

Geothermal systems heat up savings

Property owners can save up to 70 per cent on bills

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FOR THE CALGARY HERALD

When Donna and Dave Rae were planning a new resort development near Columbia Lake called Spirits Reach, they were committed to creating a low impact, sustainable community.

That's the major reason the founders of Columere Park Developments decided to use geothermal systems to provide heating and cooling for the homes in Spirits Reach.

Unlike a traditional heating system that burns fossil fuels such as natural gas or propane, geothermal systems tap into the earth's warmth to provide heat in the winter and cooling in the summer.

"One of our main objectives (with Spirits Reach) was to be stewards of the environment, so nature would come first in a lot of the things that we are doing," says Donna Rae. "In terms of development, I think that's something that we need to make more of a priority as we develop land in the future."

Because the sales office at the project is located in one of the homes, Rae says they have already had a chance to experience geothermal first-hand.

She says it works great and people don't even realize that the building is being powered by geothermal, except for the cost savings.

"There are the savings in heating costs, but you also have a reduction in your cooling costs," says Rae. "In terms of this home, the energy costs are quite minimal compared to someone with electric heat or propane heat here in the valley."

The use of geothermal and other

advanced technologies led Spirits Reach to receive a Gold rating in B.C. Hydro's Power Smart Program, which made it the highest rated development in the East Kootenays, she says.

Due to the potential energy savings, the use of geothermal systems in recreation property has been growing by leaps and bounds, with both developers and individual property owners deciding to go with the green technology.

Larry Peters, director of marketing and strategic business development with REACT Energy in Calgary, says the cost of installing a geothermal system can vary in cost depending on a wide variety of factors.

The system must be custom designed for each home, taking into account things like the energy needs of the building in that particular climate, says Peters.

Other aspects include the rockiness of the ground and how much space is available for the underground loops of pipe that provide the heat exchange.

The cost of energy to power a traditional heating/cooling system in the area will also factor into the question of how long it might take to pay off a geothermal system, says Peters.

If your recreation property is located somewhere like Alberta where cheap natural gas is available to power a furnace, the yearly savings from geothermal might be less.

However, if you would have to rely on propane or an electrical furnace, the savings each year could be substantially more.

To give you an answer on the pay-

back, it can be as little as five years or as long as 20 years," says Peters.

To understand the variables in the cost of a geothermal system requires knowing a bit more about how the technology actually works.

The term, geothermal, itself can be a bit misleading because it has been used to describe several very different types of alternate energy systems. One type of geothermal technology makes use of superheated water deep within the earth to power large generating plants that produce electricity from steam generators.

That's why the term geoelectric, geothermal heat pump systems, or earth systems have been created to describe the technology used for individual buildings such as cabins or cottages.

The Canadian GeoExchange Coalition (CGC) is a non-profit industry group that is working to promote the use of geoelectric/geothermal systems throughout Canada.

The technology can save developers or consumers up to 70 per cent on their current heating bills because it transfers existing heat without combustion, says the CGC.

There are several different ways a geothermal system could be installed at your recreation property, but the vast majority rely on what is called a closed loop system, says Peters.

It involves drilling deep vertical holes to install piping that carries a type of antifreeze to draw warmth from the soil, or burying the lines horizontally a few feet under the frost line.

Peters says installing horizontal systems is usually less expensive, but it does require having enough land to bury the necessary length of pipe, which again is determined by the energy needs of the home.

A typical city-size lot might require a vertical system, while larger lots common with recreation property usually have room for a horizontal system, he says.

The cold antifreeze circulating through the pipes absorbs heat from the warmer ground and delivers it to a heat pump, which Peters says is where the real magic happens.

A heat pump works using the same technology that allows a refrigerator to cool food, moving heat from inside the fridge and transferring it into the kitchen through exterior coils.

A geothermal heat pump works in reverse. During the winter, the coils



Photos, Calgary Herald Archive

Developer Peter Daniel with part of the underground pipes used in the geothermal heating system in the Aquattro project in Victoria.

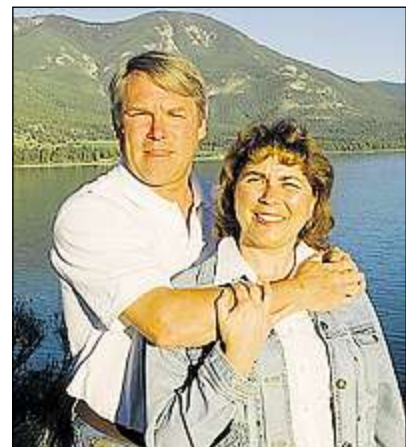
or pipe loops draw heat from the ground for use in the home, while in summer heat is carried from the home and absorbed back into the ground.

Peters says a geothermal system has plenty of flexibility and advantages over a traditional heating/cooking system.

While geothermal systems distribute hot air throughout a home using a forced air system, they can also power in-floor heating, which normally would require a boiler in addition to a regular furnace, he says.

Geothermal also provides cooling during the summer without the need for an air conditioning compressor. "Our equipment has the unique advantage of coming out from the factory with all those capabilities in one box," says Peters. "So we've now effectively eliminated three pieces of equipment and replaced it with only one."

If someone is constructing a new vacation home, installing a geothermal system may not be much more expensive than paying for all three components needed for a traditional



Dave and Donna Rae of Columere Park Developments at Spirits Reach in the Columbia Valley.

system, he says.

Geothermal also has the advantage of a built-in backup system, which is designed to use a secondary source of energy to provide heat in the event of a failure of the main system.

Compare that with a regular furnace, which if it breaks down will leave your vacation home without heat, says Peters.

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