

## **Demand for geothermal heating up**

### Costs more up front but payback is big

**MELANIE COLLISON**

CanWest News Service

*Saturday, January 19, 2008*

No one would dare cry, "Bring on global warming!" But when the cruel Arctic wind is turning our cheeks rosy, we might harbour that dark thought in our hearts. The human body is not built for the extreme temperatures we endure in Canada, and our houses are expensive to heat.

Fortunately, some clever inventors have figured out how to transfer the heat stored in the top layer of the Earth's crust into our homes.

Siphoning off geothermal energy - also called earth energy - to heat buildings is a matter of drawing out some of the solar energy absorbed by, and stored in rocks, soil and water on and near the surface of the Earth.

Whatever the climate or weather conditions on the surface, 100 metres down it's 13C.

A residential geothermal heat system - which heats your water as well as your house and reverses to cool the house in summer - already makes economic sense. It costs more up front than a traditional furnace, but the payback begins in the first month of operation.

The value can only get better as technology advances, competition increases and the relative cost of carbon-based fuels soars. Geothermal heat produces no emissions, inside or outside the house.

"The majority of residential purchasers of geothermal systems are making an ideological purchase. They're very green-minded, socially conscious, want to make a difference, and at least 50 per cent of their decision process is around the idea of being environmentally responsible," said Don MacIntyre, vice-chair of the Alberta Geothermal Energy Association.

Even the very highest-efficiency alternatives don't match the operating efficiencies of geothermal systems, he said, especially once inflation, fuel costs and greenhouse gas emissions are factored in.

"If a new home buyer is considering it," MacIntyre added, "the architect and general contractor need to know immediately. We can save money right out of the gate. This is a proven, proven technology." For operating cost, it is positioned between natural gas and electric heat.

It's certainly less expensive to incorporate Earth energy into a new house than to retrofit a system.

For example, Manitoba Hydro doesn't calculate separate averages. It combines figures for new and retrofitted systems and estimates the average at \$17,000 to \$22,000.

Boreholes must be drilled far enough apart to ensure an adequate volume of ground is available to provide heat. The deeper the boreholes can go before

they hit bedrock, the closer together they can be.

A heat-conducting fluid circulating through pipes closely fitted into the boreholes absorbs heat from the Earth. A pump inside the house extracts and condenses the heat for distribution through somewhat larger ductwork than a traditional furnace requires.

What makes a retrofit cost extra is having to replace the ductwork and remove the old system, and working around whatever is in the yard to design the borehole pattern. In new construction, the buildings can sit right over the ductwork.

"The loan program is heavily skewed towards existing customers so they don't have to go to the bank," Marinelli said. Payments are made on the monthly hydro bill.

The larger the house, the greater the advantage because the only continuing cost is the electricity for the pumps, fans and heat exchangers.

"For a larger home, a rural home, payback is in the neighbourhood of 10 years," Marinelli said.

The pricey beach access Pedley Heights in Invermere, and the Sun Rivers golf resort in Kamloops, both in British Columbia, are the leading geothermal communities in Canada.

The West Coast and the Interior of B.C. have an advantage. They're mild enough year-round to make air-source, as well as ground-source, heat pumps practical.

Natural Resources Canada's office of energy efficiency has charts that show which pumps are most efficient for the climate in each part of the country, and offers subsidy information.

Because a geothermal heating system has to be sized right for your house and the conductive tubing has to fit just so into the boreholes, among other technical considerations, it is essential to use a qualified contractor to do the installation.

It's also helpful to do your homework, so you can understand what you're paying for. Natural Resources Canada's website is a good starting point.

Go to <http://oee.nrcan.gc.ca/residential/new-houses.cfm>, click on "home buyers" and find a wealth of information about geothermal systems. Or, go to <http://oee.nrcan.gc.ca>, click on "publications," then "heating and cooling," followed by "Heating and Cooling with a Heat Pump." Information about the ecoENERGY Retrofit subsidy is at <http://oee.nrcan.gc.ca/residential/personal/retrofit-homes/retrofit-qualify-grant.cfm> Edmonton Journal

© The Gazette (Montreal) 2008

CLOSE WINDOW

---

Copyright © 2008 CanWest Interactive, a division of CanWest MediaWorks Publications, Inc. All rights reserved.