Congressional Research Service
Informing the legislative debate since 1914

Enhanced Geothermal Systems (EGS): Frequently Asked Questions

June 7, 2024

Congressional Research Service
https://crsreports.congress.gov
R48090

Congressional Research Service
Informing the legislative debate since 1914

Enhanced Geothermal Systems (EGS): Frequently Asked Questions

SUMMARY

R48090

June 7, 2024

Morgan Smith
Analyst in Energy Policy

This report is divided into an introduction and four discussion sections, each of which addresses a set of questions related to one of four key topics for EGS.

Importance

The first set of questions examines how enhanced geothermal systems (EGS) are different from typical geothermal technologies and why they are of interest. EGS adapt and use technologies and processes originally developed for the oil and gas industry to access more and deeper geothermal energy resources. This can enable greater geothermal electricity production and potentially do so in more locations across the United States. In 2023, federal and industry research and development (R&D) projects demonstrated key elements required for viable commercial EGS electricity generation.

Technical and Cost Challenges

The second set of questions examines the challenges related to EGS technologies and their development. The primary challenges are technical and related costs largely associated with adapting the drilling, stimulation, and plant operations technologies and processes to geothermal working conditions. These challenges include identifying and confirming sufficient underground geothermal resources; drilling to and through deep, hard rock; operating in high-temperature, reactive geochemical environments; and maintaining efficient and sustainable electricity generation over decades. Additional challenges include mitigating, managing, and communicating about potential emissions, seismicity, water use, and impacts on ground water resulting from geothermal energy development.

Comparisons with Other Energy Resources

The third set of questions examines how EGS and geothermal energy compare to other sources of electricity and how EGS can benefit from resources in the oil and gas industry in particular. The electricity-generating capacity of wind, solar photovoltaic, and natural gas has expanded over the last 15 years—partially due to lower costs and greater emissions-related benefits. The U.S. Department of Energy (DOE) anticipates similar cost reductions from future EGS R&D, which could enable significant amounts of renewable, low-emission, baseload power generation from EGS. Also, EGS developers could leverage many resources from the oil and gas industry, including drilling rigs and other equipment, unused or underused wells, drilling and reservoir management technologies, resource and operational knowledge bases, and workforce skill sets and expertise.

Development Potential and Supporting Policy Options

The final set of questions examines the overall potential for EGS technology and the potential policy support options for Congress. DOE's projections estimate that EGS developments could enable 90 gigawatts of geothermal electricity generation capacity by 2050—potentially supplying as much as 12% of U.S. electricity demand. If Congress chooses to support expansion of EGS, it could appropriate funds for specific EGS demonstration projects—a particularly costly element of EGS development—or it could examine ways in which existing federal incentives (such as tax benefits that reduce development risks and costs) could be expanded or applied to EGS exploration or development activities.

Contents

Contacts

Introduction[1]

Geothermal energy—natural heat from deep in the earth—has long been pursued as a source of renewable energy, but in the United States, development has been geographically limited to certain areas in western states.[2] Recent developments in enhanced geothermal systems (EGS) have increased the potential for geothermal power to supply more electricity in a larger area of the United States.[3] EGS involve drilling multiple injection and production wells and running pipelines to each well. Geothermal fluid[4] is injected into the subsurface to create or widen existing fractures or cracks in the bedrock to allow greater access to geothermal heat at depth—a process called *stimulation*.[5] The injected geothermal fluid, which helps form an underground reservoir, is heated by contact with the bedrock and extracted via the production wells. This hot, extracted fluid can then be used directly for heating or to generate steam to drive turbines to produce electricity. After use, the now-cooled and condensed geothermal fluid is reinjected into the ground—with the goal of maintaining fluid levels and geochemistry in the reservoir—where it can absorb more heat from the reservoir. The extraction/reinjection cycle helps sustain heat extraction from the reservoir and electricity generation in the plant.[6]

While geothermal energy currently produces only 0.4% of U.S. electricity,[7] the United States produces the largest amount of geothermal electricity worldwide.[8] If the United States continues a

[1] For more information on enhanced geothermal systems (EGS), see CRS Report R47256, *Enhanced Geothermal Systems: Introduction and Issues for Congress*, by Morgan Smith, and CRS Report R47405, *Oil and Gas Technology and Geothermal Energy Development*, by Morgan Smith.

[2] The United States had 3,722 megawatts (MW) of geothermal power capacity at the end of 2021, out of a worldwide total of 15,854 MW. The majority of traditional geothermal resources are hydrothermal resources located at the boundaries between the Earth's tectonic plates. Alexander Richter, "ThinkGeoEnergy's Top 10 Geothermal Countries 2021—Installed Power Generation Capacity (MWe)," ThinkGeoEnergy, January 10, 2022, https://www.thinkgeoenergy.com/thinkgeoenergys-top-10-geothermal-countries-2021-installed-power-generation-capacity-mwe/; U.S. Energy Information Administration, "Geothermal Explained: Where Geothermal Energy Is Found," February 15, 2022, https://www.eia.gov/energyexplained/geothermal/where-geothermal-energy-is-found.php.

[3] See U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, "How an Enhanced Geothermal System Works," September 9, 2022, https://www.energy.gov/eere/geothermal/how-enhanced-geothermal-system-works.

[4] A geothermal fluid is typically a mixture of water and other constituents which is circulated through a reservoir and heated by the earth. It can be extracted for a variety of power generation, heating, or other applications before being returned to the reservoir. Supercritical carbon dioxide (CO_2) is also being explored as a potential fluid for use in reservoirs with the appropriate characteristics. Y. Sakai, "Advanced Geothermal Steam Turbines," in *Advances in Steam Turbines for Modern Power Plants*, ed. Tadashi Tanuma (Sawston, United Kingdom: Woodhead Publishing, 2016), https://doi.org/10.1016/B978-0-08-100314-5.00019-1; Yu Wu and Pan Li, "The Potential of Coupled Carbon Storage and Geothermal Extraction in a CO_2-Enhanced Geothermal System: A Review," *Geothermal Energy*, vol. 8, article 19 (2020), https://doi.org/10.1186/s40517-020-00173-w.

[5] Stimulation for EGS is similar to hydraulic fracturing—fracking—used in extracting fossil fuels, though there are notable differences in implementation and effects.

[6] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, "How an Enhanced Geothermal System Works," September 9, 2022, https://www.energy.gov/eere/geothermal/how-enhanced-geothermal-system-works.

[7] U.S. Energy Information Administration, *Monthly Energy Review: May 2024*, 2024, https://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf.

[8] Alexander Richter, "ThinkGeoEnergy's Top 10 Geothermal Countries 2021—Installed Power Generation Capacity (MWe)," ThinkGeoEnergy, January 10, 2022, https://www.thinkgeoenergy.com/thinkgeoenergys-top-10-geothermal-countries-2021-installed-power-generation-capacity-mwe/; Gerald W. Huttrer, "Geothermal Power Generation in the World 2015-2020 Update Report," in *Proceedings World Geothermal Congress 2020+1* (Bonn, Germany: International Geothermal Association, April-October 2021), https://www.geothermal-energy.org/pdf/IGAstandard/WGC/2020/01017.pdf.

transition to lower carbon energy sources, new geothermal technologies like EGS could play a larger part in the electricity system.

Importance

Given the small share that geothermal power currently contributes to the U.S. electric grid, why is there interest in EGS?

The main reasons for the current interest in EGS technology are that it can access deeper heat reservoirs and those with less favorable conditions than those accessible by traditional geothermal technologies. Accessing these reservoirs could increase the amount of geothermal electricity generation, open the application of geothermal power to more locations across the United States, and enable more low-carbon, baseload electricity generation to complement the rest of the nation's energy mix.

How is EGS technology different from traditional geothermal technology?

Traditional geothermal technology typically requires a couple of elements to coexist—underground heat close enough to the surface that developers can access it and sufficient water in either liquid or steam form to allow for heat extraction. There are more locations in the western United States than in other parts of the country that meet these geophysical requirements, which is why all 93 U.S. geothermal power plants identified by the Department of Energy (DOE) in 2021 are located in seven western states.[9] Those and other states also have some direct-use geothermal systems that provide heating for a variety of purposes, including spas, greenhouses, district heating, and industrial heating and drying applications. However, applications at locations without these favorable geophysical conditions are more challenging.

This is where developments in EGS technologies may play a role. EGS technologies build on developments from the oil and gas industries—including directional drilling and fracking (or stimulation) technologies. Those technologies have enabled the oil and gas industry to access more hydrocarbon resources and increase domestic production of hydrocarbon fuels over the past roughly 20 years.[10] Now, researchers supported by DOE and industry are working to adapt those technologies to geothermal conditions and applications.[11] Successful development could enable geothermal electricity generation in more areas of the United States, even if the potential geothermal source is deep in the earth, trapped within the bedrock, and lacking in water.

[9] Doug Blankenship et al., "Pathways to Commercial Liftoff: Next-Generation Geothermal Power," U.S. Department of Energy, March 2024, https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf.

[10] U.S. Department of Energy, "Economic and National Security Impacts Under a Hydraulic Fracturing Ban," January 2021, pp. 9-10, https://www.energy.gov/fecm/articles/economic-and-national-security-impacts-under-hydraulic-fracturing-ban.

[11] U.S. Department of Energy, Geothermal Technologies Office, *GeoVision: Harnessing the Heat Beneath Our Feet*, May 2019, p. 8, https://www.energy.gov/sites/default/files/2019/06/f63/GeoVision-full-report-opt.pdf.

Geothermal power has been around for a long time. Why has it been in the news recently?

DOE's Utah FORGE project and geothermal industry companies like Fervo Energy have been working to prove and commercialize EGS technologies.[12] Since 2023, both Utah FORGE and Fervo have announced successful demonstrations of EGS technology, enabling key elements for geothermal power:[13] chiefly, the drilling of injection and production wells, injection of geothermal fluids and stimulation of subsurface cracks, and circulation of geothermal fluid through reservoirs sufficient for power generation. Google announced in November 2023 that Fervo's "full-scale commercial pilot" plant had become the first operational EGS plant in the United States. It is a 3.5 megawatt (MW) plant operating in Nevada and developed in concert with Google to provide power for their data centers. Fervo is working on a larger 400 MW EGS plant at its test site in Utah. For context, a 400 MW output is roughly equivalent to that of an average natural-gas-fired generation plant.

Technical and Cost Challenges

What are the challenges for EGS technology?

The primary challenges are technical and related costs. The operating conditions for geothermal power are more difficult than those for similar oil and gas operations. So, when transitioning the drilling, stimulation, and operations technologies developed for those industries to geothermal, they have to be adapted in a number of ways. Geothermal reservoirs are generally hotter, so new materials for seals, electronics, and sensors have to be developed to withstand the heat. The geothermal reservoirs being tapped are often deeper and beneath harder rock than what is found in an oil and gas reservoir, so stronger drill bits and deeper drilling technologies are needed. Additionally, the stimulation technology—adapted from fracking—needs to be able to stimulate and maintain sufficient porosity (cracks) in the reservoir to allow the geothermal fluid to circulate and to extract sufficient heat from the reservoir without allowing chemicals to build up or clog the reservoir or power plant piping.

Additionally, there is a general lack of knowledge about potential geothermal resources—where they are located, what the geological and geochemical conditions are—and there is a need to develop an accurate understanding and models of subsurface conditions to properly create and maintain reservoir and plant operating conditions. Finally, all of these technology adaptations, and the challenges associated with drilling wells and optimizing a plant for the appropriate conditions, are expensive compared to typical oil and gas production activities or to the development costs for some other renewable energy plants that use technologies such as wind or solar photovoltaics. Achieving all these technical requirements and generating electricity at a cost that is competitive with other sources is the challenge for researchers right now.

[12] Utah FORGE, "Vision," 2024, https://utahforge.com/about/vision/; Fervo Energy, "Technology," 2024, https://fervoenergy.com/technology/.

[13] U.S. Department of Energy, "Utah FORGE's Literal Breakthrough for the Enhanced Geothermal Systems Community," July 10, 2023, https://www.energy.gov/eere/geothermal/articles/utah-forges-literal-breakthrough-enhanced-geothermal-systems-community; Fervo Energy, "Fervo Energy Announces Technology Breakthrough in Next-Generation Geothermal," press release, July 18, 2023, https://fervoenergy.com/fervo-energy-announces-technology-breakthrough-in-next-generation-geothermal/.

What about other potential concerns, such as emissions, seismicity, water use, or impacts on ground water?

Similar to other renewables, geothermal power has few atmospheric emissions. The exact levels depend on the system configuration and the natural characteristics of the geothermal reservoir, but closed-loop and binary geothermal systems have practically no emissions.[14] Beyond emissions, other primary environmental concerns include seismicity, water use, and ground water impacts.

Induced seismicity—earthquakes caused by development activity—is one frequently cited concern related to EGS technologies.[15] Seismic events can occur during well construction, well stimulation, and power plant operations. In response to induced seismicity from early EGS activities, Lawrence Berkeley National Laboratory developed a seismicity protocol to reduce this risk.[16] The protocol has been implemented as part of federal environmental reviews of EGS projects. It serves to inform government agencies and other stakeholders of any seismic risks and potential mitigation activities.

EGS projects can use as much as 10 million gallons of water for stimulation, and they use water for operations throughout their lifetime.[17] However, geothermal power cycles and cooling cycles are anticipated to generally use binary, closed-loop dry cooling, so the total amount of water consumed is expected to be relatively small (compared to the amounts used in alternative power generation and cooling). And though there have been no known cases of groundwater contamination from geothermal activities, such considerations are part of the permitting and regulatory process for geothermal development.

[14] In closed-loop systems, the working fluid—water in the case of cooling loops or geothermal fluid in the case of geothermal power loops—is not exposed to the atmosphere, thus not subjected to evaporation or contamination. In binary systems, the heat from the geothermal fluid is used to convert a second liquid—generally one with a lower boiling point than water—to vapor to drive the turbines and generate electricity. A binary fluid allows the system to generate electricity from a lower temperature geothermal resource. For more information, see CRS Report R47256, *Enhanced Geothermal Systems: Introduction and Issues for Congress*, by Morgan Smith.

[15] Tharaka Dilanka Rathnaweera et al., "Understanding Injection-Induced Seismicity in Enhanced Geothermal Systems: From the Coupled Thermo-hydro-mechanical-chemical Process to Anthropogenic Earthquake Prediction," *Earth-Science Reviews*, vol. 205 (June 2020), https://doi.org/10.1016/j.earscirev.2020.103182; Julie Haffner, "Reducing Human-Induced Earthquake Risk," Phys.org, January 6, 2020, https://phys.org/news/2020-01-human-induced-earthquake.html; U.S. Department of Energy, Geothermal Technologies Office, *GeoVision: Harnessing the Heat Beneath Our Feet*, May 2019, p. 8, https://www.energy.gov/sites/default/files/2019/06/f63/GeoVision-full-report-opt.pdf.

[16] U.S. Department of Energy, Geothermal Technologies Office, *Protocol for Addressing Induced Seismicity Associated with Enhanced Geothermal Systems*, January 2012, https://www.energy.gov/sites/prod/files/2014/02/f7/geothermal_seismicity_protocol_012012.pdf.

[17] Rafał Moska et al., "Hydraulic Fracturing in Enhanced Geothermal Systems—Field, Tectonic and Rock Mechanics Conditions—A Review," *Energies*, vol. 14, no. 18, article 5725 (September 2021), https://doi.org/10.3390/en14185725; C. E. Clark et al., "Water Use in the Development and Operation of Geothermal Power Plants," Argonne National Laboratory, January 2011, https://doi.org/10.2172/1013997.

Comparisons with Other Energy Resources

How does EGS technology compare to other fossil fuel, nuclear, or renewable electricity options?

Of the new electric-generating capacity DOE anticipates will be installed in 2024, 71% is expected to be from solar and wind.[18] An additional 23% is expected to be battery storage.[19] Wind and solar have been expanding because research and development (R&D) over the last 15 years has reduced costs for those technologies by about 90% and because of their environmental, mainly emissions, benefits.[20] Natural gas is expected to provide 4% of new capacity.[21] It, too, has seen recent expansion, largely driven by a combination of low fuel costs from expanded domestic shale gas production and lower emissions compared to coal-fired power plants.

Currently, natural-gas-fired generation is important to the power grid because it provides baseload power—it is always available, provided that the plant has sufficient fuel. In contrast, wind and solar sources are intermittent—they generate power only when the wind is blowing or the sun is shining.[22] This intermittency is one factor driving battery storage deployment, especially where wind and solar generation are significant suppliers to the power grid—storage works in concert with these intermittent renewables to save excess electricity for use when needed and effectively increases the value of these renewable sources.

Geothermal power has a number of potentially desirable characteristics—it is always available, does not rely on fuel supplies and thus has no fuel costs, and has low emissions comparable to renewables such as solar and wind. In terms of life cycle emissions, it is estimated to have lower per-kilowatt-hour emissions than solar photovoltaics.[23] An additional benefit of EGS technology, compared to traditional hydrothermal technology, is that it can be developed in more places across the United States. EGS technology can access deeper sources of heat, create and maintain reservoir porosity, and inject water to enhance heat capture and circulation. EGS can be sited closer to population centers in the central and eastern United States, reducing the amount of additional long distance electricity transmission capacity needed, decreasing the need for more natural gas pipelines or natural gas consumption, and supplementing low-carbon electricity supplies where other renewable resources are not as plentiful.

---

[18] U.S. Energy Information Administration, "Solar and Battery Storage to Make Up 81% of New U.S. Electric-Generating Capacity in 2024," February 15, 2024, https://www.eia.gov/todayinenergy/detail.php?id=61424.

[19] Ibid.

[20] David Feldman et al., "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmark: Q1 2020," National Renewable Energy Laboratory, January 2021, https://www.nrel.gov/docs/fy21osti/77324.pdf; Vignesh Ramasamy et al., "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks, with Minimum Sustainable Price Analysis: Q1 2023," National Renewable Energy Laboratory, September 2023, https://www.nrel.gov/docs/fy23osti/87303.pdf; U.S. Energy Information Administration, "Wind, Solar, and Batteries Increasingly Account for More New U.S. Power Capacity Additions," March 6, 2023, https://www.eia.gov/todayinenergy/detail.php?id=55719.

[21] U.S. Energy Information Administration, "Solar and Battery Storage to Make Up 81% of New U.S. Electric-Generating Capacity in 2024," February 15, 2024, https://www.eia.gov/todayinenergy/detail.php?id=61424.

[22] For more details, see CRS Report R45764, *Maintaining Electric Reliability with Wind and Solar Sources: Background and Issues for Congress*, by Ashley J. Lawson.

[23] National Renewable Energy Laboratory, "Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update," September 2021, https://www.nrel.gov/docs/fy21osti/80580.pdf.

Can EGS benefit from resources from the oil and gas industry?

As noted above, the geothermal power and oil and gas industries have in some ways codeveloped, sharing some technologies, knowledge bases, skill sets, and processes. This means that in addition to the drilling rigs and drilling, stimulation, and well completion technologies that are being adapted for geothermal use, EGS development can leverage other oil and gas technologies and resources.

As they both depend on underground resources, the two sectors can share exploration and data collection technologies to help find, estimate, test, and confirm geothermal resources. DOE's Geothermal Technologies Office has programs to improve underground resource data, to expand on data from the U.S. Geological Survey and in particular on Hawaii and Alaska resources, and to improve subsurface depth profiles.[24]

There is also the potential for EGS to reuse non- or underproductive oil and gas fields. Oil and gas wells have potential value for geothermal development because they have already been drilled and completed and because their creation and operation generate associated data on subsurface conditions—all of which can reduce geothermal development costs and risks in those locations.

EGS projects and plants can benefit from the oil and gas industry's workforce. Technicians, engineers, and scientists can bring years of experience in resource exploration, drilling, stimulating, well completion, and well and power plant operations. They can also leverage existing relationships and understanding of project financing and risk management related to underground resource development gained in the oil and gas industry. This knowledge and experience may decrease the risks and costs of geothermal energy development.

EGS development may ultimately benefit workers displaced from the oil and gas industries. If the United States continues to transition to lower carbon energy sources, the oil and gas sector could contract and the geothermal energy sector could expand. Thus, EGS development could offset some of the negative impacts the energy transition has on the workers from fossil-fuel-dependent industries, especially when EGS plants are colocated near non- or underproductive oil and gas fields.

Development Potential and Supporting Policy Options

How much potential is there for EGS electricity generation?

If EGS technology continues to demonstrate reduced costs, DOE projects that U.S. geothermal capacity could increase from the current 16 gigawatts (GW) to 38 GW by 2035 and 90 GW by 2050.[25] Because of geothermal energy's potential to be "always on," it could generate as much as

[24] U.S. Department of Energy, Geothermal Technologies Office, "Data, Modeling, and Analysis," https://www.energy.gov/eere/geothermal/data-modeling-and-analysis; Sean Porse et al., "Fiscal Years 2022–2026: Multi-Year Program Plan," Government Technologies Office, February 2022, https://www.energy.gov/eere/geothermal/articles/geothermal-technologies-office-multi-year-program-plan-fy-2022-2026; U.S. Department of Energy, "National Laboratory Call for Proposals: National Lab Funding for Fiscal Year 2024,"April 18, 2024, https://www.energy.gov/eere/geothermal/articles/critical-materials-laboratory-call.

[25] Chad Augustine et al., "Enhanced Geothermal Shot Analysis for the Geothermal Technologies Office," National Renewable Energy Laboratory, January 2023, https://www.nrel.gov/docs/fy23osti/84822.pdf.

12% of U.S. electricity by 2050.[26] These projections are a 50% increase over those from the Geothermal Technology Office's *GeoVision* report from 2019, which provided a technical analysis of future geothermal deployment opportunities given increased access to geothermal resources, reduced costs and improved economics for geothermal projects, and improved education and outreach about geothermal energy.[27] This increase has been driven by demonstrations of increased geothermal fluid flow rates through wells, decreased drilling and well costs, and anticipated economic efficiencies from increased average power plant sizes—all results of recent R&D in the sector. DOE estimates the technical potential to be orders of magnitude higher.

If Congress chooses to support expansion of EGS, what are potential policy options?

Congress, through DOE, has supported and is supporting R&D for geothermal energy—the Energy Act of 2020 (Division Z of P.L. 116-260) provided for R&D across the sector. Congress could expand R&D support, for example in the area of subsurface data collection, characterization, and modeling.[28] Another major area that remains a challenge for geothermal development is the high cost of demonstration projects. When Congress enacted the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58) in 2021, it directed and funded a Clean Energy Demonstration Program within DOE.[29] To date, Congress has not directed funds for that program specifically for geothermal demonstrations.

Congress could expand some of the tax incentives, currently accessible to the oil and gas industry, to EGS development where there are similarities in costs, risks, or benefits. Geothermal energy experiences similar costs and risks related to exploration, well drilling, and production activities as the oil and gas industry.[30] Despite these similar challenges, the geothermal energy industry does not have access to all of these tax options. Some examples include tax credits for enhanced oil recovery or credits for production from marginal wells—these credits could be modified to cover EGS development as it uses some of these same enhancement technologies and can reuse or extend the use of old oil and gas wells.[31]

Congress could also consider enabling or enhancing power purchase agreements or other similar mechanisms within the federal government that would access and demonstrate the full value of geothermal electricity. Geothermal electricity generation has characteristics that might not be fully valued in all markets—example characteristics include flexibility, baseload or reserve

[26] Ibid.

[27] U.S. Department of Energy, Geothermal Technologies Office, *GeoVision: Harnessing the Heat Beneath Our Feet*, May 2019, https://www.energy.gov/sites/default/files/2019/06/f63/GeoVision-full-report-opt.pdf.

[28] The Geothermal Technologies Office highlights data collection as an R&D focus area affecting many aspects of EGS development. Sean Porse et al., "Fiscal Years 2022–2026: Multi-Year Program Plan," February 2022, https://www.energy.gov/eere/geothermal/articles/geothermal-technologies-office-multi-year-program-plan-fy-2022-2026.

[29] 42 U.S.C. §18861. For more information on IIJA programs, see CRS Report R47034, *Energy and Minerals Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)*, coordinated by Brent D. Yacobucci.

[30] Bethany Speer et al., "Geothermal Exploration Policy Mechanisms: Lessons for the United States from International Applications," National Renewable Energy Laboratory, May 2014, https://www.nrel.gov/docs/fy14osti/61477.pdf.

[31] Enhanced oil recovery credit: 26 U.S.C. §43. Credit for producing oil and gas from marginal wells: 26 U.S.C. §45I.

capacity, insulation from fluctuating fuel prices, and qualities like anticipated plant life or capacity factor.[32]

Author Information

Morgan Smith
Analyst in Energy Policy

Disclaimer

[32] Sean Porse et al., "Fiscal Years 2022–2026: Multi-Year Program Plan," February 2022, https://www.energy.gov/eere/geothermal/articles/geothermal-technologies-office-multi-year-program-plan-fy-2022-2026.