COMMITTEE ON SCIENCE SPACE AND TECHNOLOGY

H.R. 8665, the Supercritical Geothermal Research & Development Act

Introduced by Chairman Frank Lucas (R-OK) and cosponsored by Rep. Andrea Salinas (D-OR)

H.R. 8665, the Supercritical Geothermal Research and Development Act, directs research, development, demonstration, and commercial application activities at the Department of Energy (DOE) to support supercritical geothermal and closed-loop geothermal systems in supercritical conditions.

Background

Supercritical geothermal - sometimes referred to as superhot rock energy - is a category of enhanced geothermal systems that requires deep drilling technologies to access dry rocks at temperatures around 400°C or greater. Water or other liquids are then injected at depths of 4 kilometers or deeper and, utilizing natural heat deep within the Earth's crust, returned to the surface at supercritical conditions to power a turbine and generate energy.

Conventional geothermal systems are geographically limited to regions where concentrated heat and groundwater are located near the surface. As a result, a typical commercial geothermal well produces 3-5 megawatts (MW) of energy and current geothermal systems have a capacity of 16 gigawatts of total installed global power. Conversely, a supercritical geothermal well has been estimated to produce 36 MW of energy and next-generation geothermal technologies are estimated to have the potential to contribute 90 GW of power to the United States alone.

In order to capitalize on the full potential of supercritical geothermal as part of broader enhanced geothermal research, the Department of Energy can support significant engineering innovations such as rapid ultra-deep drilling methods, heat resistant well materials and tools, and deep heat reservoir development.

Bill Summary

H.R. 8665 directs DOE to support activities through the existing Geothermal Technologies Office by establishing a program with specific supercritical geothermal research focus areas. Additionally, H.R. 8665 directs DOE to award grants for the continuation and expansion of activities applicable to the Frontier Observatory for Research in Geothermal Energy (FORGE) sites. Within one year of enactment of this Act, DOE shall ensure that at least one FORGE site has the capabilities to include testing of supercritical geothermal or closed-loop geothermal system in supercritical conditions. This bill will also encourage DOE to collaborate with the Department of Interior on data collection and analysis to better provide industry with an understanding of where abundant geothermal resources are located.

Most barriers for commercialization of supercritical geothermal are engineering challenges, not a need for major scientific breakthroughs. Public-private partnerships will play a key role in sharing knowledge between geothermal companies, oil and gas companies, unconventional oil and gas innovators, and federal researchers. Therefore, DOE is also directed to establish a Next-Generation Geothermal Center of Excellence, consisting of National Laboratories, multi-institutional collaborations, or institutes of higher education, to advance enhanced geothermal energy technologies, including supercritical geothermal, in response to industry and commercial needs. This Center will also foster collaborations, support workforce development, provide educational and technical assistance, and collect and disseminate information.