



Aug 11 - McClatchy-Tribune Regional News - Stevenson Swanson Chicago Tribune

Geothermal power tapping its potential: A New York seminary and 3 million households are discovering that it is a viable alternative as oil prices keep rising steeply

When a historic seminary in the heart of Manhattan went searching for a way to cut its energy costs in an environmentally friendly way, it didn't turn to the heavens for sun or wind power but sought salvation in an unlikely direction for a religious institution. It looked underground.

Tapping the energy stored in the Earth, the General Theological Seminary, the oldest Episcopal seminary in America, is in the midst of a multiyear effort to construct the largest geothermal project on the East Coast. When completed, 20 wells reaching depths of at least 1,500 feet will supply water to heat and cool the seminary's 275,000 square feet of space.

The institution—built on land donated by Clement Clark Moore, who wrote "The Night Before Christmas"—is hardly alone in seeing the potential for geothermal power. From large power plants in the West that produce electricity to a hospital in the Chicago suburb of Elgin to homeowners looking to save money on their utility bills, geothermal power is experiencing steady but largely unnoticed growth in America.

Seeking alternatives

Say "alternative energy" and the images that spring to mind are probably huge wind turbines spinning above a farm field, or a vast array of solar panels.

But rising energy prices are bringing other unconventional energy sources to the fore, especially geothermal energy, which relies on the relatively straightforward principle that the temperature of the Earth below a certain level stays more or less constant. And the technology does not require high-visibility equipment like wind power or still-evolving methods for storing solar power efficiently.

"Drilling a hole is drilling a hole," said Maureen Burnley, head of finance and operations at the seminary, which was founded in 1817. "The technology is really simple. And the wells and the water and the Earth will be there forever."

Geothermal power is used in all 50 states, according to the Department of Energy's National Renewable Energy Laboratory.

Heat from the Earth's core radiates toward the surface, warming subterranean rocks and groundwater. Through deep holes, pumps bring hot water to the surface, where it can be used to generate electricity. Or it can be used in a heat pump, which transfers heat from the water to the air inside a building in the winter and reverses that process in the summer, when the air temperature is higher than the water temperature.

The renewable energy laboratory estimates that if all the heat trapped up to 2 miles under the U.S. were tapped, it could generate enough electricity to meet all of the country's power needs for 30,000 years.

"It's ubiquitous," said Karl Gawell, executive director of the Geothermal Energy Association, a Washington-based trade group. "It's a huge resource. But it's a largely untapped resource."

Currently, geothermal power plants account for about half a percent of the total U.S. electricity generation, providing power to an estimated 3 million households.

But that is likely to double in the next few years, with 103 new geothermal plants either under construction or planned in 13 states, predominantly in the western half of the country, where geological conditions are more favorable for large geothermal operations.

Heat pumps supply heating and cooling to about 600,000 U.S. households, according to the geothermal association, with an additional 50,000 households being added annually.

Growing presence

Institutions also are finding that geothermal systems can make sense. The entire Idaho Capitol complex uses geothermal climate control, and the new Sherman Hospital in Elgin will use a geothermal system consisting of about 150 miles of plastic pipe resting on the bottom of a 15-acre lake.

The hang-up that has prevented this seemingly inexhaustible energy source from finding widespread acceptance has been the initial cost of the system, especially deep drilling. A typical geothermal power plant costs three to four times more to build than a plant that burns natural gas, Gawell said.

But after the plant is paid for, it is much cheaper to run because the fuel—warm groundwater—costs virtually nothing.

"It's like deciding between two cars, one that costs \$10,000 and one that costs \$35,000," he said. "But the \$35,000 car comes with a lifetime supply of gas. Now that energy prices are high, people are beginning to think about what they pay for fuel."

When the seminary's geothermal system is completed, the final cost is likely to be more than \$20 million, said the seminary's Burnley. But heating oil prices have risen dramatically in the last five years, from 90 cents to \$2.80 a gallon, she said.

And the new system will allow buildings that were stiflingly hot in summer to be used for the seminary's expanding summer programs. Plus, the system will reduce the seminary's carbon footprint by an estimated 1,400 tons of emissions annually.

"It's about stewardship of the campus," Burnley said. "And it's about stewardship of the planet."

soswanson@tribune.com

