The growth of geothermal energy production has contributed to Oregon’s increased economic activity in recent years. Oregon is the third busiest state for geothermal projects under development, with many of them in southern Oregon. Some of these projects include City of Klamath Falls, Oregon Institute of Technology, Neal Hot Springs, Newberry volcano and Paisley.

**What are the benefits of geothermal energy?**

Oregon has a long and distinguished history of using geothermal energy to heat buildings. Geothermal is the internal heat of the Earth found in rocks and fluids at various depths and is extracted by drilling or pumping. Geothermal supplies clean baseload power year round – unlike solar and wind – and releases little to no greenhouse gases, significantly limiting air pollution.

Geothermal power plants provide steady and predictable baseload power with local economic benefits. Direct use applications and power generation both create construction, operation and maintenance jobs. Power plants also generate tax revenue for federal, tribal, state and local governments.

**What are the advantages of geothermal technologies?**

Geothermal technologies offer many environmental advantages over conventional power generation. Further, geothermal power costs about the same as other renewable energy sources and fossil fuels.

Geothermal power technologies include dry steam, flash and binary cycle plants. Binary cycle plants produce electricity from lower temperature reservoirs and release no emissions. For these reasons, some geothermal experts believe the binary plant will be the dominant choice in the future.

Developers use geothermal technologies to also recycle groundwater and replenish reservoirs. As an example, Santa Rosa California uses pipelines to deliver treated wastewater to The Geysers, recycling it back into the geothermal fields, prolonging the life of the reservoir. The Geysers is where the first operating geothermal power plant in the U.S. was located – in 1921.

**What are the challenges to geothermal development?**

Geothermal developers generally incur higher upfront capital expenses, but the trade-off is lower fuel costs over the life of a project. For example, exploration and drilling is expensive and risky. Drilling costs account for as much as one-third to one-half of the total cost of a project. For example, power generation drilling costs can be a few million dollars. By contrast, wells for ground source heat pumps can cost thousands of dollars. Challenges also include siting geothermal power facilities in environmentally sensitive areas.

---

What are the permitting requirements for a geothermal plant?

Geothermal developers should use the following guidelines to secure the necessary permits if applicable. Developers may need to:

- Obtain a permit from State of Oregon’s Department of Geology and Mineral Industries for wells with temperatures over 250°F.
- File with the State Water Resources Department for wells with temperatures less than 250°F.
- Obtain air, water and solid waste permits from the Department of Environmental Quality.
- Meet county planning requirements for direct use projects and power plants smaller than 38.5 megawatts.
- Obtain approval from the state’s Energy Facility Siting Council for geothermal power plants larger than 38.5 megawatts.
- On federal lands, obtain permits from surface management agencies and the Bureau of Land Management.

What financial incentives are available for geothermal projects?

Non-residential geothermal projects can qualify for state tax incentives through the Oregon Department of Energy.

ODOE’s Small-scale Energy Loan Program offers loans for geothermal projects and uses a performance-based model to determine a project’s repayment potential. Because geothermal projects produce power or reduce energy costs, developers can use a project’s anticipated power revenue or energy savings to repay capital costs when using a SELP loan.

Additionally, the following organizations may offer additional incentives: U.S. Department of Energy, U.S. Department of Agriculture, Energy Trust of Oregon and local Energy Suppliers.

The Western United States has the highest concentration of geothermal resources.

http://www.oregon.gov/energy/RENEW/Geothermal/Pages/geo_index.aspx