

ENERGYwise

FOR YOUR HOME



What is a Ground Source Heat Pump (GSHP) System?

A GSHP system is an electrically powered heating and air conditioning system that uses the earth's ability to store heat in the ground. The GSHP system operates based on the stability of underground temperatures. The ground a few feet below the surface has a very stable temperature throughout the year, depending upon the location's annual climate. A GSHP system uses that available heat in the winter and puts heat back into the ground in the summer. A GSHP system differs from a conventional furnace or boiler by its ability to transfer or "pump" heat, versus the standard method of producing heat. As energy costs continue to rise and emissions become a concern, GSHP systems may hold a solution to address both of these concerns.

How does it work?

GSHP systems require a closed-loop of buried plastic tubing next to your home, a pump pack and a water-source heat pump. The purpose of the tubing, which can be installed either horizontally or vertically, is to transfer heat to and from the ground. The amount of plastic tubing that is necessary depends on the size of the home being conditioned. Typically, one loop (400 to 600 feet) has the capacity of one ton or 12,000 British thermal units per hour (BTU/h). An average house will range from 3 to 5 tons.

The second component is a pump pack, which sends the water through the tubing and through the water-source heat pump.

Lastly, the water-source heat pump is the unit that replaces the existing furnace. This is where the heat from the tubing is transferred allowing for heating or cooling of your home.

Ground source heat pumps have the ability to capture heat at one temperature reservoir and transfer it to another temperature reservoir. In a closed loop system a water and antifreeze mixture circulates through the tubing transferring heat to and from the water-source heat pump. Because the earth's temperature remains at a relatively constant 50 degrees year round, GSHP systems are the most energy efficient heating and cooling systems available (300%-400%),

regardless of the outdoor air temperature. In addition, waste heat from the air conditioning cycle can be used to provide free water heating during the summer.

Ground Source Heat Pump (GSHP): Is it right for your home?

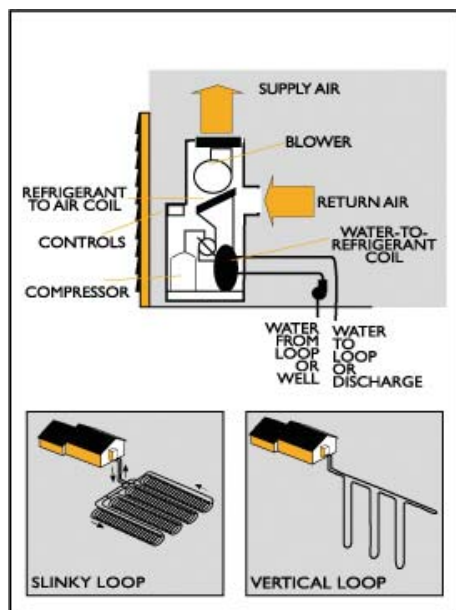
A GSHP system can be installed in and accommodate a residential home of any size, anywhere including both single- and multi-family units, and new or retrofit. Most lot sizes can hold the buried plastic tubing under lawns, landscaped areas, and driveways. Many homeowners choose to retrofit their home with a GSHP using the ductwork that is already there. Your dealer/installer will be able to determine ductwork requirements and if any minor modifications are needed.

GSHP systems provide maximum efficiency for your home

- The most efficient residential heating and cooling systems available today
- Heating efficiencies 50 to 70% higher than other heating systems and cooling efficiencies 20 to 40% higher than available air conditioners
- Energy savings of 20 to 50% which results in recouping your investment in only a few years

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As energy costs rise and emission concerns continue, GSHP systems may hold a solution to both



Source: International Ground Source Heat Pump Association (IGSHPA)

Other benefits for your home

- Can be a combination heating/cooling and hot water heating system
- Some GSHP systems can save you up to 50% on your water-heating bill by preheating water
- Made of mechanical components that are either buried in the ground or located inside the home – no exposed equipment outdoors
- About the same size as a traditional heating/cooling unit
- Plastic tubing carries up to a 50-year warranty
- Very quiet, providing a pleasant environment inside and outside the home
- No open flame, flammable fuel or potentially dangerous fuel storage tanks

Get Your Federal Tax Credit

New for 2009, Federal Tax Credits are available for 30% of the cost of buying and installing a GSHP system. For complete details, go to www.energystar.gov or contact your tax accountant.

Who can participate?

To qualify for a GSHP rebate, the customer must live in the member cooperative service territory.

What you'll receive

\$200 per ton rebate. If you currently heat with electricity or are considering heating with electricity the rebate may be more – as much as \$400 per ton!

What you need to do

1. As a member of Lake Country Power you are responsible for checking with your electric cooperative to verify funding availability and program parameters.
2. Request a GSHP Rebate Application from Lake Country Power.
3. Complete the GSHP Rebate Application and include proof-of-purchase and documentation of efficiency ratings.
 - Installation must be complete before rebate will be issued
 - Itemized invoices from equipment vendors/installers must accompany rebate application
 - Invoices must itemize labor charges, quantity and price of the equipment installed
 - Invoices must include manufacturer and model numbers for the installed equipment
 - Lake Country Power reserves the right to conduct inspections
 - Only new and complete ground source heat pump systems qualify

Contact us

To save energy and money, call Lake Country Power at 800-421-9959.



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Cooperative