



GEO THERMAL GEMS

What does “geothermal” mean?

“Geo” means earth and “thermal” means heat.

- Enough heat is in the earth to supply our energy needs for millions of years. But most of the heat is too deep for us to use.
- At least 95 percent of the hot water in geothermal reservoirs begins as cool rainwater, trickling down through the earth.
- The hot water is called geothermal water. If it flows out on the surface, it’s a hot spring. If it spurts out like a fountain, it’s a geyser. If it puffs out as steam, it’s a fumarole.
- Sometimes the geothermal water is trapped underground in the hot rocks. This is called a geothermal reservoir.
- In most geothermal fields, wells are drilled into geothermal reservoirs holding hot water. Steam is made from the hot water.
- In California, we have hundreds of hot springs and fumaroles, and many geothermal reservoirs.

Geothermal resources are used in many ways:

1. Hot springs

- Native Americans and early settlers bathed in them, soaking away aches and pains.
- People cooked food in them. In some countries, they collected minerals such as boron and sulphur from hot springs that had dried up.

2. Health resorts

- Tourist attraction
- Some cooled geothermal water is also called mineral water. The amounts and kinds of chemicals and minerals are different from those in the water we use every day.

3. Heat

- Buildings and houses
- Greenhouses and food-drying plants
- Fish farms
- Heating soil in cold climates
- For melting snow and ice on streets and sidewalks

In California, geothermal heating projects save over 2 million gallons of oil a year.

4. Electricity

- When geothermal water is very hot, around 300°F or above, we can make electricity.
- Electricity is made in power plants. Mechanical energy from spinning turbines is changed into electrical energy inside the generator. The electricity is sent through lines that lead to our homes.

About 3 percent of the energy used in California is electrical energy made from geothermal steam.

CALIFORNIA COUNTIES WITH COMMERCIAL GEOTHERMAL PRODUCTION

Electrical Generation from High-Temperature Geothermal Resources

- Imperial
- Inyo
- Lassen
- Lake
- Mono
- Sonoma

Commercial, Low-Temperature Uses of Geothermal Energy

- Alpine
- Colusa
- Contra Costa
- Imperial
- Inyo
- Kern
- Lassen
- Modoc
- Mono
- Monterey
- Napa
- Plumas
- Riverside
- San Bernardino
- San Diego
- San Luis Obispo
- Shasta
- Sierra
- Sonoma

GEO THERMAL RESOURCES ARE RENEWABLE. MANY CAN BE USED OVER AND OVER, MAYBE FOR HUNDREDS OF YEARS. OIL, NATURAL GAS, AND OTHER MINERAL RESOURCES ARE NOT RENEWABLE. THEY ARE USED ONCE AND THEN THEY’RE GONE FOREVER.

Information was taken from *Geothermal in California* (#TR38), published by the California Department of Conservation’s Division of Oil, Gas, & Geothermal Resources. It is geared to students in grades 4-8. If you would like to order free copies, or need additional information on geothermal resources, please call (916) 445-9686.