



Center for Public Enterprise

an enhanced geothermal  
consortium for  
the mountain west

## An enhanced geothermal consortium for the Mountain West

Next-generation geothermal technologies are at the frontier of energy development in the United States. Drawing on drilling techniques developed during the shale boom, enhanced geothermal drilling can open newer geologic formations with lower permeability to injected liquids.<sup>1</sup> Heated liquid is then piped up to power turbines, generating a source of clean firm power that can run 24/7, 365 days a year. The United States is a prime location for the development of these geothermal technologies: next-generation geothermal promises 5,500 GW of power production, particularly in Western States.<sup>2</sup>

Moreover, enhanced geothermal is a clean firm resource that can meet growing load forecasts. Grid Strategies notes that FERC's 5-year peak load growth forecast jumped to 128 GW by 2029, an increase of 15.8 percent.<sup>3</sup> By 2040, U.S. electricity demand is expected to grow by 35 to 50 percent.<sup>4</sup> Much of this growth is driven by strategic industries, including artificial intelligence, semiconductor manufacturing, and battery manufacturing. Deploying next-generation geothermal would allow U.S. states to expand these industries, support home and vehicle electrification, and improve grid reliability. Moreover, the geothermal industry draws on workforces, technology, and know-how the United States has long possessed in the oil and gas industry—supporting workers and communities still dependent on these industries. Additionally, advancing next-generation geothermal that taps America's unique experience and know-how in drilling and equipment manufacturing can cultivate a new competitive export industry.<sup>5</sup>

While next-generation geothermal technologies have achieved significant technical advances—bringing them to the cusp of commercial viability—they are not yet at the point where individual projects can attract finance on the terms necessary for developers and investors to deploy it at scale. Investors in the position to provide bulk project finance need to see additional evidence of project viability and drilling cost reductions. However, providing this evidence requires additional drilling and larger operational datasets, which require capital the sector does not possess. The bottleneck in project financing has created a vicious cycle that slows deployment and obstructs the technological progress necessary to lowering deployment costs in the first place.

States can cut through this cycle and build America's energy future by working together to create new tools to support catalytic public investment in and financing for next-generation geothermal. **CPE recommends that Western states establish a Mountain West consortium to advance regulatory harmonization and coordinate a regional investment strategy.** The

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<sup>1</sup>Conventional geothermal technologies rely on naturally occurring fissures and liquids.

<sup>2</sup>U.S. Department of Energy, "[Pathways to Commercial Liftoff: Geothermal Heating and Cooling](#)," Geothermal Family of Reports, Report #2, January 2025.

<sup>3</sup>John D. Wilson, Zach Zimmerman, and Rob Gramlich, "[Strategic Industries Surging: Driving US Power Demand](#)," report sponsored by Clean Grid Initiative, December 2024.

<sup>4</sup>American Clean Power Association, "[U.S. National Power Demand Study: Executive Summary](#)," report prepared by S&P Global Commodity Insights, March 7, 2025.

<sup>5</sup>Mary Sagatelo and Ryan Fitzpatrick, "[Status Report: America's Competitive Advantage in Geothermal Energy](#)," Third Way, July 23, 2024.

regional consortium can cooperate on surmounting the many barriers to growing the industry—including but not limited to outdated regulation, interconnection challenges, access to capital, development finance obstacles, and state and federal land utilization restrictions.

This report describes how states can create such a geothermal consortium and the toolkit it needs to be successful. The first section discusses obstacles to further deployment of geothermal and the difficulties faced by the private sector in pursuing development alone. The second proposes a series of steps Western states can take to begin creating a consortium with real powers to coordinate regulatory actions and investments in next-generation geothermal projects.

## I. Barriers to deploying next-generation geothermal

Next-generation geothermal systems have demonstrated their viability in two successful Department of Energy pilots. The first, with Ormat Technologies at Dessert Peak, NV, saw the addition of 1.7 MW of capacity to an existing (conventional) geothermal facility.<sup>6</sup> The second, with Calpine in Northern California, saw the addition of 5.8 MW to existing geothermal production by utilizing next-generation geothermal on abandoned wells.<sup>7</sup> The Department of Energy also funds the Frontier Observatory for Geothermal Energy (FORGE)—a Utah-based research facility where scientists test drilling techniques for tapping geothermal reservoirs.<sup>8</sup> In November of 2023, Fervo—an enhanced geothermal firm—launched the world’s first commercial next-generation geothermal demonstration, a small-scale 3.5 MW facility in Winnemucca, NV, to provide Google with power for its data centers. Fervo plans to complete its first full-scale 400 MW commercial facility at Cape Station, Utah in 2026.

Despite early successes, even Fervo—the firm closest to reaching commercial-scale next-generation geothermal—has struggled to raise capital for expansion. The Department of Energy’s Pathways to [Commercial Liftoff: Next-Generation Geothermal Power \(Liftoff Report\)](#) identified the following challenges that next-generation geothermal firms and projects face in scaling their technology.

1. **High upfront development costs** constrain further exploration and development of geothermal resources. In particular, they make developers reluctant to expand beyond existing sites and existing methods and open new areas for development.
2. **Securing sufficient evidence of well viability data** from limited demonstrations. The success cases of next-generation geothermal technologies are real, but few. As such, sufficient data on well heat rates do not yet exist to satisfy investors that projects can be pursued across a variety of geographies and commercial scales.
3. **Unpredictable development life cycles** as a result of complex permitting and interconnection processes, not to mention procurement delays for the power station component of a geothermal project.

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<sup>6</sup>[“Enhanced Geothermal Systems.”](#) Energy.gov. Accessed March 25, 2025..

<sup>7</sup>Ibid.

<sup>8</sup>[“Frontier Observatory for Research in Geothermal Energy \(FORGE\).”](#) Energy.gov. Accessed March 25, 2025.

4. **Underdeveloped markets** for clean and firm power. Utilities and electricity markets largely consider these two attributes to be separate needs for new power, and few states have defined “clean firm” procurement policies. This results in new geothermal generation unnecessarily competing with other clean and firm resources that do not fulfill this joint niche.

These challenges combine to create a bottleneck for geothermal projects unrelated to the long-term risks or potential of the technology. To undertake a large “fixed-capital” project like next-generation geothermal, developers need large upfront financial commitments well before any output is generated.<sup>9</sup> For established technologies can raise capital from investors because the latter know what to expect of project costs and profits. But next-generation geothermal is a still-novel technology with a relatively small number of success cases to point to or draw data from for projections.

To mitigate some of this risk, developers must show investors that they have a buyer for any output that is ultimately produced. Increasingly, geothermal projects may be able to acquire that signal from technology companies like Google (as Fervo did for Project Red<sup>10</sup>), but the lack of state procurement policies for clean firm power as a specific category of energy sourcing means geothermal competes with lower cost renewables in the process of clean energy procurement, and gas powerplants in the procurement of peaking and baseload energy. In addition, developers and investors need certainty that the permitting<sup>11</sup> or interconnection processes won't stall their projects unexpectedly. Without that certainty, developers cannot plan projects, nor can they easily articulate timelines and projected outcomes to investors.

Geothermal sits between two unformed markets: a market for financing large-scale next-generation geothermal projects on the one hand and a market for clean firm power on the other. The former requires far more demonstration of next-generation geothermal projects' costs and its potential; the latter requires certainty about next-generation geothermal projects' performance (including pricing) and specific initiatives to purchase clean firm next-generation geothermal output over other sources. Both of these markets depend on one another.

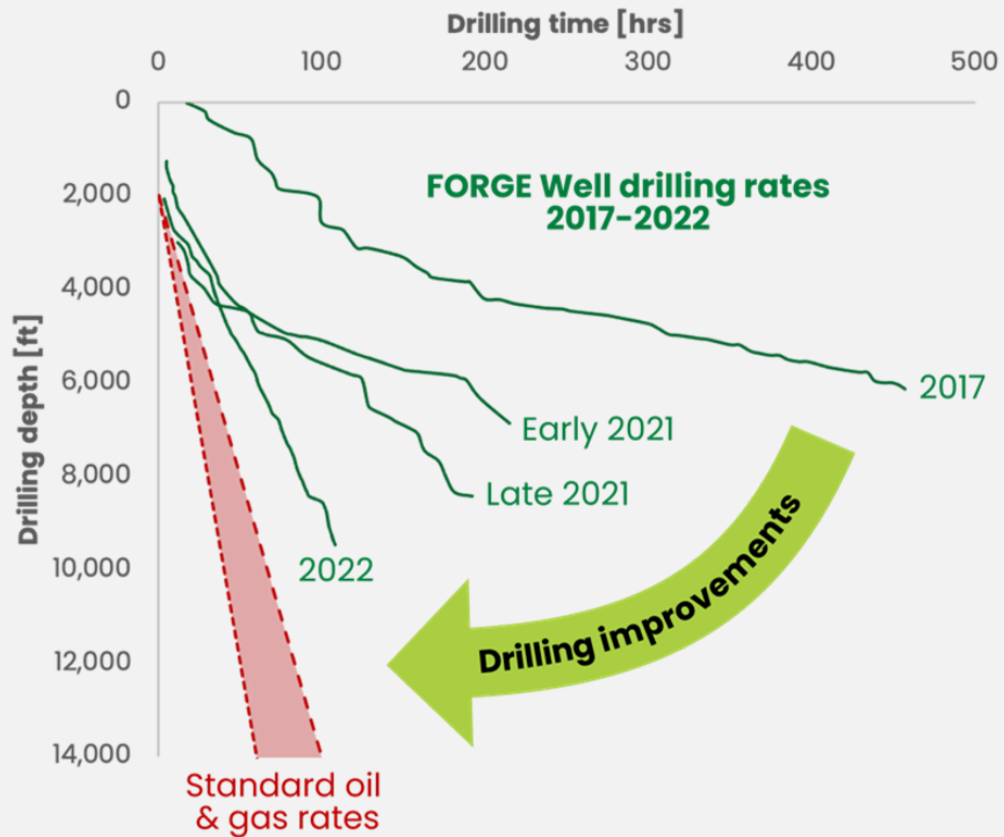
Reducing the cost of geothermal and addressing these market barriers requires a process of “learning by doing” that can only occur by completing projects. In turn, completing projects requires a source of project financing that can only be secured by well-defined demand for outputs. It's a capital bottleneck: a vicious cycle in which geothermal firms at the cusp of commercial viability have trouble attracting the investment from more than just venture capital and other equity sources.

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<sup>9</sup>Lala, Chirag, Yakov Feygin, and Advait Arun. “Amortizing Public Capital: How to Advance Large Fixed Capital Projects.” Center for Public Enterprise, February 2025.

<sup>10</sup>Fervo Energy, “[Fervo Energy Announces Technology Breakthrough in Next-Generation Geothermal](#),” July 18, 2023.

<sup>11</sup>For more on permitting reforms for next-generation geothermal development, see: 1) Datta, Arnab, and Ashley George. “[Hot Rocks Part IV: The Policy Interventions that Could Boost Geothermal](#).” 2023. Employ America. 2) Mackenzie, Aidan. “[Geothermal Energy Needs Permitting Reform](#).” 2023. Institute for Progress.



Improvements in drilling rates from the Department of Energy's FORGE demonstration site. Source: DOE.<sup>12</sup>

Solutions to the capital bottleneck require a first mover. Until now, many states are waiting for developers to come to them for incentives instead of actively working to establish an industry. In turn, developers are trying to stitch together the technology, investors, offtake, and demonstration all on their own—proceeding slowly, constantly buffeted by new supply chain shocks, policy uncertainty, high costs of capital, and uncertain demand.

But this need not be the case. If states enter the picture as active co-investors, as partners to the private sector, and as developers in their own right,<sup>13</sup> they can facilitate project development in the face of these uncertainties.

## II. What states can do

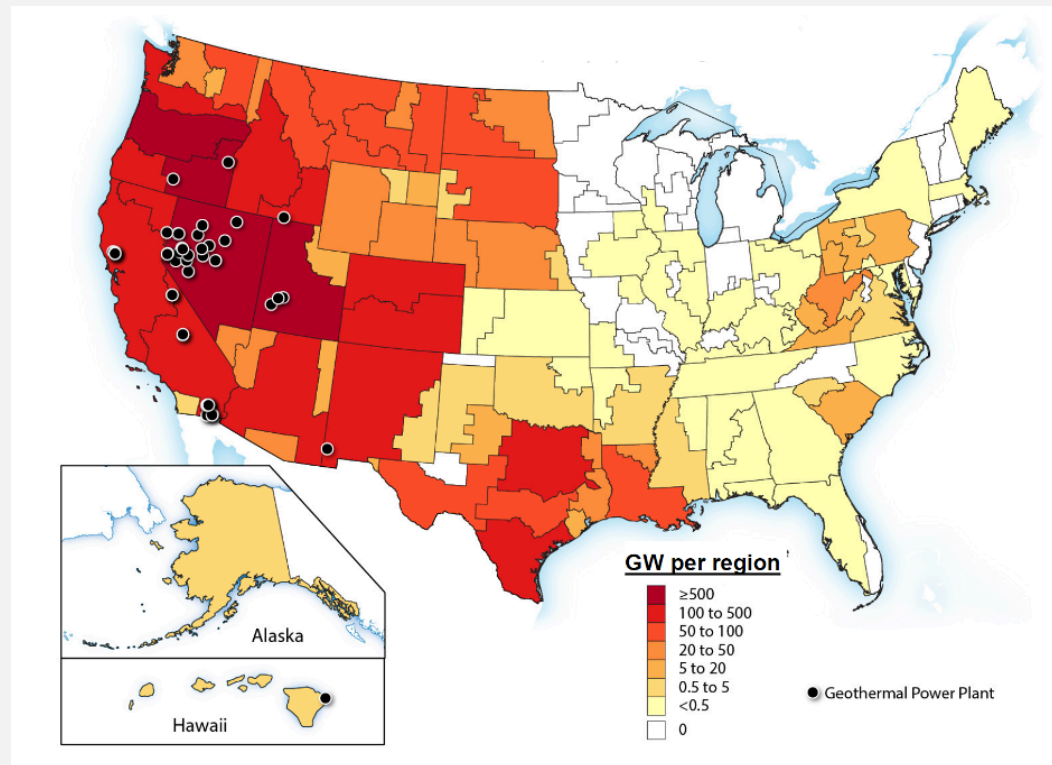
The Center for Public Enterprise proposes that Western states establish a Mountain West Geothermal Consortium to coordinate next-generation geothermal activity.<sup>14</sup> State consortiums to pursue energy investment are common in the United States. In February 2025,

<sup>12</sup>U.S. Department of Energy, "[The Pathway to Next-Generation Geothermal Power Commercial Liftoff](#)," 2025.

<sup>13</sup>Lala, Chirag, and Yakov Feygin. "[Public Developers](#)." Center for Public Enterprise, August 2024.

<sup>14</sup>Hereafter, the consortium will be referred to as "Mountain West."

the National Association of State Energy Officials (NASEO) announced the creation of a multi-state coalition<sup>15</sup> to standardize advanced nuclear reactor design and procurement. Similar consortia were established in the past for research and development on offshore wind<sup>16</sup> and transmission<sup>17</sup> expansions. Numerous states conduct their transmission planning via regional transmission organizations (RTOs, sometimes referred to as ISOs). A consortium of Western states would encompass the vast majority of the US's next-generation geothermal potential, including both the states with the largest estimated resources and the regions that are major centers of electricity demand.



Resource estimates of next-generation and conventional geothermal resources.<sup>18</sup>

Inter-state cooperation should strive to both align regulatory policies and identify the discrete pieces of the capital bottlenecks facing next-generation geothermal that states are able to offer regulatory or financial solutions to tackle. This Mountain West consortium proposal draws on recommendations previously made by CPE for tackling large-fixed capital projects through

<sup>15</sup>["Ten-State Coalition Aims to Accelerate Advanced Nuclear,"](#) World Nuclear News (World Nuclear Association, February 11, 2025).

<sup>16</sup>U.S. Department of Energy, "[National Offshore Wind R&D Consortium](#)".

<sup>17</sup>Connecticut Department of Energy and Environmental Protection, "[Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont Working Together on Multi-State Transmission Infrastructure](#)," January 25, 2023.

<sup>18</sup>It includes New York, Indiana, Kentucky, Tennessee, Wyoming, Maryland, Pennsylvania, Utah, Virginia, and West Virginia. [Source](#).

building state-by-state capacities for project development.<sup>19</sup> To that end, we propose that states set up or join an organization that can undertake the following two functions in the immediate term:

- **Recommend and facilitate the harmonization of state rules with respect to permitting, siting, interconnection, grid planning, subsidies, and other relevant matters for next-generation geothermal projects.** A major goal of Mountain West is to ensure all its members can benefit from geothermal deployment. One way to further ensure these benefits is to ensure all states have common rules for encouraging and channeling geothermal development in a coherent and consistent manner. Doing so would also provide significant investment and regulatory certainty to developers.
- **Maintain a standing policy forum to facilitate cooperation on both short- and long-term project development issues:** supply chain hurdles, changes in interest rates, opportunities to work with new firms with emerging technologies, or tackling other developmental problems.

Many state energy offices and other relevant agencies across the region have developed pieces of the puzzle. Completing the puzzle, putting the pieces together, requires convening to share information about what has worked, what has not, and what parts remain missing or underdeveloped. The natural tendency of state governments to compete to attract economic activity is one of the building blocks of a successful economic policy; it is no wonder that states are called “the laboratories of democracy.” However, without learning the lessons of successful experiments and working together to build on them, the progress created by each state cannot scale enough to benefit the whole region—or, worse, sets off races to the bottom. That is why structured, formal convenings and exchanges of information are not only established best practices but tools for discovering needs and potential capacities to meet them.

### III. Recipes for for Successful Collaboration

State leaders and public servants communicate and coordinate with one another almost every day, sharing know-how and experience at formal convenings and informal gatherings. These networks are vital for the successful sharing of best practices and for harmonizing policy. However, developing a global, cutting-edge industry requires some intentionality and formal coordination. Of the many ingredients that make up the recipe of a successful multi-state economic development coordination program, the most important one is an organizational backbone that identifies challenges and pursues solutions to them in a continuous and iterative manner.

**Thus, CPE proposes to establish a body to act as a regular forum through which state officials can formally share information about specific challenges and discuss them with members of the geothermal industry, lenders, and other important stakeholders.** This forum should either be hosted by an existing organization with the resources to administer it, or be created as a new non-profit entity. **Each state should designate an agency to act as the state’s regular representative in these meetings.** The goal of this organization is to build a one-stop shop for developers and other parties which are seeking to communicate their project development needs to state governments. To achieve this goal, however, the organization must

<sup>19</sup>Lala et al., “[Amortizing Public Capital](#).”

first use its convening power to gather the information necessary to produce a systemic roadmap of the steps to geothermal deployment, bottlenecks that slow the journey from project conception to deployment, and find specific state policies that can break or widen these chokepoints. Some immediate areas relevant to all states in the region include:

**Strategies to leverage public lands to derisk next-generation geothermal developers while protecting the interests of taxpayers.** States can pursue a variety of actions related to public land use, including harmonizing procedures for leasing, working together to share information about heat resources that span the borders of their states, and developing a better understanding of how the value of public funds can be levered to financially derisk projects.

**Creating and coordinating project development capacities for next-generation geothermal projects,** including lobbying to create new federal funding pools or improving existing ones, sharing best practices and opportunities to leverage public and private concessional debt, examining the state's role in improving insurance products, and examining the prospects for direct, public-private partnerships in geothermal project development.<sup>20</sup>

**Establishing and deploying regulatory structures that encourage advanced geothermal development,** including deploying specific tariffs or procurement incentives for clean firm energy,<sup>21</sup> improving geothermal projects' access to new and existing transmission lines that connect regional generation and load centers, ensuring that resources are available to house and support new industry workforce, creating clarity regarding insurance regulation, and establishing collaborative procurement efforts between industry partners and public sector entities to ensure access to scarce inputs and resources such as transformers, turbines, and inverters.

## Conclusion

Next-generation geothermal harbors many advantages. It is a clean firm resource that mobilizes expertise and capabilities long utilized in the oil and gas sector. But its development will also involve barriers that only coherent policy action can surmount. States governments are always constrained by their lack of resources, but they are often more nimble and innovative than Washington can ever hope to be. Thus, combining efforts and working together offer the best balance between states' economic development objectives and optimizing the use of limited capital resources. Thus, a regional consortium approach to promoting advanced geothermal offers states the means to pursue the benefits of this new technology while mitigating the risks inherent in rapidly developing a cutting-edge industry. Dialogue and joint action can make sure that regional economic development need not be a zero sum game between states, but rather an opportunity for synergy.

The Mountain West Consortium cannot replace the federal government, nor can it guarantee the shape of the future next-generation geothermal industry. However, it can help both industry and the states by making sure that the industry not only takes off faster but benefits as many people in America's leading energy development region as possible.

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<sup>20</sup>The United States has a long history deploying large-fixed capital projects using municipal and public power authorities as well as rural electric cooperatives, each with access to specialized or preferential financing such as tax-exempt bonds (public utilities) or loan finance (rural electric cooperatives).

<sup>21</sup>Collier, Ann, and Justin Lindemann. "[Innovative Utility Tariffs Pave the Way for Flexible, Carbon-Free Data Centers](#)." Smart Electric Power Alliance, February 21, 2025.



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### **Cover Photo**

The Davis-Schrimpf Seep Field by Chris Hunkeler/[Flickr](#).

### **About the Center for Public Enterprise**

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