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## Geothermal Energy

Geothermal energy comes from the heat within the earth. The word "geothermal" comes from the Greek words geo, meaning earth," and therme, meaning, "heat." People around the world use geothermal energy to produce electricity, to heat buildings and greenhouses, and for other purposes. Geothermal energy is called a renewable energy source because the water is replenished by rainfall, and the earth continuously produces the heat.

Below the Earth's crust, there is a layer of hot and molten rock called magma. Heat is continually produced there, mostly from the decay of naturally radioactive materials such as uranium and potassium. The amount of heat within 10,000 meters of Earth's surface contains 50,000 times more energy than all the oil and natural gas resources in the world.

Not only do geothermal resources in the United States offer great power, they can also provide continuous baseload electricity. According to the U.S. National Renewable Energy Laboratory, the capacity of geothermal plants is comparable with those of coal and nuclear power. With the combination of both the size of the resource base and its consistency, geothermal can play an important role in a cleaner, more sustainable power system.

Some applications of geothermal energy use the Earth's temperatures near the surface, while others require drilling miles into the Earth. The three main uses of geothermal energy are:

● **Direct use and district heating systems** use hot water from springs or reservoirs near the surface.

● **Electricity generation power plants** require water or steam at very high temperature (300° to 700°F). Geothermal power plants are generally built where geothermal reservoirs are located within a mile or two of the surface.

● **Geothermal heat pumps** use stable ground or water temperatures near the Earth's surface to control building temperatures above ground.

According to the U.S. Environmental Protection Agency (EPA), geothermal heat pumps are the most energy efficient, environmentally clean, and cost effective systems for temperature control. Although most homes still use traditional furnaces and air conditioners, geothermal heat pumps are becoming more popular.

Geothermal power plants use hydrothermal resources that have two common ingredients: water (hydro) and heat (thermal). Geothermal plants require high temperature hydrothermal resources that may come from either dry steam wells or hot water wells. People use these resources by drilling wells into the Earth and piping the steam or hot water to the surface. Geothermal wells are one to two miles deep.

There are three basic types of geothermal power plants:

● **Dry steam plants** use steam piped directly from a geothermal reservoir to power the generator turbines.

● **Flash steam plants** take high-pressure hot water from deep inside the Earth and convert it to steam to drive the generator turbines. When the steam cools, it condenses to water and is injected back into the ground to be used over and over again. Most geothermal power plants are flash steam plants.

● **Binary cycle power plants** transfer the heat from geothermal hot water to another liquid. The heat causes the second liquid to turn to steam, which is used to drive a generator turbine.

These days, there is a concern as well as awareness of the necessity of using sources of power that are not carbon-based. Here are some advantages of geothermal energy:

- Geothermal energy does not create any pollution because it is the earth's energy that is used.
- Geothermal energy is also very efficient.
- Perhaps the most important advantage of geothermal energy is that, unlike energy derived from carbon-based sources, geothermal energy will never run out. And because it is ubiquitous, its cost will never continue to rise with time.

Geothermal energy can change the world, as we know it. Most people today should have geothermal energy in their homes because it's cheap and good for the environment. Geothermal energy is one of the most important inventions ever. Our small city of Pensacola holds the fist ever McDonalds to go geothermal. That's one big accomplishment.