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# 2026 Geothermal Case Study Review: North America

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Geothermal energy in North America, notably the USA, is entering a growth phase buoyed by investment, technology advances and a growing awareness of its role both in easing climate concerns and boosting energy security.

Recent reports from the US Department of Energy (DoE) and the National Laboratory of the Rockies (NLR) show that capacity is expanding, though still modestly, standing at roughly 4 GW nationwide, located mostly in California and other western states.

Next-generation technologies such as enhanced geothermal systems (EGS), which could significantly scale output beyond current levels, have added momentum. There is also wider recognition of geothermal's potential as a source of reliable, 24/7 'firm power' that complements intermittent renewables, such as wind and solar.

At the same time, geothermal's role is expanding beyond traditional markets, like district heating and energy systems, with the rapid growth of data centres stirring new opportunities. Deployment of geothermal at several US military sites has further raised awareness. Investment is also increasing, with commercial banks and other institutions showing greater interest.

Continued technological innovation and supportive policy frameworks, as well as more appetite from lenders keen to hit their own climate targets, will go a long way in advancing uptake.

However, the development of geothermal in North America still faces challenges, from high upfront drilling costs and financial risk, through to uncertainty in locating viable resources and slow, complex permitting processes.

As a result, though long-term potential remains clear and significant, near-term growth may be constrained unless such structural barriers are addressed.

## MARKET POLICY AND LANDSCAPE

Overall, the past five years have been a success for geothermal in the USA, according to the NLR's 2025 US Geothermal Market Report. The power expansion estimated in its 2021 report has become reality, with an 8% increase in installed capacity by 2025. By contrast, from 2015 to 2019, geothermal capacity increased by 1%.

In that time, 26 new power purchase agreements (PPA) were signed with data centres, utilities, local communities and other offtakers, representing 1,000 MWe of new capacity commitments under development, the NLR report notes. Several of these are to supply artificial intelligence-driven data centres. Well-known offtakers include Amazon/AWS, Google and Meta.

Federal and state incentives, including tax credits, have further stimulated awareness and adoption, not only among the big tech firms, but more broadly with commercial installers of geothermal heat pump systems and residential customers.

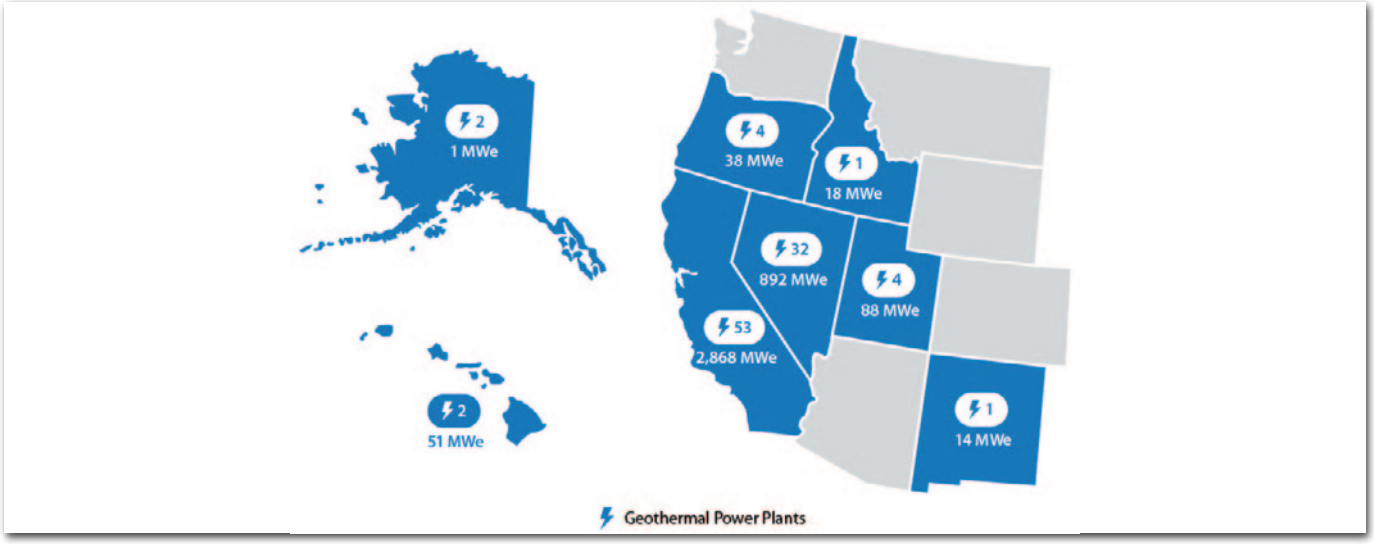


*Image Source: National Laboratory of the Rockies*

*Distribution and installed nameplate capacity of geothermal power plants in the United States as of June 2024.*

Energy security is another factor driving adoption. The Department of Defence (DoD) has initiated geothermal projects at some of its bases to decouple from civilian electrical grids to ensure continuity in the face of outages, cyber threats or other disruption. DoD has partnered with geothermal developers to build EGS plants to power Air Force, Army, Navy and Marine bases in California, Idaho, Nevada, New Mexico and Texas.

The DoE's Office of Geothermal GRID initiative is also exploring how geothermal can help support the nation's electric grid using advanced modelling and analysis tools on eight selected projects as part of energy resiliency efforts.

## GEOTHERMAL TECHNOLOGY

The advance of EGS and other emerging geothermal technologies, such as Advanced Geothermal Systems (AGS)/Closed Loop Systems is another reason to be excited about the sector. As well as broadening the geographical spread of potential energy sites across the country, and opening up additional opportunities, it is hoped these new solutions can accelerate project timelines.

This technology ecosystem is also backed by a host of government-sponsored initiatives and institutions such as NLR, The Utah FORGE project and the DoE's Geothermal Technologies Office (GTO).

So far, EGS plants in the USA have been small and experimental, but this is changing. Fervo Energy's Cape Station in Utah is expected to be the first large-scale commercial-scale EGS generator in the country. The first phase is on track to deliver power in 2026, before reaching approximately 100 MW of operating capacity by early 2027, and plans to scale to 500 MW.

Rodatherm Energy Corporation is piloting a patented Waterless Geothermal System (WGS), optimised to work in hot sedimentary rock, common throughout the western USA and the US Gulf Coast, following a successful venture capital fundraising.

Meta has signed an agreement with geothermal developer Sage Geosystems to power its data centre operations using its proprietary Geopressured Geothermal System (GGS). A first phase is to be online and operating in 2027, with plans to deliver up to 150 MW of new geothermal baseload power to support data centre growth.

The advance of EGS, along with other systems, and their ability to scale commercially, is seen as a complement to other clean energy and renewable technologies. As the trend toward hybrid power solutions advances, geothermal will be critical in providing firm and reliable generation that complements intermittent sources such as solar and wind.

## FINANCE & ECONOMICS

In 2022, the DoE unveiled a target to make EGS a widespread renewable energy option in the USA by cutting its cost by 90% to US$45 per megawatt hour (MWh) by 2035 – known as the Enhanced Geothermal Shot.

Reality is still a way off. According to Lazard's Levelised Cost of Energy Comparison 2025 report, the cost of geothermal power stands at anywhere between US$66/MWh and US$109/MWh.

But, given geothermal's progress in recent years and efforts to scale up, coupled with its ability to provide 24/7 'always-on' power, in contrast to solar or wind, there are hopes costs will continue to fall.

This has not been lost on lenders. Crucially, commercial funding is now finding its way in, notably a US$421mn non-recourse debt financing for the first phase of Fervo Energy's Cape Station development.

This transaction, closed early in 2026, involved coordinating lead arrangers such as Barclays, BBVA, HSBC, MUFG, RBC, and Société Générale, with participation from Bank of America, JP Morgan and Sumitomo Mitsui Trust Bank.

It signals a rise in interest among some of the world's top-tier project financiers. BBVA highlighted geothermal's "remarkable transformative potential" following its participation in the Cape Station phase I project financing.

This transaction was also supported by leading law firms in the project finance space, such as White & Case LLP, which acted as sponsor counsel for Fervo Energy, and Norton Rose Fulbright, counsel for the lender group.

Non-recourse financing has historically been considered out of reach for first-of-a-kind projects. It suggests that as demand for firm, clean, affordable power accelerates, EGS may become a core energy asset class for infrastructure lenders.

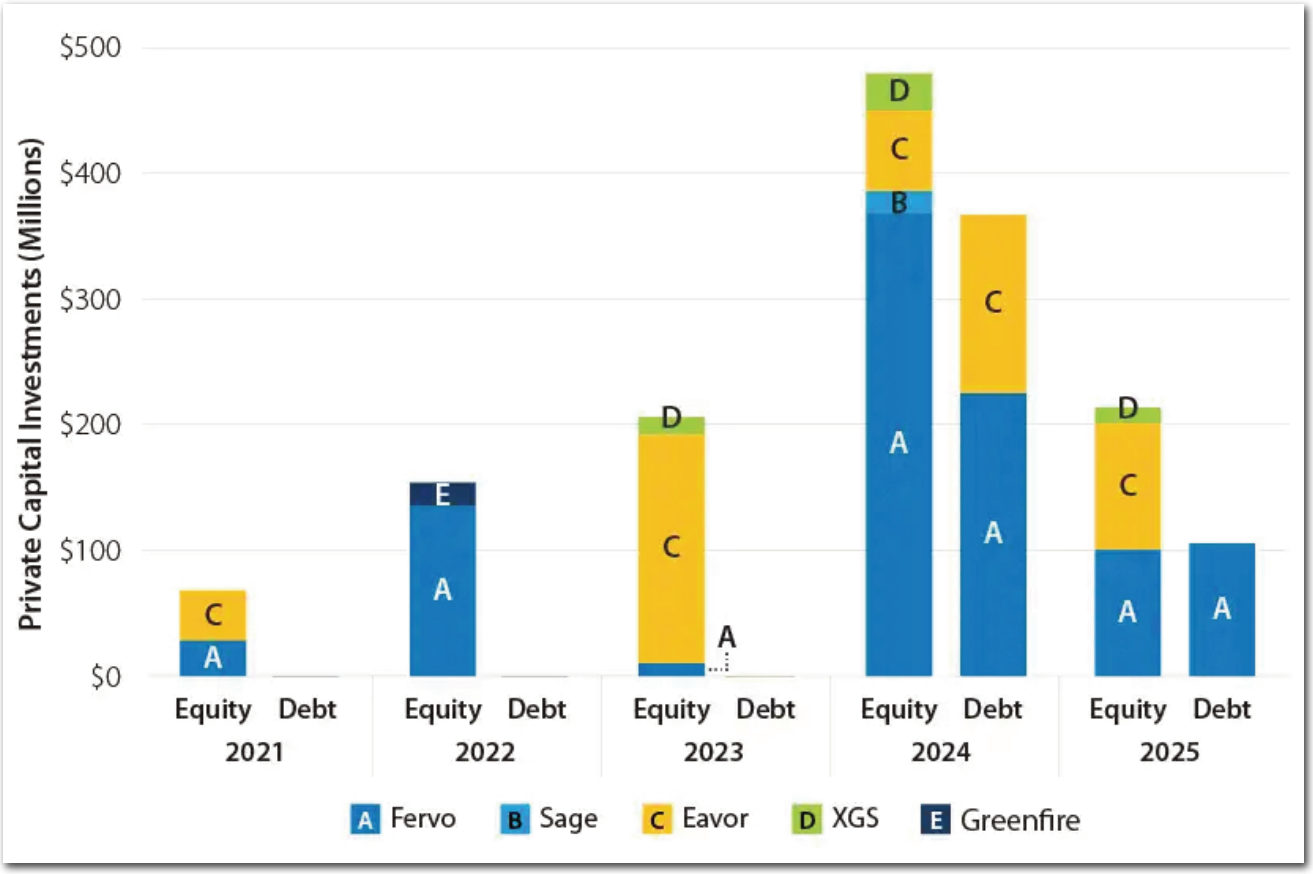


Image Source: National Laboratory of the Rockies

*Private capital investments in next-generation geothermal developers between 2021 and June 2025.*

## COMPETITIVE LANDSCAPE

The business environment is similarly expanding, alongside the evolution of technology and the opening of commercial financing. Long-term, this could mean the establishment of a fully domestic supply chain supporting geothermal wells, drilling and related infrastructure.

While Fervo Energy's Cape Station EGS project has garnered much of the attention, it is planning further expansion and was recently named the number one company on TIME's 2026 list of America's Top GreenTech Companies, again reflecting wider appreciation of this nascent industry.

Other notable operators include Calpine, Ormat Technologies, Quaise Energy, Mazama Energy, Zanskar Geothermal & Minerals, XGS Energy and Controlled Thermal Resources, among others.

Oil and gas companies continue to show interest in geothermal, although hydrocarbon price hikes triggered by global energy sector volatility could cool enthusiasm. Drilling specialists like Halliburton, Baker Hughes, SLB and Nabors Drilling could also aid the long-term viability of the sector given the clear skills overlap.

Fervo Energy's burst of speed in advancing its various projects has also triggered competition among contractors and equipment suppliers. ABB, for example, is supplying advanced motor control solutions for the Cape Station project in Utah.

The company also signed a three-year framework contract with Turboden, part of Mitsubishi Heavy Industries, for the supply of Organic Rankine cycle (ORC) units for up to 35 GeoBlocks totalling 1.7 GW of power capacity. The ORC turbines, which convert heat into power without increasing fuel consumption, water use, or $CO_2$ emissions, can also be used with gas turbines and other industrial processes that produce waste heat, unlocking additional capacity from existing infrastructure for utilities and other energy providers.

Separately, Vallourec struck an US$800mn deal with Fervo Energy to supply tubular solutions and VAM connections through its distribution partner Sooner, Inc. All products will be developed, manufactured and tested in the USA using Vallourec's domestic industrial footprint, highlighting the significance of local presence as the market matures.

## CANADA BUILDS MOMENTUM

Canada likewise offers immense long-term geothermal potential, although the industry lags some way behind the USA, whose current experiences will no doubt prove valuable north of the border.

According to Geothermal Canada, the country holds vast resources, especially in western and northern regions, but currently produces less than 6 MW of geothermal electricity as the sector transitions from exploration to early commercialisation.

Again, a mix of factors, including drilling costs and regulatory fragmentation, continue to constrain large-scale deployment, although recent initiatives and collaborations, such as the 2025 Canadian Deep Geothermal Coalition, signal stronger progress. New entities such as Geothermal Rising Canada are also working to create a unified roadmap and attract new investment.

Like the USA, Canada also holds an advantage through its expertise in oil and gas and subsurface technology, which may aid the drive to commercialisation.

Saskatoon-based DEEP Earth Energy has partnered with SLB to develop a commercial-scale geothermal power facility near Estevan, Saskatchewan. The project will be built in phases, beginning with an initial small well system to generate about 5 MW, before expanding to a larger network of roughly 20 wells capable of producing up to 30 MW.

Other active companies in Canada include project developer Tu Deh-Kah Geothermal and technology specialist, Eavor.

However, the lack of a national strategy and no coordinated R&D agenda, with only Alberta, British Columbia and Nova Scotia having geothermal-specific legislation, means the window for Canadian leadership is closing, according to an RBC thought leadership piece released in February 2026.

"If Canada does not act with coordinated policy, regulatory harmonisation and strategic R&D investment, it risks squandering subsurface expertise and geological endowment that offer natural advantages," it notes.

## EMERGING OPPORTUNITIES

According to NLR's 2025 US Geothermal Market Report, the geothermal industry in the USA is seeing a number of emerging opportunities opening up:

**Energy security and independence:** Geothermal for heating and cooling is not affected by supply chain disruptions and energy price fluctuations like conventional heating fuels. As well as recent DoD contracts, this has resulted in deployment in federal buildings, leading to energy and maintenance cost savings.

**Data centres:** Data centre load growth has tripled over the past decade and is projected to almost triple by 2028. Major technology companies, such as Meta andGoogle, have already turned to geothermal energy to power their operations.

**Superhot geothermal:** Superhot geothermal can produce 5-10 times more energy per well than conventional systems. GTO is funding research to de-risk superhot exploration and demonstrate superhot EGS at Oregon's Newberry Volcano.

**Mineral extraction from geothermal brines:** Another emerging opportunity is lithium mineral extraction from geothermal brines. Findings from Lawrence Berkeley National Laboratory indicate the Salton Sea lithium resource is estimated to be 4.1 million metric tons of lithium carbonate equivalent, which has the potential to create a domestic lithium industry in the USA.

**Flexible generation and grid stability:** Geothermal can provide stable and flexible generation. Hybrid plants combining geothermal with other energy sources are in use at Cyrq Energy's Patua project, Ormat's Tungsten Mountain project and Ormat's (formerly Enel's) Stillwater project. DoE has separately selected two demonstration projects in this space to further explore the potential.

## CONCLUSION

Geothermal energy in North America is moving from promise toward practical scale, but its trajectory is not yet assured. Rising electricity demand – driven by data centres, AI infrastructure and energy security concerns – is bringing new urgency to the search for reliable, low-carbon power and geothermal is increasingly part of the conversation.

Corporate offtakers, government programmes and, critically, institutional lenders are beginning to treat it as a viable infrastructure asset rather than a niche technology.

Yet the sector's expansion still hinges on whether it can overcome key structural constraints. High upfront drilling costs, subsurface risk and slow permitting continue to limit the pace of deployment, even as technology advances begin to showcase the commercial potential.

If these barriers are successfully addressed, geothermal could shift from a marginal contributor to a foundational source of firm, clean power across North America.

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