



Spotlight on Women in Geothermal USA - August 2024

Terra Rogers, Program Director for Superhot Rock Energy at Clean Air Task Force

Terra is driven to make clean firm power affordable to all. She believes geothermal will be a massive market disruption and she has the vision to see it through.



Picture 1. Rogers delivers the Welcome remarks at the CATF / GEORG hosted event – Bridging the Gaps – at the 2024 Iceland Geothermal Conference

Building her Career

Terra began her career in chemical and petroleum refining engineering after graduating from the Colorado School of Mines. She initially worked as a chemical engineer, designing, building, and operating biofuel facilities that converted manure to a natural gas substitute. Her skills as an effective communicator were honed by telling the story behind the numbers on her spreadsheets. Her passion for data and travel led her to Venezuela, where she witnessed firsthand the critical impact of firm, reliable power on growing economies.

While answering other’s questions through her analysis, Terra realized she wanted to be the one posing the questions. As the market shifted during the shale revolution, she pursued an MBA from Harvard Business School. During those studies, she started tracking

funding for renewables and dense energy resources, which unexpectedly led her to the field of geothermal energy.

As a newly minted MBA, she noticed significant investments being made into places like California and Utah, comparable to the levels of developing nations’ energy projects. This observation led her to realize that superhot rock (SHR) geothermal (which utilizes temperatures over 400 degrees Celsius or 750 degrees Fahrenheit) represents the next energy revolution.

Terra has worked in various teams of inspiring people. One of her former supervisors, Mike Long, gave her encouragement that boosted her confidence and growth for years to come. Other champions within the geothermal industry, like Lauren Boyd, inspire Terra to keep educating people about SHR. Role models, like Susan Petty, who routinely hires and amplifies outspoken women who speak up for their business and technical decisions, motivate Terra to amplify women. Terra also works with many people who are new to the geothermal world and she works to inspire them to think big in geothermal.

Getting into Geothermal

While working at NREL, Terra discovered the immense potential of geothermal energy as a source of firm, clean, renewable power and recognized its significant market opportunity. She explored whether geothermal could be cost competitive and found that it can be at higher temperatures. However, she noticed a stagnation in geothermal development and wondered why there wasn’t a stronger push for research and development to reduce costs and make

geothermal more competitive. Disappointed by the lack of progress in pursuing higher temperature resources, she became determined to help accelerate these efforts and advance the geothermal industry

While working at Facebook as the Data Center Campus Facility Manager, Terra had a pivotal conversation with the Energy Director about the potential of geothermal energy for powering data centers, plants, and facilities. The Director, like many others, believed that geothermal energy was only viable for those with access to hydrothermal resources. Terra explained that was no longer the case due to advancements in enhanced geothermal systems (EGS), which provide clean, firm power and expand the potential for geothermal energy to many more locations). Terra emphasized that with engineering innovations, geothermal energy could be harnessed in a wider range of areas. Her ability to effectively communicate these ideas didn't go unnoticed and led to an unexpected job offer from a non-profit organization. She has been a strong advocate for the potential of next-generation geothermal energy ever since.

Clean Air Task Force

Research and development are crucial for making businesses cost-competitive and enabling market penetration. International efforts have focused on de-risking geothermal development to facilitate the adoption of high-temperature geothermal projects and are supported by venture-backed groups and government lead pilot projects. These projects require supportive policies and unbiased experts to communicate scientific findings to policymakers, which is the role fulfilled by Clean Air Task Force (CATF).

CATF is a non-profit organization that comprises 130+ experts across five continents, organized into 11 technology-focused programs. The SHR team includes four technical experts who collaborate with other divisions. The SHR team frequently works with other subject-specific teams, the communications team, regional advocacy teams, and the legal team. CATF's expert communication and advocacy help advance first-of-a-kind geothermal projects and other clean energy initiatives, ensuring that science-driven policies can pave the way for broader adoption and innovation in the energy sector.

CATF understands that policy backed by unbiased reporting is key to enabling the development of projects both locally and internationally. Without a solid policy infrastructure to regulate an industry, there is no mechanism to enforce minimum project disclosure requirements. In industries dependent on venture capital, sharing information publicly can attract investors but may also jeopardize intellectual property. Therefore, a regulated ecosystem for data sharing is essential. Terra and the SHR team are developing five technology gap reports that cover heat extraction, well design and construction, drilling, surface equipment, and site selection. These reports aim to describe the limiting factors for developing SHR projects. Recently the SHR team presented on their progress of these reports during the Iceland Geothermal Conference and will be presenting at the Geothermal Rising Conference in October. By highlighting challenges for SHR in their reports, CATF helps to inform policy decisions that can foster a more transparent and secure environment for innovation and project development. Recently, Rogers testified on behalf of H.R. 8665 the Supercritical Geothermal Research and Development Act, to the US House of Representatives – which,



Picture 2. Rogers takes a moment to pose for a picture in front of one of the world's largest geothermal facilities, Hellisheidi, with the Director-General of Iceland's National Energy Authority, Halla Hrunn Logadóttir

Hobbies Outside of Geothermal

In the winter Terra enjoys skiing at Mount Rose and in the summers, she likes to listen to an audiobook while she goes trail running.

according to Rogers, was a “significant step toward recognizing the unparalleled potential of the next generations of geothermal energy in the US energy portfolio”.

International Development

Terra believes that for geothermal energy to reach full technological readiness, it must incorporate proven technologies from other industries and countries. She sees that SHR geothermal projects are feasible on a global scale and can lower electricity costs by increasing the energy density of power generation. To achieve scalability, Terra sees the need for venture-backed first-of-a-kind projects that demonstrate geothermal’s potential to provide energy-dense power. She understands that international collaboration and knowledge sharing are crucial for advancing geothermal technology on a global stage.



Picture 3. Rogers presenting the findings from the CATF research into the public perceptions of Geothermal Energy in advance of the 2023 Geothermal Rising Conference.

Countries with hydrothermal resources, like New Zealand, Iceland, and Japan, are working on EGS development to expand into areas past hydrothermal capabilities and beyond to hot, dry rocks. Notable examples of innovative EGS projects include the Beyond Brittle project in Japan, Horizon 2020 in Europe, and the FORGE project in the USA. Terra believes that such advancements would not be possible without collaboration with other industries. For instance, many insights from the shale revolution, particularly regarding creating permeability, have been instrumental in advancing geothermal technology.

Terra's vision is for the geothermal industry to leverage these cross-industry innovations and international collaborations to realize its full potential. By doing so, geothermal energy can become a major player in the global energy market, providing a sustainable, energy-dense power source.

A Voice for Firm Clean Power

Terra is passionate about driving the activation and funding of geothermal projects, recognizing that costs can be reduced as manufacturers realize the terawatt-scale potential. She believes that the market disruption potential of scaled geothermal energy cannot be overstated. Terra emphasizes that the expertise in ultra-high temperature industries found in various nations can be leveraged to advance geothermal technology.

Terra points out that while some hope current renewables will suffice, the growing demand for clean firm power makes it imperative to explore additional solutions. Promising technologies like direct air capture and green hydrogen require abundant energy



Picture 4. Rogers sharing the 2024 AGORA / CERAWEEK stage with industry leaders in the next generation geothermal sector

to function effectively. Geothermal is an abundant, clean resource that needs to be harnessed. Terra advocates for multiple energy solutions, stressing the importance of reliability and accessibility in the renewable sector.

To someone trying to start in the geothermal industry, Terra advises not to think small; this industry has so much potential. Think outside of potential energy production and what industries might offer collaboration with geothermal.

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