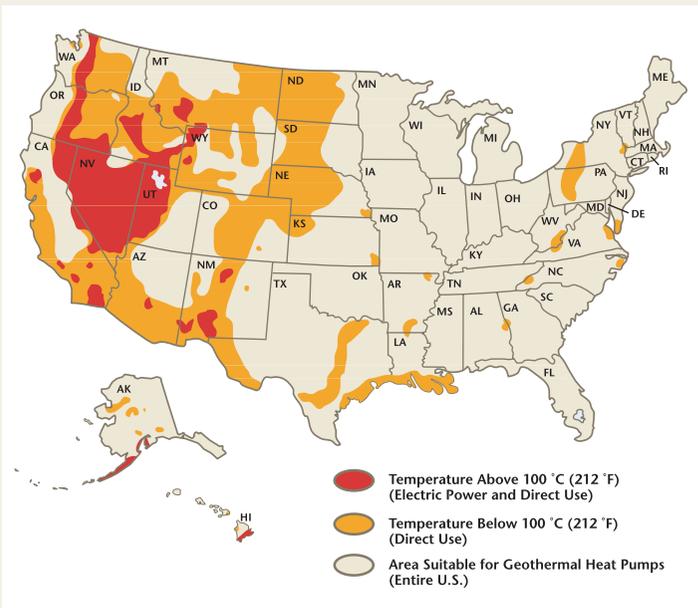


# U.S. Geothermal Energy Potential



● Temperature Above 100 °C (212 °F)  
 (Electric Power and Direct Use)  
● Temperature Below 100 °C (212 °F)  
 (Direct Use)  
● Area Suitable for Geothermal Heat Pumps  
 (Entire U.S.)

**Geothermal heat pumps** (GHPs) use the ground as an energy storage device and are far more efficient than conventional HVAC equipment. GHPs transfer heat from the building to the ground during the cooling season, and transfer heat from the ground to the building during the heating season. There are over one million GHPs in service in the United States today, including over 1,000 at schools and colleges. President Bush has a GHP system installed at his ranch in Crawford, Texas.

## Strategic Value

• Clean, baseload power	• Mineral recovery
• Ethanol & biodiesel production	• Co-production & enhanced oil recovery
• Distributed & modular systems	• Hydrogen production
• Climate change mitigation	• Rural economic development

## Contacts and Resources

### General Geothermal Energy Information

U.S. Department of Energy  
 Geothermal Technologies Program  
[www1.eere.energy.gov/geothermal](http://www1.eere.energy.gov/geothermal)  
[www1.eere.energy.gov/geothermal/gpw](http://www1.eere.energy.gov/geothermal/gpw)

### DOE Contacts

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### Resources

Geo-Heat Center  
[geoheat.oit.edu](http://geoheat.oit.edu)

Geothermal Resources Council  
[www.geothermal.org](http://www.geothermal.org)

Geothermal Energy Association  
[www.geo-energy.org](http://www.geo-energy.org)

Geothermal Biz.com  
[www.geothermal-biz.com](http://www.geothermal-biz.com)

Geothermal Education Office  
[Geothermal.marin.org](http://Geothermal.marin.org)

Great Basin Center for  
 Geothermal Energy  
[www.unr.edu/geothermal](http://www.unr.edu/geothermal)

### A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

For more information contact:  
 EERE Information Center  
 1-877-EERE-INF (1-877-337-3463)  
[www.eere.energy.gov](http://www.eere.energy.gov)

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 Energy Efficiency and Renewable Energy



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# GEOPOWERING THE WEST

## Geothermal Energy The Clean Energy Source



Geothermal resources across  
 the U.S. are among the best sources  
 of clean, reliable, domestic energy  
 available to us today.



U.S. Department of Energy  
 Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

## Geothermal Technologies Program



PIX 07655, Joel Renner, INEEL

*The Steamboat geothermal power plant (24 MW), originally built and now owned by ORMAT, in Steamboat Springs, Nevada.*

## What Is GeoPowering the West?

The GPW initiative identifies geothermal opportunities and facilitates the development and deployment of geothermal technologies. While primarily focused on the geothermal resource-rich western states, GPW supports deployment, market transformation, and technology diffusion throughout the nation. The GPW initiative has developed technical assistance and outreach activities in partnership with state energy offices, utilities, other federal agencies, tribal governments, and geothermal industrial stakeholders. For more about GPW, see: [www.eere.energy.gov/geothermal/gpw](http://www.eere.energy.gov/geothermal/gpw)



PIX 13011, NREL, Robb Williamson

*Low-temperature geothermal water provides inexpensive heat and reliable irrigation for this New Mexico greenhouse.*

## GeoPowering the West Activities

GeoPowering the West (GPW) develops relationships with policy and decision makers to expand the use of geothermal resources as an environmental alternative that will increase economic development. GPW addresses the following areas:

- Transactional Costs: Break down institutional barriers to decrease project transactional cost.
- Technical Unfamiliarity: Make decision-makers aware of geothermal benefits and resource locations.
- Power Market Process: Make utilities, power generators, and regulators aware of geothermal benefits. Need “field-leveling” policies.
- Leasing, Permitting and Public Policies: Address policy constraints of land use plans, and federal and state requirements.
- Environmental, Tribal, and Public Perception: Address environmental issues, both real and imagined.



Pacific Gas and Electric Company (PG&E)

*The Big Geysers (Unit 13) geothermal power plant (70 MW) in Lake County, California.*

## Electricity

**Power** is produced using expanding steam or very hot water from the underground reservoir to spin a conventional turbine-generator. Geothermal power plants operate at a high-capacity factor, typically over 90%, and are a proven, baseload generation resource. **Geothermal plants are among the cleanest sources of electric power available.** With western United States demand for power growing rapidly, the need to develop geothermal power resources is essential. DOE is seeking to decrease the levelized cost of electricity from hydrothermal systems to about 5 cents per kilowatt-hour, and has a vision of geothermal energy as the nation’s environmentally preferred baseload energy alternative.

*Aquaculture, or fish farming, is one of the many uses of geothermal energy. These alligators in Colorado, growing in warm geothermal waters, consume waste products from nearby geothermally heated fish farms, and also provide meat and leather products.*

## Geothermal Heat

**Direct-use** applications directly pipe hot water from geothermal resources to provide heat for industrial processes, crop drying, greenhouses, aquaculture, recreation, sidewalk snow-melting, and buildings. Geothermal district-heating systems supply heat to multiple buildings through a network of pipes carrying the hot geothermal water. Horticulture and aquaculture enterprises have demonstrated economic development benefits.



PIX 05872, NREL, Warren Gretz