

Next-Generation Geothermal Energy Offers New Market for Manufacturers

New Report Explores Supply Chain Opportunities for Appalachian businesses

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-- Geothermal energy has long been a reliable, if limited, part of the global energy mix, providing 24/7 baseload power. Now, a new generation of enhanced geothermal systems (EGS) is poised to rapidly expand this market. Today, the Energy & Manufacturing in Appalachia (EMA) initiative released a [report](#) examining how Appalachian manufacturers can supply the advanced drilling, piping, and power generation components needed to develop new geothermal resources.



The EMA initiative is led by [Catalyst Connection](#), southwestern Pennsylvania's economic development organization, along with the following regional partners: Alliance for Manufacturing and Technology (AMT), Industrial Modernization Center, Magnet, Manufacturers Resource Center, MANTEC, Maryland MEP, Northeastern PA IRC, Northwestern PA IRC, Reimagine Appalachia, and West Virginia University.

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Innovations from the oil and gas industry are transforming the geothermal industry. No other region can match the expertise of Appalachian manufacturers to supply these vital geothermal components.”

*Petra Mitchell, President and
CEO of Catalyst Connection*

“Innovations from the oil and gas industry are transforming the geothermal industry,” said Petra Mitchell, President and CEO of Catalyst Connection. “No other region can match the expertise and capacity of Appalachian manufacturers to supply these vital components for a new generation of geothermal energy projects.”

As of 2024, the United States has approximately 3.7 gigawatts (GW) of installed geothermal capacity, with a global capacity of 16 GW. The domestic geothermal market is estimated to be valued between \$3 billion and \$4 billion and is projected to grow 5–7% annually through 2030. Due to EGS advancements, by 2050, the U.S. geothermal capacity could reach 60 GW, while the International Energy Agency projects global capacity could reach 800 GW.

Federal and private investments are accelerating this growth, such as the 45Y Production Tax Credit and 48E Investment Tax Credit. The U.S. Department of Energy (DOE) is supporting research and demonstration programs such as the Utah FORGE test site and the Geothermal Energy from Oil and Gas Demonstrated Engineering (GEODE) initiative. The DOE has also announced more than \$60 million in new pilot projects, and companies such as Google and Microsoft are funding geothermal initiatives to secure reliable energy for new data centers. Start-ups like Fervo Energy, Sage Geosystems, and Eavor Technologies are developing commercial-scale EGS projects that use advanced drilling and fiber-optic monitoring systems.

EGS technology enables geothermal development in locations that were previously unsuitable, allowing access to heat at depths of 3–10 kilometers across much of the country. However, EGS projects face challenges including high upfront drilling costs, regulatory uncertainty, and technical risks related to reservoir performance. Continued investment and permitting coordination are essential for the industry to scale while reducing costs.

Manufacturing and Supply Chain Opportunities

EMA's Energy Overview Segment: Geothermal report identifies opportunities for small and medium-sized manufacturers to contribute to the geothermal supply chain by producing key components such as:

- Rotary drilling rigs, casing, and tubulars capable of reaching depths over 15,000 feet.
- Downhole and injection pumps engineered for high-temperature environments.
- Heat exchangers, turbines, and air-cooled condensers for power generation systems.
- Fiber optic sensing for real-time wellbore analysis.
- Piping, valves, and control systems designed for high-pressure geothermal operations.

EGS systems benefit from technology transfer from the oil and gas industry, allowing Appalachian manufacturers already serving energy markets to adapt existing capabilities and supply the materials, equipment, and electronics needed to support geothermal development.

[Read the Full Report](#)

About Catalyst Connection

Catalyst Connection is a southwestern Pennsylvania economic development organization

dedicated to serving manufacturers. For more than 35 years, Catalyst has operated with a focus on powering potential through delivering technical assistance and management consulting services and developing long-standing partnerships across the region. Catalyst maintains a deeply held commitment to modernizing manufacturing and enabling opportunity across business enterprises, individuals, and throughout communities.

Catalyst Connection is supported, in part, by the Pennsylvania Department of Community and Economic Development and the National Institute of Standards and Technology Manufacturing Extension Partnership (NIST MEP). As such, we are an affiliate of the Pennsylvania Industrial Resource Center (IRC) and the MEP National Network in southwestern Pennsylvania.

About the Energy & Manufacturing in Appalachia Initiative

The Energy & Manufacturing in Appalachia (EMA) initiative provides technical assistance and business support to small and medium manufacturers and enterprises in 156 counties of Maryland, New York, Ohio, Pennsylvania, and West Virginia seeking to expand business, production, and jobs in the energy supply chains or to be more energy efficient.

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