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A Megawatt in the Parking Lot

A few thousand feet below a parking lot is a heck of a lot of hot water.

RENO, Nevada -- Dean Parker will soon put a couple of 250-kilowatt natural gas boilers on eBay.

Parker, the executive director of the Peppermill Casino here, replaced four boilers with a combined capacity of one megawatt at the casino last year with a **geothermal** system that provides all of the heating and hot water required by the facility.

In all, that's 2.1 million square feet of real estate, two outdoor pools, spas, 1,635 rooms and 16 theme bars heated by, and provided with hot water from, energy from the bowels of the earth.

While Parker will keep two boilers for backup, two other boilers will get auctioned off.

One of the most stunning things about geothermal technology is the size. The now-silent boilers (see photo below) occupy the bulk of the interior space of a facilities building. The heat transfer unit -- a set of 160 plates (see photo) that extract heat from water pumped from 4,400 feet from underground and transfer that energy to the water that circulates in the casino's pipes -- looks like it could almost fit in the back of a pick-up truck.

'That's it?' is the common reaction.

The **geothermal well** looks even more mundane. The injection and recovery well heads are located under a steel door in the parking lot that takes up less space than two parking spots. The wells and necessary equipment together cost $9.5 million.

"We save $2.2 million on natural gas a year," he said.

Approximately 900 gallons of water per minute pass through the plates on average, but the entire system barely makes any sound. (See video.) Like any hotel, demand for hot water spikes at various times of the day: the Peppermill can increase the hot water it extracts to 2,200 gallons a minute.

In the coming months, Parker will connect the company's snow removal equipment to the geothermal system. And if it didn't require a major retrofit, he said he'd even consider getting some of the casino's air conditioning power from geothermal.

The sticking point for expansion **isn't the lack of underground hot water** but current regulations. In Nevada, consumers can only qualify for renewable credits on the first megawatt of power. (In total, the Peppermill consumes 6 megawatts of energy.)

"I wish we could get more," he said.