



LPRO: Legislative Policy and Research Office

# GEOHERMAL ENERGY

## BACKGROUND BRIEF

Geothermal energy is energy from the internal heat of the earth. It is found in rocks and fluids at various depths, including in hot springs. Useful heat is extracted by drilling or pumping. Geothermal heat is used directly to heat buildings and to generate electricity. Traditionally, electricity generation was accomplished with steam turbines and required very high temperature resources. Recent technological innovations enable electricity generation at much lower temperatures.

United States geothermal energy generation was relatively stable between 2006 and 2013, with an average of three percent annual growth. Most of the country's geothermal generation is in the west (Figure 1).

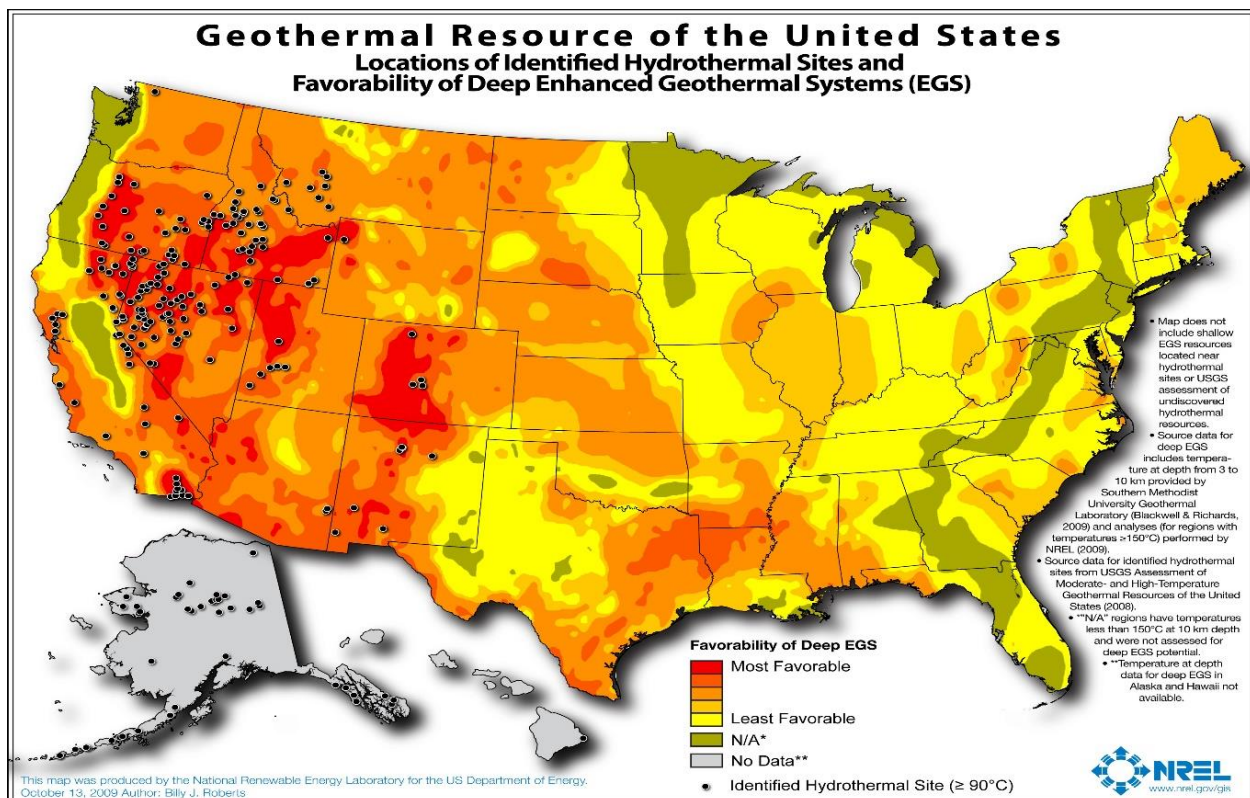


Figure 1: Geothermal resources in the United States (National Renewable Energy Laboratory)

Challenges geothermal developers face include high upfront capital expenses, resource uncertainty, and location of some geothermal sources near environmentally sensitive areas.

In Oregon, areas with the greatest geothermal resource potential are in the central and southeastern parts of the state (Figure 1). The National Renewable Energy Laboratory (NREL) has developed an

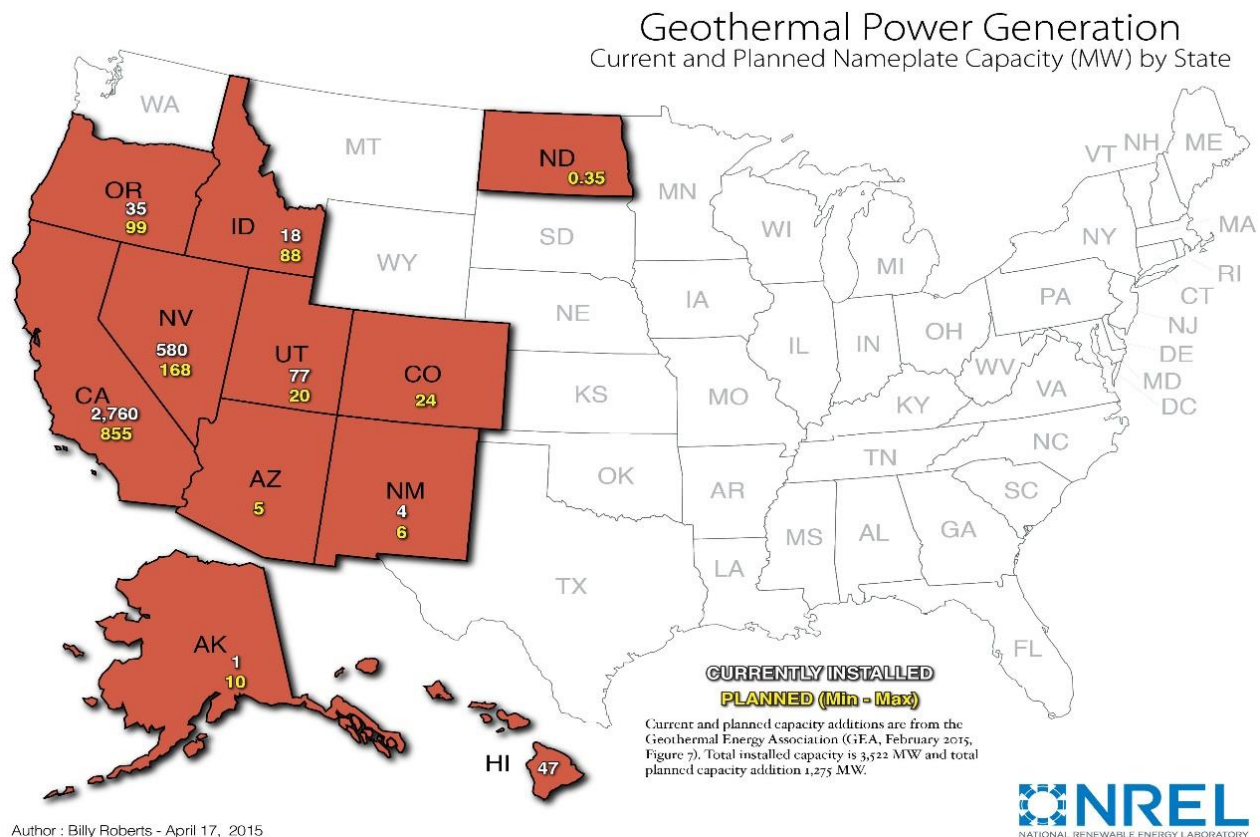


interactive mapping tool<sup>1</sup> of geothermal resources. Additionally, the Oregon Department of Geology and Mineral Industries (DOGAMI) maintains an interactive map<sup>2</sup> of geothermal springs and wells in Oregon.

## GEOTHERMAL ELECTRICITY GENERATION

Oregon is ranked fifth in the nation for geothermal electricity generation. As of April 2015, nameplate capacity of installed geothermal power generation was 35 megawatts (MW), with another 99 MW of planned capacity. Figure 2 shows the existing and planned capacity of geothermal plants throughout the United States.

The state's first geothermal power plant began operating in 2010 at the Oregon Institute of Technology (OIT) in Klamath Falls, with an initial electricity-generating capacity of 280 kilowatts (kW). A second plant at OIT generates 1.2 MW of power. In 2012, U.S. Geothermal Inc. brought online a 22 MW facility at Neal Hot Springs near the eastern Oregon town of Vale. In 2015, a 3.1 MW geothermal power plant began operation in Paisley, Oregon. Additional geothermal opportunities are being explored at Crump Geyser and Glass Butte in Lake County.



**Figure 2:** Current and Planned Geothermal Power Plants in the United States (National Renewable Energy Laboratory)

<sup>1</sup> NREL's Geothermal Prospector: [http://www.nrel.gov/gis/tools\\_gt\\_prospector.html](http://www.nrel.gov/gis/tools_gt_prospector.html)

<sup>2</sup> DOGAMI's Geothermal Information Layer for Oregon: <http://www.oregongeology.org/gtilo/index.html>



---

## GEOHERMAL HEATING

---

The City of Klamath Falls uses geothermal energy to heat buildings, residences and pools and to even melt snow. In Lakeview, a geothermal well system is used to heat school properties and hospital buildings. Other examples of direct use of geothermal heat in the state include drying agricultural products, aquaculture (raising fish), heating greenhouses, and heating swimming pools at spas and resorts. Hot springs resorts are widespread in Oregon, including Ashland, Belknap, Breitenbush and Hot Lake.

---

---

## STAFF CONTACTS

---

Beth Reiley  
Legislative Policy and Research Office  
(503) 986-1755  
[beth.reiley@oregonlegislature.gov](mailto:beth.reiley@oregonlegislature.gov)

Beth Patrino  
Legislative Policy and Research Office  
(503) 986-1751  
[beth.patrino@oregonlegislature.gov](mailto:beth.patrino@oregonlegislature.gov)

*Please note that the Legislative Policy and Research Office provides centralized, nonpartisan research and issue analysis for Oregon's legislative branch. The Legislative Policy and Research Office does not provide legal advice. Background Briefs contain general information that is current as of the date of publication. Subsequent action by the legislative, executive or judicial branches may affect accuracy.*