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## Hot under the cordillera

### How geothermal has green investors all steamed up

#### Paul Luke

Miles below the rocks and trees of B.C.'s surface lies a liquid treasure that may help to slake the province's thirst for clean energy.

Subterranean pools of hot water and steam, called geothermal reservoirs, are grabbing renewed attention as North America scrambles to develop sources of green power.

Geothermal energy, which uses water heated by the Earth's core to produce electricity, is staging a comeback in the U.S. that is spilling over into B.C.

"Geothermal reservoirs are being snapped up like crazy," renewable-power analyst John McIlveen says of resurgent interest in the U.S.

"Hundreds of geologists are running around there looking for them."

North America's geothermal reservoirs are restricted to the West, thanks to moving tectonic plates that bring molten rock and water closer to the surface.

Geothermal sites could generate at least 10 per cent of U.S. power by 2050 — they currently provide only 0.3 per cent — if \$1 billion is invested in research over the next 15 years, says a study by the Massachusetts Institute of Technology.

B.C. has some catching up to do. Most countries except Canada on the "ring of fire" — the zone of earthquakes and volcanic activity encircling the Pacific Ocean — are generating geothermal power.

"British Columbia has potential high-temperature [the water is heated to more than 200 C] geothermal resources in the coastal mountains and lower-temperature resources in the Interior, in northeast British Columbia and in a belt down in the Rocky Mountains," the B.C. Energy Plan released earlier this year says.

"Geothermal energy's two main advantages are its consistent supply, and the fact that it is a clean, renewable source of energy."

B.C. has 16 geothermal sites, B.C. Hydro says in its own report on green energy. Six of these offer the greatest potential for commercial development.



*CREDIT:*  
Western GeoPower Corp. is developing a geothermal energy project in the South Meager, near Pemberton.

Between them, the six could generate up to 1,070 megawatts of power, Hydro says.

Most geothermal reservoirs are found by accident, says McIlveen, who works for Jacob & Co. Securities, a Toronto-based investment bank focused on renewable power.

Farmers hit hot water when drilling wells. Oil and mining companies blunder into hidden cauldrons. Hot springs and geysers enjoyed by tourists point toward sub-surface resources.

"Geothermal uses naturally occurring heat and/or steam within the Earth at depths of 500 to 3,000 metres," McIlveen says.

"In essence, it is mining heat."

Five of the continent's seven public geothermal companies trade on Canadian exchanges. Vancouver is home to three — Western GeoPower, Nevada Geothermal Power and Sierra Geothermal Power.

Western is developing geothermal projects at leases in the South Meager, an area about 70 kilometres northwest of Pemberton, and in the Geysers Geothermal Field in California.

**South Meager is thought to have the best commercial potential of any B.C. sites.**

In the early 1980s, B.C. Hydro dug three wells, two of which went down 3,500 metres, and encountered water temperatures up to 275 C.

The utility ran a small demonstration geothermal plant at South Meager from 1982 to 1984.

GeothermEx, an independent consultant, says South Meager could support a 100-megawatt plant, enough to supply electricity for 80,000 homes.

Western GeoPower spokesman Craig Aspinall says a South Meager plant would cost about \$350 million to build and employ 30 to 45 people in operations.

South Meager could start producing in 2010, if everything goes the company's way, Aspinall says.

Nevada Geothermal, for the time being, is focusing on the U.S., where it has three development projects in Nevada and another in Oregon.

"I think the industry is going to have 10 or 15 years of strong growth," says Nevada president Brian Fairbank.

Fairbank, a geological engineer with 30 years of experience in geothermal power, rates B.C.'s geothermal potential as good to excellent.

Just as the U.S. investment community had to catch-up with Europe when it came to awareness of renewable power, so Canadian financiers have had to scramble up the geothermal learning curve, McIlveen says.

That rising interest marks a change from three or four years ago, when Canadian investors, buried in rocks, just didn't want to know.

"I started calling clients in New York who had never heard of geothermal but they told me to come down and talk because their attitude is if they haven't heard of something they want to know about it in case they miss it," he says.

"I made the same calls to Toronto accounts and they put their hands up to their foreheads said, 'Sorry, I'm up to here in mining deals.'"

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