U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

GEOTHERMAL TECHNOLOGIES OFFICE FY 2015 BUDGET AT-A-GLANCE

The Geothermal Technologies Office accelerates the development and deployment of clean, domestic geothermal energy. It supports innovative technologies that reduce the risks and costs of bringing geothermal power online. As a key component of the U.S. clean energy mix, geothermal is a renewable energy that generates power around the clock.

What We Do

The Geothermal Technologies Office portfolio invests in activities along the span of technology readiness to facilitate the growth of installed electrical capacity:

- ✓ **Research and Development** invests in innovative technologies and techniques to improve the process of identifying, accessing, and developing geothermal resources.
- ✓ **Demonstrations** enable technologies and techniques to be field tested and validated.
- ✓ **Deployment** activities focus on reducing non-technical barriers and conducting analysis on the impact of our investments.

Program Goals/Metrics

- Demonstrate the capability to create and sustain a 5-MW Enhanced Geothermal Systems reservoir by 2020.
- Lower the levelized cost of electricity from newly developed geothermal systems to $0.06/kWh by 2030.

FY 2015 Priorities

- **Enhanced Geothermal Systems (EGS)** program will begin the next phase of the Frontier Observatory for Research in Geothermal Energy (FORGE**)** and initiate site characterization. FORGE will be a dedicated site for testing and validating cutting-edge EGS technologies and techniques that will create an accelerated commercial pathway to large-scale EGS power generation in the United States.
- **Hydrothermal** program will begin validation of its "Play Fairway Analysis" effort, competitively launched in FY 2014. Play Fairway analysis and mapping assesses exploration risk and the probability of finding new resources on a regional scale—identifying the most prospective areas for new geothermal exploration and development.
- **Low-Temperature and Coproduced Resources** subprogram will advance the Strategic Materials effort, competitively launched in FY 2014, by transitioning the most successful feasibility studies to technology prototype development and/or field demonstration projects.
- **Subsurface Crosscut Roadmapping and R&D** activity will promote collaborative research and development with program offices across the U.S. Department of Energy (DOE)—including the Office of Fossil Energy, the Office of Nuclear Energy, the Office of Science, and the Office of Environmental Management—and engage national laboratories, industry, and other stakeholders on crosscutting geology and engineering initiatives within the geothermal portfolio that maximize the leveraging of DOE investments.

(Dollars in Thousands)	FY 2013 Current*	FY 2014 Enacted	FY 2015 Request
Enhanced Geothermal Systems	20,103	27,084	33,500
Hydrothermal	8,092	10,285	17,500
Low Temperature and Coproduced Resources	2,942	4,708	6,000
Systems Analysis	3,888	3,698	4,000
NREL Site-Wide Facility Support	0	0	500
Total, Geothermal Technologies	**35,025**	**45,775**	**61,500**

Key Accomplishments

- In FY 2013, the Desert Peak demonstration project in Nevada completed an 8-month, multi-stage stimulation of an existing, yet underperforming, well—making it the **first grid-connected EGS project in America to generate commercial electricity** by providing an additional 1.7 MW at the existing well field.
- In FY 2013, The Geysers EGS demonstration in California successfully yielded a clearly demonstrated, **commercial-strength 5-MW resource**.
- In FY 2013, Caldwell Ranch in California **confirmed an initial 11.4 MW of equivalent steam—50% more than early estimates**—from three previously abandoned wells. This was the first geothermal project where an abandoned steam field has been successfully re-opened for production after approximately 20 years of thermal regeneration.
- In FY 2013, the Office completed a project that takes advantage of **emission-free geothermal power** generation—as a thermal byproduct of gold mining—to generate electricity for **less than $0.06/kWh**. This was a first-of- its-kind for additive geothermal power.
- In FY 2013, a Geothermal Regulatory Roadmap for 10 geothermal-rich states was issued to **help developers navigate regulatory requirements** to deploying geothermal energy projects.
- In FY 2014, the Office will deploy the National Geothermal Data System, a "best-in-class" data collection and dissemination effort. This initiative aggregates **data from all 50 state geological surveys and DOE-funded projects**, and it is critical to advancing geothermal research and resource development.
- In FY 2014, the Raft River EGS demonstration project in Idaho will **complete two phases of thermal stimulation** that commenced in FY 2013, and it will complete a large injection volume hydraulic stimulation of an existing sub-commercial well.
- In FY 2014, **first-of-a-kind, high-temperature** (575°F), U.S.-made, logging and wellbore pumping systems will be **deployment ready**. Technologies include a Geothermal Ultrasonic Fracture Imager, electronic submersible pump, and downhole orientation module—representing **best-in-class temperature-rated systems**.


Desert Peak, NV


Caldwell Ranch, CA


Raft River, ID

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