The Conservative Case for Next Generation Geothermal Energy

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Executive Summary

America's next energy revolution is beneath our feet. Geothermal energy is a 24/7, reliable power source that strengthens the grid, reduces costs, and enhances U.S. energy independence. Built on decades of American drilling expertise, next-generation geothermal leverages advances in hydraulic fracturing, horizontal drilling, and subsurface engineering to unlock vast domestic energy reserves—without reliance on foreign adversaries. Unlike intermittent renewables, geothermal provides consistent, always-on power while maintaining one of the smallest land footprints of any energy source.

With an estimated 5,000 gigawatts of untapped geothermal capacity, the U.S. has the opportunity to lead the world in this critical energy sector.[1] Geothermal energy technologies have the potential to turn from a nascent solution to one that can be deployed almost anywhere. Despite its potential, geothermal remains underutilized due to unnecessary regulatory barriers and a lack of investment in advanced drilling technologies. Expanding access to federal lands, streamlining permitting, and incentivizing private-sector innovation will accelerate deployment, drive down costs, and create thousands of high-paying jobs in energy-rich communities.

As global competitors like China aggressively expand their geothermal capabilities, America must take action to maintain leadership. By cutting bureaucratic red tape, prioritizing domestic energy production, and leveraging American ingenuity, the U.S. can secure an affordable, resilient, and independent energy future. Geothermal is not just a clean energy solution—it is a pathway to strengthening national security, revitalizing industry, and ensuring long-term economic prosperity. The U.S. cannot afford to wait. It's time to unlock our underground potential, fuel economic growth, and lead the global energy race.

Unlocking America's geothermal potential requires bold policy action. Congress should focus on three key priorities:

1. Enact comprehensive permitting reform to cut red tape and accelerate project timelines.
2. Maintain technology-neutral tax incentives like the 45Y and 48E credits to spur private investment.
3. Prioritize robust research and development (R&D) funding to reduce drilling costs and advance next-generation geothermal technologies.

By adopting the policies outlined in this document, the U.S. can **unleash domestic energy production, reduce dependence on foreign adversaries, and cement its position as the global energy leader.**

Geothermal: a Powerful, Untapped Source of Domestic Energy

Geothermal energy, especially next-generation technologies, is poised to transform America's energy landscape. Geothermal provides 24/7 power, strengthens the grid, cuts costs, and challenges China's renewable energy dominance—without never-ending subsidies or unreliable technology.

Built on decades of oil and gas innovation, geothermal is now drilling deeper and hotter than ever before. The U.S. shale revolution, driven by hydraulic fracturing and horizontal drilling, transformed America into a global energy leader.[2] Since 2019, our nation has produced more energy than consumed and is reducing greenhouse gas emissions faster than any other country.[3] This same ingenuity can now unlock geothermal's vast potential—offering clean, always-on power that reduces emissions while ensuring energy security.

The National Renewable Energy Laboratory (NREL) estimates geothermal energy could generate **90.5 gigawatts of electricity (GWe) by 2050**.[4] The U.S.'s total possible geothermal potential may exceed **5,000 GWe** (Figure 1).[5] This is energy independence, grid resilience, and economic opportunity—all powered by American innovation.

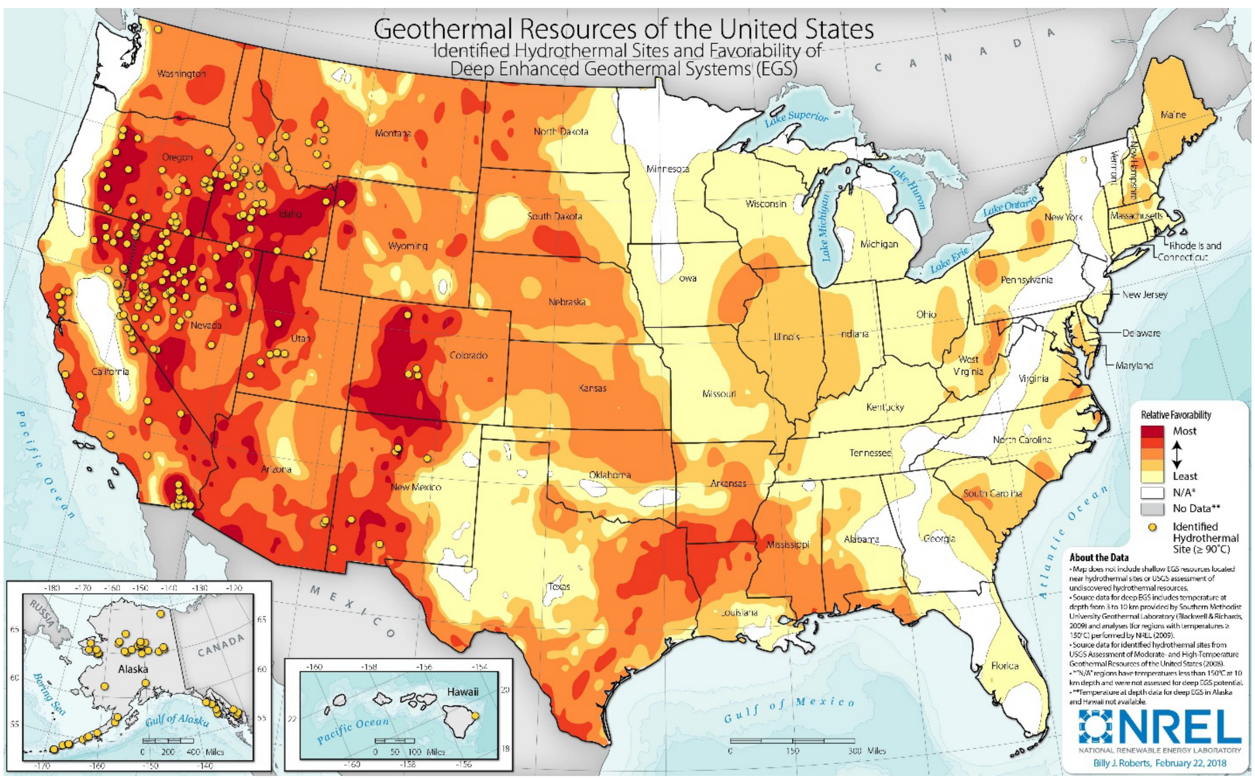

Figure 1: There is opportunity for geothermal power, direct-use heat, and heating/cooling in almost all parts of the U.S. Source: National Renewable Energy Laboratory

Technology Overview

Geothermal energy harnesses the Earth's natural heat to generate power through a straightforward process: drill wells into high-temperature underground areas, use that heat to warm a fluid (typically water), and then bring that fluid above ground to either generate electricity or use the heat directly.[6]

Traditional geothermal energy technologies, often called Conventional Hydrothermal Systems (CHS), represent the earliest form of geothermal energy production (Figure 2). These systems rely on naturally occurring geological features with pre-existing hot water reservoirs, typically found in only a few limited areas globally, like Iceland or parts of the western United States. In CHS, naturally pressurized hot water is accessed near the surface, where it can be directly used to drive turbines and generate electricity.[7]

Next Generation Technologies: Recent advances have unlocked new methods to access and utilize this geologic heat and unlock vast new potential for geothermal globally, enough to power the world 140 times over.[8] Cutting-edge technologies from the oil and gas sector—including advanced sub-surface mapping, horizontal drilling, and multi-stage hydraulic fracturing—have revolutionized geothermal energy extraction.[9] Energy companies utilize these advances to tap geological heat that was previously inaccessible due to high physical and financial risk to produce abundant geothermal. This new era of 'next-generation geothermal' promises to unlock geothermal power almost anywhere and use American labor, skills, and technologies to transform the energy sector once again.[10]

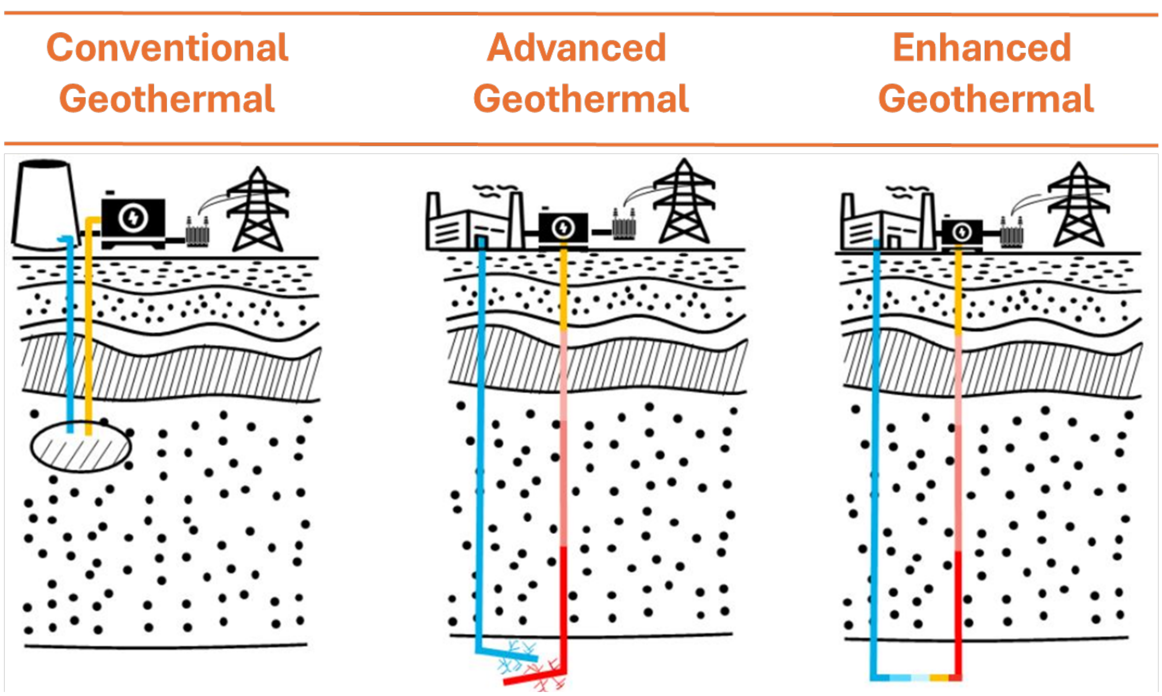

Figure 2: Advanced geothermal is creating opportunities to tap previously inaccessible areas. Source: BloombergNEF, with author edits

Advanced Geothermal Systems (AGS): Advanced Geothermal Systems (AGS) offers an innovative approach to geothermal energy. Unlike CHS, which relies on natural underground reservoirs, AGS uses a closed-loop system with subsurface pipes arranged like a radiator. The working fluid circulates through these pipes without ever leaving them, heating up naturally and flowing back to the surface to generate electricity. AGS can significantly expand the potential production of geothermal energy with lower pumping costs, as AGS systems can operate in a wide range of temperatures and rock compositions.[11] Greenfire Energy, a U.S.-based startup, successfully tested an AGS demonstration in California and is expected to soon develop the world's first "closed-loop geothermal laboratory" in Oklahoma.[12]

Enhanced Geothermal Systems (EGS): Unlike both CHS and AGS, Enhanced Geothermal Systems (EGS) can create geothermal reservoirs in areas without natural hot water systems.[13] In an EGS setup, water is pumped down into horizontal wells extending more than 10,000 feet underground. These wells create hydraulically-stimulated fractures in rock, which holds a temperature of 400 degrees Fahrenheit due to natural geologic systems. As the water circulates through these engineered fractures, it heats up and returns to the surface through a parallel well, where the steam drives electrical turbines. Critically, EGS does not require pre-existing reservoirs or natural fractures, dramatically expanding potential geothermal sites. Three pilot facilities have successfully implemented EGS: the Soultz power plant in France, Project Red in Nevada, and FORGE in Utah.[14]

Super Hot Rock (SHR): While still in early development and many years away from commercialization, Super Hot Rock (SHR) promises to unlock previously unreachable heat resources. The approach targets extremely deep, incredibly high-temperature rock formations, typically located 3-10 miles underground and heated to 750-1250 degrees Fahrenheit.[15] When water is heated above 705 degrees Fahrenheit it reaches a "supercritical" state, which significantly increases its energy density and improves energy conversion.[16] This could mean much greater electricity generated per well.

Advanced Geothermal: Reliable, Secure, Compact, and Clean

Reliable: 24/7/365 Availability

Resilience and reliability are key attributes of geothermal technologies. Today's geothermal plants deliver a capacity factor—an important metric of a power plant's reliability—of approximately 71% (Figure 3).[17] Nuclear power, the only source of energy more reliable than today's geothermal energy systems, provides a 92% capacity factor. Utility-scale solar provides 25%, and wind provides 34%. Next-generation geothermal systems are expected to have a capacity factor above 90%, rivaling nuclear power for the most reliable form of electricity generation on the grid.[18]

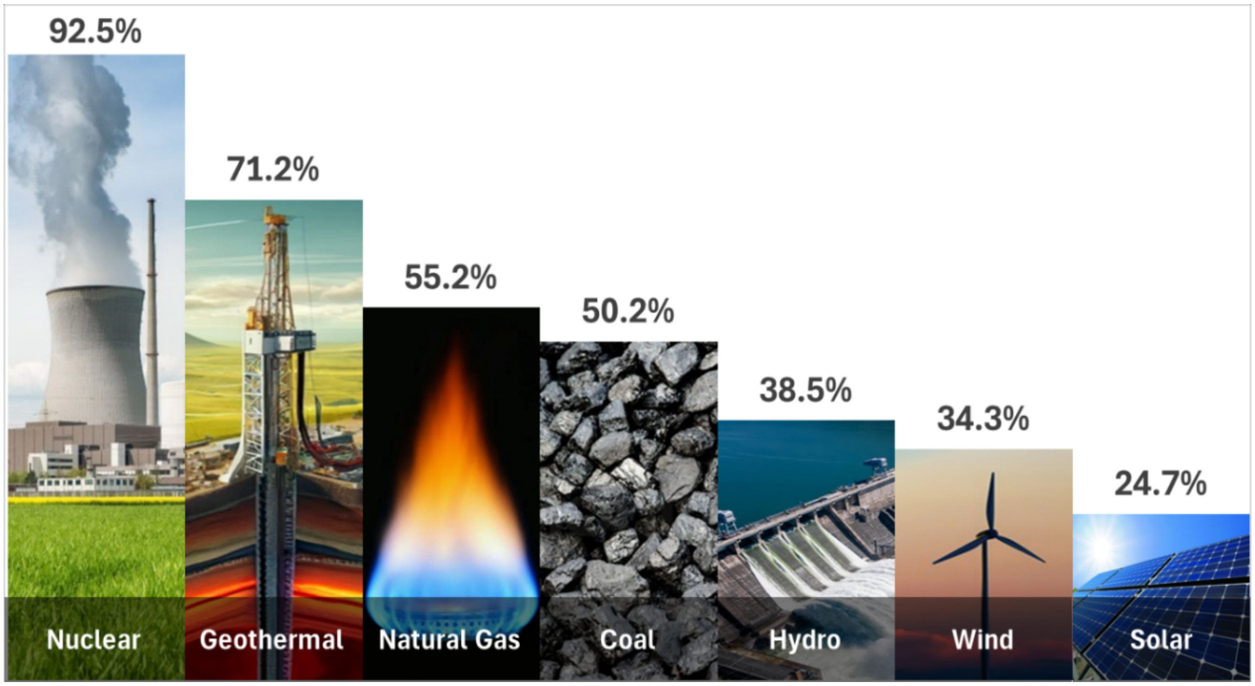

Figure 3: The capacity factor of today's geothermal energy is more than double that of wind and solar.
Source: Data from U.S. Energy Information Administration, author's illustration

Geothermal energy systems also stand out as being incredibly resilient against extreme weather events or physical attacks. Most of a geothermal system is underground and is therefore much less vulnerable to environmental challenges, such as hurricanes, winter storms, or wildfires, or man-made threats.[19] As concerns over grid reliability continue to grow, such attributes will become more valuable to consumers and regulators.[20]

Secure: Uses Existing Domestic Supply Chains

Geothermal also offers a more secure and more domestic supply chain when compared to other energy sources. For instance, China currently dominates the solar industry, controlling over 80% of the world's solar panel supply chains.[21] Next-generation geothermal does not suffer from the same reliance on Chinese supply chains.[22]

Compact: Small Footprint and Minimal Land Use

A geothermal plant can produce energy all year around the clock and do so with a relatively small land footprint. A 2022 study indicates that geothermal energy has one of the lowest levels of land use.[23] More specifically, the study shows that today's geothermal energy fleet uses approximately 4.5% of the same surface area as coal, 0.37% of wind energy, or 0.08% for crop-based biomass.[24]

Clean: Minimal Emissions and Water Use

Geothermal energy systems offer positive environmental attributes with relatively minor and manageable risks. First and foremost, geothermal-associated emissions are far lower than for most other types of energy.[25] According to the U.S. Energy Information Administration (EIA), geothermal energy emits "97% less acid rain-causing sulfur compounds and about 99% less carbon dioxide than [similar] fossil fuel power plants."[26]

Water use is another important aspect of geothermal energy, although it's comparatively small. The U.S. Department of Energy (DOE) projected that by 2050, geothermal energy could represent 8.5% of total U.S. electricity generation, while only accounting for 1.1% of power sector water withdrawals.[27] Additionally, both traditional and advanced geothermal systems typically utilize non-potable water sources, significantly reducing the impacts on water supplies used for daily life.

Advanced Geothermal: Exploring Strategic Opportunities Across Critical Industries

Looking to the future, geothermal energy can play a key role in bolstering energy security and creating energy abundance under an all-of-the-above framework. Next-generation clean and renewable geothermal technologies have the potential to expand this impact beyond electricity generation, reaching a wider range of sectors across the American economy. In this section, we highlight its applications by sector and outline opportunities.

Bolstering Defense & National Security

Geothermal energy offers unparalleled reliability and resilience, making it an ideal choice for securing U.S. military installations within the continental United States and allied territories (Figure 4). Geothermal provides 24/7 power without reliance on fuel delivery and reduces exposure to grid failures. Its underground infrastructure is naturally protected from extreme weather events and physical attacks, enhancing its appeal for facilities that are critical for our national security.

According to the Defense Logistics Agency, fuel and water transportation represented 70-90% of all logistical operations by volume in Iraq and Afghanistan, and attacks against those convoys caused approximately 52% of all casualties in those theaters.[28] By utilizing geothermal energy, the need for such convoys could be cut drastically. Finally, geothermal energy's nearly fully domestic supply chain leverages American expertise in drilling and engineering, minimizing reliance on foreign sources. These attributes position geothermal as a critical tool for bolstering energy security and protecting U.S. military assets.

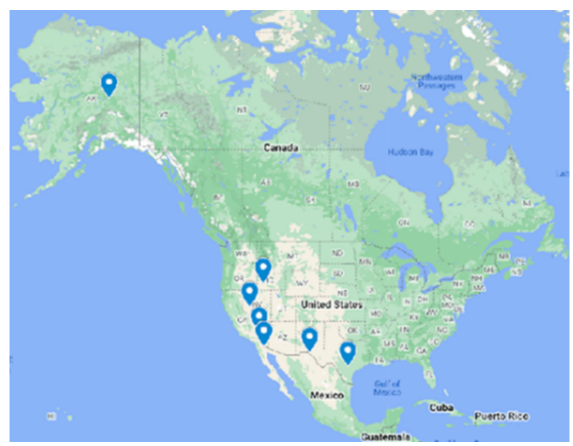

Figure 4: DOD Geothermal Installations
Source: Defense Innovation Unit

Strategic Defense Partnerships:

- **Department of Defense (DOD) Partnerships:** The DOD, through the Defense Innovation Unit, is partnering with companies like Fervo Energy and Sage Geosystems to deploy next-generation geothermal systems on military installations. These projects aim to enhance base energy security while accelerating the development and adoption of AGS and EGS systems.[29]
- **Mountain Home Air Force Base, Idaho:** The U.S. Air Force launched a prototype project with Zanskar Geothermal & Minerals, Inc. to test the potential for AGS and

EGS to power and cool military bases.[30] This project will provide significant energy resilience to the installation and may be commercially operational by 2026.[31]

- **Fort Bliss, Texas:** The U.S. Army signed an agreement with Sage Geosystems to deploy EGS technologies to provide both power and heating for base operations.[32] This project will enable the base to operate off-grid during emergencies.

Providing Stable Power for Data Center Growth

The rapid growth of data centers, driven by artificial intelligence and cloud computing demands, has created an urgent demand for reliable power and cooling solutions.[33] By 2030, data centers are projected to consume 8% of U.S. electricity, up from just 3% in 2022.[34] Geothermal energy offers a unique advantage for this sector by providing consistent, 24/7 power and efficient cooling without releasing any emissions. Geothermal energy reduces grid stress and ensures lower emissions, making it an attractive option for companies seeking resilient energy solutions that meet their aggressive climate goals.

Artificial Intelligence & Geothermal Announcements:

- **Google and Fervo Energy:** Enhanced geothermal power project will provide 24/7 emissions-free electricity to data centers in Nevada.[35]
- **Meta and Sage Geosystems, Texas:** This first of a kind project, expected to start operating by 2027, will provide datacenters up to 150 megawatts of reliable power.[36]
- **Iron Mountain Data Centers, Pennsylvania:** First commissioned in 2013, this geothermal cooling system reduced datacenter energy use by 34%.[37]

Revolutionizing Heating & Cooling

From educational institutions to healthcare facilities and corporate campuses, geothermal systems reduce energy usage and operating costs while improving comfort and resilience. By integrating geothermal energy into buildings and campuses, organizations can achieve significant cost savings, enhance operational reliability, and meet sustainability goals while creating comfortable environments for students, patients, and employees.

Educational Institutions: Schools and universities are turning to geothermal energy to cut costs and create healthier learning environments.

- **Example:** In Texas, nearly every school built by the Denton Independent School District since 2010 uses geothermal wells to improve air conditioning efficiency, lowering energy costs in the hot Texas summers.[38]

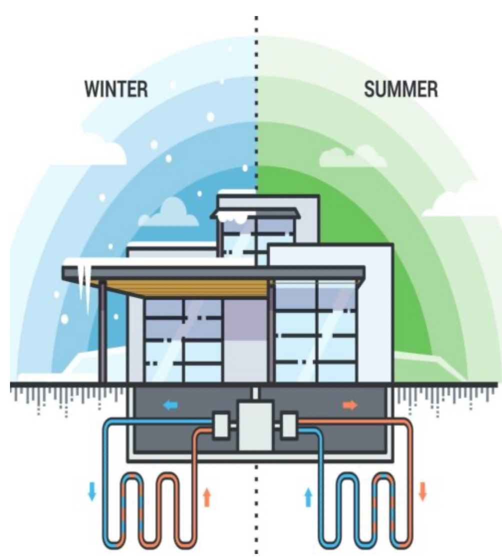

Figure 5: Geothermal heat pumps provide cost savings in hot and cold weather. Source: Focus on Energy

Healthcare Facilities: Hospitals can use geothermal systems to provide reliable power and reduce operational expenses, freeing more resources for patient care.

- **Example:** In Wisconsin, Edgerton Hospital and Health Services utilize geothermal heat pumps to reduce energy consumption by about 40%.[39]

Corporate Facilities: Large corporate campuses are embracing geothermal energy as a strategic advantage to lower costs and reduce emissions.

- **Example:** Microsoft's new headquarters in Redmond, Washington, was constructed with over 900 wells to heat and cool 3 million square feet of office space. The company intends to "reduce campus energy consumption by 50% and water use by 8 million gallons."[40]

District Heating and Cooling: Multiple buildings can be linked together through a centralized network, lowering energy costs for whole communities.[41]

- **Example:** A pilot project in Framingham, Massachusetts, combines geothermal wells and a shared network to heat and cool 37 homes and businesses, which could reduce electric bills by 20%.[42]

Emerging Use Cases: Innovative Applications for Advanced Geothermal

Agriculture: Strengthening Farm Operations

Geothermal energy presents several applications in agriculture, including greenhouse heating, fish farming, food processing, drying, cold storage, and refrigeration. These uses can improve productivity and yield, enhance food system resiliency, support post-harvest preservation, and bolster food security and nutrition. Geothermal heat pump systems can also reduce energy costs for farmers by providing year-round heat for greenhouses.[43]

Critical Minerals: Supporting Domestic Lithium Production

Geothermal energy also offers a transformative opportunity for critical mineral production, particularly lithium—a key component for batteries used in smartphones and utility-scale energy storage systems.[44] The U.S. currently imports about half of its lithium, and domestic mining efforts face significant challenges. Geothermal plants can extract this lithium from hot brine pumped to the surface, reducing reliance on foreign sources and providing a secure domestic supply.

Energy Storage: Strengthening the Grid

Geothermal energy offers an innovative solution for energy storage.[45] Dual-use geothermal systems combine energy generation with storage capabilities, enabling excess energy to be stored underground as thermal energy and retrieved when needed. Geothermal energy storage systems are uniquely positioned to serve diverse energy needs, from small-scale community grids to large utility-scale operations. By leveraging underground reservoirs, these systems can store thermal energy at high efficiencies without the material constraints of traditional batteries. This reduces the need for expansive energy storage infrastructure while offering a cost-effective and environmentally friendly alternative.

Meeting Energy Demand: Growing an Advanced Geothermal Industry

Energy demand is growing, both at home and abroad. According to the EIA, global total energy demand is set to increase by up to 57% and electricity demand is expected to increase by up to 75% by 2050 (compared to 2022).[46] In the United States, the build out of new datacenters, manufacturing, and electrification is expected to push electric grid load growth over 15% by 2029.[47] The EIA expects these trends to drive total installed power capacity to nearly 2,500 GWe by 2050.[48] This urgent need for more power incentivizes strong growth in every part of the energy industry, especially for geothermal energy.

According to a 2023 International Renewable Energy Agency report, the global installed geothermal energy capacity was just 15 GWe.[49] By comparison, America's total geothermal capacity was 3.9 GWe with a market estimated to be valued at $7.45 billion.[50] Over the same time frame, the DOE reported that geothermal energy employed nearly 8,900 people and over 6,600 more people worked installing geothermal heat pumps.[51] However, these figures are mostly reflective of traditional geothermal energy systems, which have significant geographic limitations. Next-generation geothermal energy systems may yet be in their infancy, but they hold significant promise for rapid growth and expansion into new geographic areas.

International Competition: China Investments Risks U.S. Leadership

Today, the U.S. remains a leader in geothermal drilling expertise, leveraging decades of experience innovating oil and gas technologies to advance geothermal energy. However, China and other nations are rapidly scaling their investments in geothermal energy, positioning themselves to challenge U.S. leadership in the sector. According to the International Energy Agency (IEA), China alone accounts for over 70% of global geothermal investments, driven by aggressive government incentives and state-backed financing.[52] If this trend continues, China could surpass the U.S. as the dominant player in next-generation geothermal technologies, much as it has done in solar panel manufacturing and critical mineral supply chains (Figure 6).

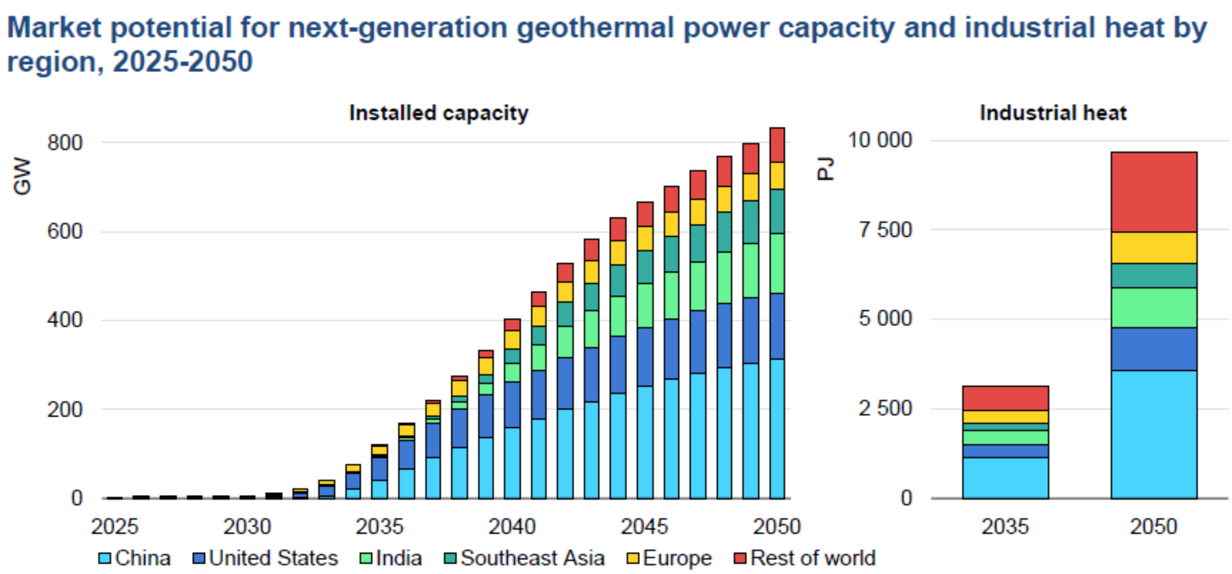

Figure 6: U.S. geothermal leadership is expected to be overtaken by China before 2050.
Source: International Energy Agency

China's strategic push into geothermal is part of a broader effort to replace its aging coal fleet while securing control over the future of clean energy technologies.[53] Beijing has directed significant resources into both geothermal heating and power generation, with plans to install more than 100 GW of geothermal capacity by 2050—a staggering figure that would dwarf the current U.S. capacity of 3.9 GWe. In a global market projected to reach over 800 GW of next-generation geothermal by 2050, maintaining America's leadership requires success both domestically and abroad.[54] Without a clear U.S. strategy to counter these efforts, the country risks ceding technological leadership and losing valuable economic opportunities to foreign competitors.

Industry Growth: Challenges & Barriers

Despite recent progress, the geothermal industry faces significant challenges that hinder large-scale deployment. Key barriers include:

- Permitting & Regulatory Barriers: Geothermal projects must navigate complex and archaic permitting processes, which can significantly delay development timelines.
- High Upfront Costs: The high capital costs associated with geothermal drilling and infrastructure development remain a major barrier.
- Technology Needs: Geothermal wells often require deeper drilling and specialized equipment resistant to extreme temperatures and pressures. Continued investment in drilling advancements for both EGS and AGS is essential to drive down costs.

Policy Roadmap: How to Unleash Advanced Geothermal

Geothermal energy is an essential component of a domestic energy strategy that utilizes all-of-the-above and below energy technologies. Its attributes—**reliability, affordability, and security**—address key priorities such as energy independence, economic growth, and national security. As a clean, baseload power source, geothermal reduces reliance on foreign energy imports, supports domestic job creation, and bolsters the nation's ability to meet growing energy demands.

Conservatives are committed to unleashing American energy while emphasizing cutting unnecessary regulations, empowering private-sector innovation, and leveraging abundant domestic resources to drive prosperity.[55] Geothermal energy embodies these values by offering a market-driven solution that fosters economic growth while lowering energy costs for households and businesses. Streamlined permitting and targeted incentives can unlock its potential, ensuring geothermal plays a leading role in reducing inflation, revitalizing manufacturing, and securing America's position as an energy superpower.

Recent Policy Actions Accelerating Geothermal Energy

Legislative Actions: Over the past several years, Congress has provided a strong foundation for geothermal energy development through bipartisan legislation aimed at boosting innovation and reducing financial risk. Since 2020, Congress has enacted new laws authorizing new geothermal research and development (R&D) projects, appropriating additional funding for advanced geothermal R&D, and expanding existing tax credits.[56] Despite this surge in government funding, Congress must still enact substantial permitting reform to ensure new energy infrastructure, particularly geothermal energy, can be built.

Executive Branch Actions: Less than a month after taking office, President Donald Trump signed several executive orders (EO) designed to expand domestic energy production and streamline energy regulations. These include three of particular importance: an EO declaring a national energy emergency, an EO unleashing American energy, and an EO establishing the National Energy Dominance Council, all of which identified geothermal heat as a key domestic energy source.[57]

States Championing Development: State-level leadership remains essential for the success of the geothermal industry. While states like Nevada and California have already leveraged their natural resources to excel in traditional geothermal energy, others are leading the way on advanced geothermal technologies. For instance, Texas recently consolidated all state-level authorities in one regulatory body and clearly identified ownership rights for geothermal heat. These small changes create significant market certainty by reducing jurisdictional confusion and avoiding ownership disputes.[58] As another example, Pennsylvania's Renewable Energy Program provides various financial incentives for certain energy production, including geothermal.[59] This program provides yet another tool for geothermal energy developers to reduce capital costs and de-risk projects, but more can still be done.[60]

Policy Recommendations for Geothermal Abundance

The future of geothermal energy in the United States hinges on bold, targeted policy action that unleashes the full potential of this reliable, clean, and domestically abundant energy resource. Without decisive action, the U.S. may find itself importing next-generation geothermal technology from China rather than leading the global market as it did with oil and gas innovations. The stakes are high—not just for energy security but for economic competitiveness and strategic influence in the global clean energy transition.

Below are three policy recommendations with the greatest opportunity for transformative change in the geothermal industry. For a full list of recommended policy options, please see the Appendix.

1. *Cut Red Tape to Unleash Energy: Enact Comprehensive Permitting Reform*

Issue: America's broken permitting system, marred by red tape, endless litigation, and excessive delays, is a major obstacle to unlocking our nation's clean energy potential, especially regarding the geothermal energy industry. Modernizing the permitting system is critical for meeting growing our energy demand, boosting our economic competitiveness, bringing back our manufacturing dominance and realizing environmental progress.

Policy Solution: Congress must enact comprehensive permitting reform that will accelerate the pace of deploying geothermal projects, unlock America's vast subterranean heat resources, and result in economic gains for America. Comprehensive reforms could include:

1. Expanding categorical exclusions under the National Environmental Policy Act (NEPA) for geothermal to ensure parity with other energy projects.
2. Reforming the process of litigation under NEPA to break the cycle of endless frivolous litigation.
3. Speeding up judicial review to accelerate how quickly litigation is handled.[61]
4. Streamlining federal regulatory processes to avoid duplicity.

Recommendation: Looking toward the 119th Congress, we encourage Congress to enact comprehensive permitting reform that simplifies the permitting process and accelerates deployment times of American energy, including for geothermal projects.

2. *Scaling Advanced Geothermal Investments: Continue Leveraging Federal Tax Credits*

Issue: Geothermal projects require high upfront capital and carry development risks that often deter private investment. Without a stable, predictable tax system, including incentives, financing new innovation is difficult. This difficulty slows the development and deployment of this secure American energy resource.

Policy Solution: Targeted financial support can help de-risk geothermal projects and encourage broader adoption by businesses, utilities, and individuals. Congress has provided this kind of assistance to new and existing energy systems for decades, with strong bipartisan support. Of particular interest to geothermal assets are the technology-neutral clean electricity investment tax credit (45Y) and the technology-neutral clean electricity production tax credit (48E).[62] These important policies provide strong incentives for the geothermal industry to accelerate deployment of AGS and EGS systems.

Recommendation: Congress should maintain existing technology-neutral tax credits (e.g., 45Y and 48E) that catalyze investments in geothermal technology deployment.

3. *Accelerate Technological Innovation: Prioritize R&D and Commercialization*

Issue: High costs and technical challenges—particularly with drilling and reservoir development—continue to limit geothermal energy's growth. Like any new technology, developing, deploying, and eventually commercializing new technologies poses significant challenges to nascent market participants. Federal support for R&D should remain consistent to avoid slowing breakthroughs needed to reduce costs and scale deployment.

Policy Solution: Innovation is essential to reducing the cost of geothermal systems and driving adoption. Federal R&D funding must prioritize subsurface energy resources. This means robust support for research into basic research, early-stage applications, and late-stage demonstrations of geothermal technologies. These investments will accelerate the continued innovation and deployment of this important source of domestic energy.

Recommendation: Ensure the Department of Energy, its national laboratories, and other agencies working to scale geothermal continue to receive adequate funding for research, development, demonstration, and deployment. We also encourage robust oversight to ensure that no taxpayer dollars are wasted or diverted from the core missions of advancing American energy.

Conclusion: Advanced Geothermal Accelerates Energy Dominance

Geothermal energy is a cornerstone of America's path to energy dominance—delivering 24/7 baseload power, strengthening energy independence, and reducing costs for American families and businesses. Built on the same oil and gas drilling expertise that made the U.S. a global energy leader, next-generation geothermal can provide reliable, affordable, and American-made energy without reliance on foreign adversaries. With the right policies—**streamlined permitting, expanded domestic drilling, and investment in advanced technologies**—geothermal can unleash the full potential of our energy sector while creating high-paying jobs and revitalizing local economies.

At a time when global competitors are racing to control the future of energy, the U.S. must act decisively to maintain its leadership. By cutting bureaucratic red tape, empowering private-sector innovation, and expanding access to domestic resources, policymakers can ensure that America—not China—leads the next energy revolution. Geothermal offers not just a cleaner power source but a stronger, more independent, and more secure future for the nation. **It's time to drill deeper, power smarter, and put American energy first.**

Appendix: Recommended Policy Options

Cut Red Tape to Unleash Energy

1. Congress should enact comprehensive permitting reform which:
   - Expands categorical exclusions under the National Environmental Policy Act (NEPA) for geothermal,
   - Reforms the judicial review process under NEPA to accelerate timelines,
   - Streamlines federal permitting and regulatory processes, and
   - Enables applicants to reimburse the Department of the Interior (DOI) for administrative costs, expediting lease and permit processing.
2. Create a framework for concurrent consideration of all project phases to streamline approvals.
3. Expand lease availability to promote broader access to geothermal resources.
4. Increase the frequency of geothermal lease sales to an annual schedule.
5. Direct relevant federal agencies to take every available action to open international markets to U.S. geothermal drillers, service providers, and technology manufacturers.
6. Remove obstacles for the Department of Defense to partner with independent power producers to generate geothermal power on domestic military installations for the purpose of improving base energy resilience.

Scaling Advanced Geothermal Investments

1. Maintain existing tax credits (e.g., the 45Y ITC and 48E PTC) to incentivize geothermal electricity investment and production.
2. Reform the Intangible Drilling Tax Credit to be more useful for geothermal projects.
3. Ensure that geothermal is an eligible resource for federal power procurement policies.
4. Encourage public-private partnerships to attract investment and reduce taxpayer burdens.
5. Leverage the Department of Energy's (DOE) Title XVII loan authorities to de-risk geothermal projects and exploration drilling.
6. Provide technical assistance to maximize the potential of installing geothermal systems.

Accelerate Technological Innovation

1. Focus on reducing the cost of geothermal systems through robust research and development.
2. Expand DOE funding for subsurface drilling and exploration technologies and processes through the national labs.
3. Provide DOE funding for early-stage research into geothermal applications and later-stage demonstrations.

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