

## Economic Simplicity

Geothermal systems are energy-efficient packages that help you budget your household expenses. With a geothermal system, you can escape the headache of balancing numerous utility bills. Each month, you will receive one bill from your electric cooperative for your home's heating, cooling and water heating.

## Incentives Support the Geothermal Choice

If you're still wondering if a geothermal heat pump is right for you, here are some additional reasons to invest in a geothermal system. Not only will you be placed immediately in the quiet comfort of energy-efficient heating and cooling, but a geothermal system can also put cash in your pocket. We offer financial incentives to customers who install a geothermal system. Cash rebates, special heating rates, low-interest financing and state and federal tax credits may be available.

Geothermal systems provide optimum performance, dependable service, high efficiency and much more. Once the system is installed, you will reap the benefits of lower utility costs year after year, allowing a quick recovery of your original investment.



A typical horizontal slinky loop installation

For more information visit:

**U.S. Department of Energy (DOE)**  
**Energy Efficiency and Renewable Energy**  
[www.energysavers.gov](http://www.energysavers.gov)

**Iowa Energy Center**  
[www.energy.iastate.edu/efficiency/residential](http://www.energy.iastate.edu/efficiency/residential)

**Iowa Geothermal Association**  
[www.iowageothermal.org](http://www.iowageothermal.org)

**Geothermal Heat Pump Consortium**  
[www.geoexchange.org](http://www.geoexchange.org)



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G E O T H E R M A L



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## Geothermal Energy is an Unlimited Resource

The yard around your home contains a vast reservoir of thermal energy to heat your home. The sun and surrounding earth constantly replenish this resource. With a geothermal heating and cooling system, your lawn becomes a permanent energy source. You will enjoy the benefits of the most comfortable, reliable and cost-efficient heating, cooling and water heating system available on the market today.

## How a Geothermal System Works



Geothermal is an electrically powered system that takes advantage of the earth's constant temperature using a water-based solution circulated through pipes buried in the earth. In cold weather, this solution absorbs heat from the earth and carries it to the geothermal unit. The geothermal system then concentrates this heat and delivers it throughout your home.

In warm weather, the process is reversed. Excess heat is carried from your home into the earth. You keep refreshingly cool during even the hottest summer day. In addition, the geothermal system can be integrated with your water heater to provide low-cost hot water. This is done by a heat recovery system that captures waste heat from the compressor.

## The Smart Alternative to Fossil Fuels

The most efficient gas furnaces today are only one-fourth as efficient as a geothermal system. Geothermal is the most efficient type of heating system available today. It is the smart, efficient alternative to fossil fuels (oil, propane and natural gas) because the system works with the earth by moving heat rather than making heat. Because heat always moves from hot to cold, geothermal systems can efficiently warm and cool your home by transferring heat energy to or from the earth without requiring the combustion of fossil fuel in your home.

## Benefits



### Endorsements

The U. S. Environmental Protection Agency and Department of Energy rank the geothermal technology as the most efficient and environmentally safe heating and cooling option available.

### Durability

Geothermal systems last longer than conventional systems because they are self-contained systems housed entirely within your home and underground. They are sheltered from extreme outside weather conditions that conventional systems must endure.

### Affordability

Geothermal heat pumps can cut your home heating costs by 50% in the winter and cooling costs by 30% in the summer while also providing low-cost hot water for your home.

### Low Maintenance

Geothermal heat pumps have fewer mechanical components, making them more reliable and less prone to failure. The ground loop has an expected life of over 50 years and requires no maintenance.

## Comfort

Geothermal systems are very quiet and provide even temperature and humidity to create a pleasant environment.

### Here's what some people said about geothermal heat pumps...

"Buy it. You'll never regret it. Every time I get my heating bill, I know it would be a lot higher if I'd gone with LP."

"Now, our heating and air conditioning bills are only 25 to 30 percent of the total we paid in our previous home, which was similar in square feet."

"I can't believe how even the heating and cooling is. The temperature stays pretty even. And it's very quiet, too."

"We installed a geothermal heat pump and the heat bills are low. It provides a nice, even heat. We would highly recommend the geothermal heat pump."

## Flexibility

Geothermal heat pumps can be placed in new buildings or used as retrofits in existing buildings. Today, many homeowners are requesting multi-function geothermal units that deliver in-floor water heating while providing a forced air system in another part of the house.

## Peace of Mind

Geothermal systems have no flues or flames. They create no dangerous carbon monoxide and come with a sealed refrigerant circuit. There are no unsightly tanks or noisy outdoor equipment to bother you or your neighbors. A geothermal system is an attractive option for quiet, safe, clean and environmentally friendly comfort in your home.

***Installing the right size equipment for the home is essential to getting the best performance and comfort. Many homeowners believe bigger is always better when buying new heating and cooling equipment. In reality, a system that is too large will not keep your home comfortable because of frequent "on-off" cycling. Incorrect sizing can also put stress on system components and shorten the life of the equipment.***

## Connecting to the Earth

It's surprisingly simple. The most popular method of installing geothermal units in Iowa is the closed loop system, which circulates a water-based solution through small-diameter underground pipes. These pipes enter the home below the ground and attach directly to the indoor equipment. You can select from several closed loop versions. Available land space, soil type and amount of rock near your home will determine which installation is best for you. All installation types are equally efficient and offer the same high performance.



**Pond or lake loops** are economical to install when an adequate body of water is nearby. Coils of pipe are simply placed on the bottom of the pond or lake.

In some areas, the home's natural water supply can provide a direct energy source in what is called an open loop system. This application can be the most economical type of geothermal system when an existing adequate water supply is available.



**Horizontal loops** are often considered when adequate land surface is available. Pipes are placed in trenches below the frost line and are 100 to 350 feet long. Various loop arrangements are possible. The majority of horizontal installations in Iowa use a slinky coil loop. This design allows three times the amount of pipe to be installed (laid upright or flat) in a trench.



**Vertical loops** are the ideal choice when available land surface is limited or rock lies close to the earth's surface. Drilling equipment is used to bore small-diameter holes from 50 to 200 feet deep.