent events, staff updates, and news articles featuring GTO staff as well as geothermal more broadly. Then our program managers will join us for project and funding updates.

We'll finish off with a question-and-answer session. You can enter any questions you have throughout the webinar using the Q&A tab on your screen.

1:03-1:04

## Hispanic Heritage Month – David

**Slide 3:** We'd like to start by acknowledging that we are in National Hispanic Heritage Month, a celebration of Hispanic and Latino history and culture. The month is celebrated September 15 through October 15, with the dates intended to coincide with the Independence Day celebrations of many Latin American nations—namely Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua—that declared independence from Spain on September 15, 1821. The 2024 theme is *Pioneers of Change: Shaping the Future Together*, and GTO joins DOE in recognizing and celebrating these communities and their role in history.

1:05-1:11

## DOE/EERE Updates – David

**Slide 4:** Now we'll share some updates from DOE and its Office of Energy Efficiency and Renewable Energy, of which GTO is part.

First, earlier this month, DOE announced selections totaling \$142 million to support small business research in multiple areas under the SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) programs. These 123 projects include one selected by GTO to receive \$1.1 million for advancing a high-temperature flow rate instrument for geothermal reservoir monitoring. This project aims to mitigate limitations of electronic components in high-temperature environments, specifically geothermal reservoirs, and increase the reliability and functionality of fracture zone management tools. We are proud to fund small business research and encourage anyone interested in future SBIR/STTR opportunities to check out the program's website and GTO's small business geothermal research page.

DOE's Office of Technology Transitions, or OTT, currently has an open call for Technology Commercialization Fund vouchers, which are intended to help commercialize scientific discoveries. Up to 21 applicants will receive vouchers of up to \$100,000 to redeem at one of eight national laboratories for testing and validation, use of specialized equipment or software, simulation or modeling, consulting, or various other work. Applications are open through October 3.

OTT also announced a Notice of Intent to publish a call for proposals from DOE national laboratories, plants, and sites for the fiscal year 2025 Core Laboratory Infrastructure for Market Readiness Lab Call, or CLIMR. The office anticipates releasing the lab call in October and expects to award up to \$36.8 million across six topics, subject to appropriations.

On September 10, DOE announced six state-based collaboratives that will receive a combined \$11.6 million and technical assistance under the Renewable Energy Siting through Technical Engagement and Planning, or R-STEP, program. R-STEP funds state-based and Tribal collaboratives to evaluate stakeholder needs and develop educational materials and technical assistance, ultimately aiming to expand the decision-making capabilities of state and local governments on large-scale renewable energy planning, siting, and permitting.

DOE's Solar Energy Technologies Office recently announced \$33 million for projects to advance concentrating solar-thermal systems for solar production and long-duration energy storage. The nine projects include a demonstration power plant capable of using reservoir thermal energy storage to store thermal heat underground in depleted oil reservoirs. This demonstration project continues work initiated under GTO's hybrids analysis and we're excited to see how it progresses.

DOE's Office of Fossil Energy and Carbon Management recently announced \$1.4 million for 14 organizations and universities representing communities across the country. Under the Capacity Building for Repurposing Energy Assets initiative, each selected entity will receive \$100,000 to create a roadmap toward repurposing existing energy assets, with a focus on labor and community engagement. Selections include a Texas A&M project to repurpose oil and gas wells for geothermal energy production and a Penn State Extension project to assess transforming abandoned oil and gas wells for renewable energy production—specifically targeting the agricultural sector's energy needs—using a closed-loop geothermal system.

In August, DOE released a funding opportunity of up to \$65 million for Connected Communities 2.0, which aims to drive innovation that manages growing loads on the grid. The goal is to validate grid-edge technology innovations in real-world situations and provide new tools for utilities, grid planners and operators, automakers and smart charge management service providers—and, ultimately, the communities these entities serve. Letters of Intent were required for this funding opportunity and applications are due October 10.

And, last but not least, the U.S. General Services Administration, in collaboration with DOE's Building Technologies Office, recently selected 17 technologies as part of their landmark Green Proving Ground

program, which aims to improve energy efficiency and reduce costs in federal buildings. Funding for the program comes in part from the Inflation Reduction Act and has allowed GSA to more than triple the number of technologies it evaluates, including a geothermal retrofit solution.

1:11

### **DOE/EERE Contacts – David**

**Slide 5:** The DOE and EERE stories included here are just a sampling of all that’s happening. We encourage you to stay informed about DOE news and funding opportunities by signing up for EERE’s Weekly Jolt and following Secretary Granholm, DOE, and EERE on social media using the information shown here.

And we hope you’ll use GTO’s hashtag when you post your news—#GeothermalEverywhere—so that we can stay connected.

1:11–1:12

### **GTO Updates: Staff – David**

**Slide 6:** Ok, let’s move on to updates from GTO, starting with some staff news. First, as I noted, I’ve recently joined the federal staff! We also just welcomed Billy Shinevar (“Shin-uh-var”) to our hydrothermal resources team. Billy is an AAAS Fellow with a PhD in geophysics. Billy’s research interests include geochemical and geological processes, and we’re glad to have him on board.

Mixed with the pleasure of welcoming team members comes a sad goodbye: Our previous AAAS Fellow, Sudeep Kanungo, left GTO in August. We were sorry to see him go and grateful for the many contributions he made in his time at GTO.

Finally, we wanted to note that Alexandra Prisjatschew (“Priest-a-chef”) is currently acting program manager for our data, modeling, and analysis team, filling in for Sean Porse. Alex hails from our hydrothermal team and has seamlessly integrated into helping lead our fantastic DMA team.

1:12–1:15

### **GTO Updates: Recent Events – David**

**Slide 7:** Now on to highlights of a few upcoming events:

Alexis McKittrick, program manager for both our hydrothermal resources and low-temperature and coproduced resources programs, will be presenting about GTO and the benefits of geothermal energy at the National Association of State Energy Offices Annual Meeting in New York.

In late October, the team will be particularly busy. Alexis will be speaking at NY-GEO’s New York City event in that time frame and other GTO staff will attend, while George Stutz will present about GTO and our work in repurposing oil and gas knowledge and infrastructure for geothermal energy at the Interstate Oil and Gas Compact Commission Annual Conference.

And, of course, many GTO staff and the GTO booth will be at the Geothermal Rising Conference in Hawaii. Our communications and stakeholder engagement lead will share a little more about that soon, including our booth number and some of the fun things we have planned for GRC. We look forward to seeing you there!

In November, Jen Livermore will present on geothermal energy at the Mountain West Renewables conference in Salt Lake City and Elisabet Metcalfe will present to the National Academies. And, in December, DOE's Loan Programs Office will host the second Demonstrate Deploy Decarbonize 2024 gathering—known as Deploy24—in Washington, DC. LPO launched the Deploy dialogues in 2023 to support private-public collaboration aimed at the immediate opportunities and challenges to accelerating our domestic energy transformation. The events provide an independent platform to expand dialogue around DOE's Pathways to Commercial Liftoff reports and sectors.

GTO staff are also planning speaking engagements at multiple additional events through the end of the year, so this is just a sampling. As always, we'll continue to provide updates on event happenings in our *Drill Down* newsletter.

1:15–1:18

### **GTO Updates: Recent Events – David**

**Slide 8:** Now, for recent events. This slide features some of the events GTO has attended just since our last webinar in June. I won't go through all of these, but I'm sure you can tell that it was a busy summer. A few highlights I do want to mention include an event DOE hosted in August, convening geothermal developers, investors, and offtakers to brainstorm ways to accelerate geothermal deployment. The event was coordinated by multiple DOE offices, and an article with takeaways is expected. We were honored to have Deputy Secretary David Turk share remarks at the event and continue to appreciate DOE leadership's strong support for geothermal energy. Deputy Secretary Turk also presented remarks about geothermal energy at New York Climate Week just this morning, as did DOE's Director for Science and Energy Crosscut, Jennifer Arrigo.

Back in July, GTO's Kevin Jones joined a town hall in Santa Rosa, California, hosted by Sonoma Clean Power, and spoke about the potential benefits and impacts of next-generation geothermal energy to the community. Also in July, Lauren Boyd and Sudeep Kanungo joined Energy Secretary Jennifer Granholm in Romania for the P-TECC Ministerial meeting. P-TECC is the Partnership for Transatlantic Energy and Climate Cooperation, an important international platform to provide policymakers and stakeholders within Eastern and Central Europe with the resources and technical tools to build secure, resilient, climate-conscious energy systems.

And GTO staff have been speaking about geothermal energy at numerous events, from a Landscape Architecture Forum webinar on clean energy to DOE's 2024 Sustainability Summit to the International District Energy Association's annual conference. Geothermal continues to be a hot topic—pun intended—and we look forward to continuing to see you all out at geothermal and clean energy events!

1:18–1:19

### **Geothermal in the News – David**

**Slide 9:** I doubt it's a surprise to many people on the call that geothermal continues to make headlines into this latter part of 2024. This slide is a recap of just some of the places where GTO and geothermal energy have been featured lately—including webinars with Sean Porse discussing DOE's Next-Generation Geothermal Liftoff Report and Kevin Jones discussing Utah FORGE, plus news about our Geothermal Collegiate Competition.

We continue to see stories and receive media interest about geothermal across the resource spectrum, and we encourage you to subscribe to the *Drill Down*, which always includes a *Geothermal in the News* section.

1:19

**David**

**Slide 10:** Okay, now it's time to drill into what's happening in GTO's programs. I'll start by turning things over to Elisabet Metcalfe to kick us off with updates from our communications and stakeholder engagement team.

1:19–1:22

**New Web Page – Elisabet**

**Slide 11:** Thanks, David, and thank you to everyone for being here. Just a reminder before I dive in that you can enter your questions into the Q&A box anytime.

Our communications and stakeholder engagement team has been very busy lately, on everything from the website to planning for GRC. We are focused on continually getting the word out about GTO's research and geothermal energy more broadly, and we do this through resources that support a range of stakeholders. I'll start with a few new web pages.

First is a page discussing the permitting process for geothermal power projects. We know permitting can be a confusing topic, so we created this page to help streamline the information. It features information on permitting regulations related to geothermal, timelines, and data on the potential for geothermal under improved permitting processes. The page also includes links to resources offering additional details about permitting and its importance to expanding geothermal deployment.

In the same vein, we created a page dedicated to another confusing topic: where to find support for installing geothermal heat pumps. The page breaks down currently available tax incentives and technical assistance opportunities, and offers links to more information. Our stakeholders have also expressed interest in learning more about our work with Tribal and Native communities, so we created a page with those resources.

1:22–1:23

**Funding Pages – Elisabet**

**Slide 12:** We also wanted to create resources to make information about funding opportunities and GTO's funding process easy to find. GTO supports research through competitive funding solicitations as described on the graphic here—which is also on the About page in our website—and our funding opportunities page features open and recently closed solicitations. We also have new pages dedicated to geothermal research under SBIR and funding across DOE for communities interested in clean energy.

GTO's website is constantly evolving, and we aim to make it a site where information is accessible and useful. You can scan the QR code here to get to our home page, and we hope you'll check it often!

1:23–1:24

**GHP Case Studies – Elisabet**

**Slide 13:** Next, I want to highlight another upcoming resource: a collection of geothermal heat pump case studies. We know many organizations and communities are interested in GHPs and want to know more about

how and where GHPs are used. Developed with our partners at NREL, these 20 case studies feature a range of systems—from entire neighborhoods to single buildings—and highlight the reasons different entities chose GHPs, what the installation processes were like, technical specifications, and more. We'll be hosting these case studies on our website as both pages and downloadable PDFs. We expect to publish them soon and will send an email to all of our GTO news subscribers when they are available.

1:24-1:25

### **Success Stories – Elisabet**

**Slide 14:** Another important part of my team's work is spreading the word about GTO-funded research and its impact on expanding geothermal energy. To help us do that, we publish monthly success stories. These highlight notable achievements from our research partners, prize winners, and others in the GTO ecosystem as they work to advance geothermal. The slide features the most recent success stories we've published, and you can find a link to them in the sidebar on our About page.

1:25-1:26

### **GCC Reminder – Elisabet**

**Slide 15:** Shifting gears from web content, I wanted to share a reminder that the Geothermal Collegiate Competition is open for registration through October 7. The competition invites teams of three or more college students at any level and in any major to participate in one of two tracks—technical or policy—to design or analyze a proposed geothermal system for a community of their choice. It's a great way for students to gain real-world experience—and some extra spending money! First-, second-, and third-place teams all take home a cash prize, and this year's competition features a bonus prize for an outstanding submission from a team of all Tribal and/or community college students.

You can get more information at the links on the slide and we hope you'll register to compete or share the info with a student you know.

1:26-1:27

### **INTERN – Elisabet**

**Slide 16:** Another terrific announcement in the student realm is the recent selection of 24 students for our Geothermal INTERN program, which is in collaboration with the National Science Foundation. The program was developed through a memorandum of understanding between GTO and NSF and provides graduate students the chance to gain core professional skills by working within the geothermal industry.

The 24 students chosen for the second Geothermal INTERN cohort represent 17 colleges and universities across the country, including two Hispanic-serving institutions and four affiliated with NSF's Established Program to Stimulate Competitive Research or EPSCoR program. They bring a rich mix of ethnic and cultural backgrounds, along with a wide range of academic disciplines and we're looking forward to seeing how their internships proceed.

The Geothermal INTERN program accepts applications on a rolling basis; see our website for more information.

1:27–1:28

## **GRC – Elisabet**

**Slide 17:** Finally, as David mentioned, GTO is gearing up for the annual Geothermal Rising Conference in Waikoloa, HI, at the end of October. This is the premier conference for geothermal energy and we are looking forward to seeing many of you there. We'll be in booth # 147 in the exhibit hall and we'll have lots of cool information to share—from new project postcards to fact sheets and more. Please stop by and see us during your time on the beautiful Big Island.

1:28

## **Elisabet**

**Slide 18:** Okay, now I'll turn things to Alex to say hello and provide a quick update from the data, modeling, and analysis team.

1:28–1:30

## **GTO GRID FOA - Alex**

**Slide 19:** Thanks, Elisabet. As David mentioned earlier, I'm filling in for Sean Porse as acting DMA program manager and enjoying getting engaged with all the great work the team is doing. We have numerous initiatives underway and I'll have more to highlight on our next quarterly webinar. For now, I'll just mention that DMA released its first funding opportunity announcement back in June, called GTO GRID—short for Geothermal Resources' Value in Implementing Decarbonization—and applications are now under review. With funding of up to \$7 million, the GTO GRID effort will support regional grid modeling studies to quantify the potential contribution of geothermal power in the future decarbonized grid and economy. We're looking forward to announcing selections after our merit review process, so stay tuned.

1:30

## **Alex**

**Slide 20:** Now I'll turn the virtual mike over to Kevin Jones, program manager for our enhanced geothermal systems program.

1:30-1:32

## **Wellbore Construction Selections – Kevin**

**Slide 21:** Thanks, Alex. And thanks to all of you for being here. Just a reminder that you can submit questions into the Q&A box anytime.

I'll lead off the EGS updates with news from our wellbore construction funding opportunity, which we released back in February. If you work in or are familiar with geothermal wells, you know that one critical element of success is the ability to monitor and evaluate the structural integrity of those subsurface assets, including the performance of casing and cement. Current high fidelity solutions to do this are suitable for the upper end of oil and gas temperature needs but aren't adequate for use in hotter geothermal systems. So the goal of this work is to supplement and advance beyond currently available off-the-shelf solutions and make it easier and less expensive to inspect and evaluate the casing and cement in geothermal boreholes.

In August, we selected the five projects on this slide to receive combined funding of up to \$23.1 million for this effort. These projects will use a range of approaches to improve imaging, measurement, and evaluation downhole. You can learn more about the goals of this initiative and the selections at the web page linked here. This FOA was combined with a second topic area in reservoir thermal energy storage, which Alexis will discuss in a few minutes.

1:32–1:34

### **FORGE – Kevin**

**Slide 22:** Now over to our work at FORGE, which is our Frontier Observatory for Research in Geothermal Energy located near Milford, Utah.

Earlier this year, the team completed stimulation operations on both the 16A injection well and 16B production well, enhancing interwell connectivity through a humanmade fracture system and performed an initial 9-hour circulation test. The results proved fluid flow and energy transfer from an EGS reservoir in hot, dry granite—which is a major breakthrough—and confirmed the potential for EGS energy production.

Now, the team has completed a successful full-scale 30-day circulation test. For the majority of this test, a consistent rate of 420 gallons of water per minute was injected, with no drop in injectivity and showing a constant recovered fluid temperature of about 370° F. The FORGE team’s work represents multiple breakthroughs in creating EGS reservoirs and is providing vast amounts of data that will continue to be made publicly available.

We’re also pleased to share that the FORGE project has also just been extended, consistent with the Energy Act of 2020 that allowed FORGE to be extended by up to 7 years. This extension will allow us to continue this groundbreaking work in EGS.

1:34-1:35

### **GEODE Kickoff – Kevin**

**Slide 23:** I’ll close with an update on our Geothermal Energy from Oil and Gas Demonstrated Engineering initiative, or GEODE. GEODE aims to expand geothermal energy deployment nationwide by leveraging the technology, skill, and experience of the oil and gas sector for geothermal energy. Last year, we selected Project InnerSpace to lead the GEODE consortium and the initiative officially kicked off earlier this month at a two-day event in Houston. The consortium has started work to develop a roadmap of research priorities and anyone working in the subsurface is invited to contact Project InnerSpace or GTO for information on how to get involved.

1:35

### **Kevin**

**Slide 24:** GEODE is a shared initiative between GTO’s EGS and hydrothermal resources programs, so this is a particularly opportune time to turn things over to Alexis McKittrick, program manager for both our hydrothermal resources and our low-temperature and coproduced resources programs.



1:35-1:37

## Critical Materials Lab Call – Alexis

**Slide 25:** Thanks, Kevin. I agree that it was great to see GEODE get underway and we look forward to bringing you all updates on the consortium's progress. \*excited to be back\*

Beyond GEODE, I'll get the hydrothermal resources program updates underway with selections from our critical materials lab call. We released this call in the spring, and in July we selected seven projects at four DOE national laboratories to research ways to advance and develop U.S. critical material supply chains. These minerals and rare earth elements are important for products including computers, smartphones, household appliances, and clean energy technologies like batteries and electric vehicles.

Geothermal brines are a byproduct of geothermal electricity generation and often have high concentrations of minerals like lithium and zinc. GTO already supports work to assess lithium resources in the Salton Sea Known Geothermal Resource Area in California and multiple projects to innovate direct lithium extraction technologies. This lab call is the next "chapter" in our critical materials research, if you will, and looks to characterize lithium and critical materials in areas beyond the Salton Sea region as well as to improve understanding of how to better break down and release minerals from rocks in geothermal reservoirs and advance drilling materials to better access geothermal resource areas where critical materials may be located.

We selected the three projects you see on this slide, one of which is in partnership with DOE's Advanced Materials and Manufacturing Technologies Office ...

1:37

## Critical Materials Lab Call – Alexis

**Slide 26:** ...and these four, one of which is funded by DOE's Office of Fossil Energy and Carbon Management. Critical materials research is critical to ensuring secure, domestic supplies of these resources, and we're looking forward to working with the labs on these projects.

1:37-1:38

## Regional Data Partnerships – Alexis

**Slide 27:** Next, I'm excited to share that we just announced our intention to release funding in early 2025 that will help us discover and develop new U.S. geothermal resources through field data collection. We expect to fund regional data partnerships to collect resource assessment, exploration, and development data, in turn helping to reduce barriers to locating, characterizing, and accessing geothermal systems. The effort will also aim to help Tribal authorities develop a pipeline of energy projects and to expand and strengthen geothermal technical expertise.

If you are interested in staying updated on this planned funding and potentially partnering with other entities, send an email to [DOE.Geothermal@ee.doe.gov](mailto:DOE.Geothermal@ee.doe.gov) using the instructions on the slide.

1:38

**Alexis**

**Slide 28:** Okay, I'll change hats now and share some news from our low-temperature and coproduced resources program.

1:39-1:40

### **RTES Selections – Alexis**

**Slide 29:** As Kevin mentioned, we issued the wellbore construction funding opportunity as a joint FOA with a reservoir thermal energy storage topic. In July, we selected a \$7.9-million pilot project planned for Kern Front Oil Field in Bakersfield, pairing subsurface geothermal reservoirs with a steam system and process heat off-taker. RTES technology has tremendous opportunity to decarbonize the industrial sector with thermal energy storage and we know this project will help us understand more about how to get that done in the U.S.

1:40-1:41

### **FedGeo – Alexis**

**Slide 30:** And a quick update on our Federal Geothermal Partnerships, or FedGeo. This initiative provides technical assistance for federal agencies to consider geothermal energy at their sites. We've been working with the first two sites selected under FedGeo, U.S. Army Garrison Detroit Arsenal in Warren, Michigan, and West Point Military Academy in West Point, New York. Both sites are making progress and have collected data and drilled test wells that are helping them understand how to best implement geothermal on campus. We'll continue to update you as the initiative progresses and we see geothermal deploy.

1:41

### **Resources – Alexis**

**Slide 31:** With that, I'll make one more plug for the many resources available on GTO's website and turn the virtual microphone back to our newest Low Temperature staff member, David.

1:41-1:42

### **David**

**Slide 32:** Thanks, Alexis. Now we'll move on to the Q&A portion of the agenda. If you haven't already, please enter any questions you have in the Q&A box.

While you do that, I'll remind you to sign up for the *Drill Down* newsletter to make sure you get all the latest on GTO. We also encourage you to send us your resume or CV at the email listed here if you're interested in being a merit reviewer for GTO research proposals. We collect information for reviewers on a rolling basis and hope you'll join us to help shape the future of geothermal research!

1:42-1:58

### **Q&A – David**

1:59-2:00

### **Dismissal – David**

**Slide 33:** Ok, we are out of time today. Thank you all again for joining us. We'll distribute today's slides and transcript soon.

If you have any follow-up questions, or if we didn't get to your question today, please email [doe.geothermal@ee.doe.gov](mailto:doe.geothermal@ee.doe.gov). Have a great rest of your day!