



Lincoln Electric Cooperative, Inc.

Your Touchstone Energy® Cooperative 

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www.lincolnelectric.coop

Ground Source Heat Pumps

Thank you for your inquiry about ground source heat pumps. This system uses the latest technology to give you the most efficient heating and cooling system available on the market.

Lincoln Electric Cooperative offers a rebate program for a portion of the cost of installing a ground source heat pump in your home.

Here are answers to the most common questions we've encountered:

Q. How does a heat pump work?

A. A heat pump does not create heat, but rather it moves heat from one place to another. Your refrigerator is a heat pump that moves warm air from inside the box to outside making inside the box colder. A ground source heat pump collects heat energy stored in the earth and transfers it inside your home.

Q. I've heard heat pumps don't work very well in this area.

A. Some air source heat pumps, especially the older models, don't perform well when the outdoor temperature drops below freezing. Ground source heat pumps connect with the earth and are not affected by freezing temperatures.

Q. How is the heat transferred between the earth and my home?

A. The earth has the ability to absorb and store heat energy. To use that stored energy, heat is extracted from the earth through a liquid medium (groundwater or an anti-freeze

solution), and is pumped to the heat exchanger of the heat pump. There it's converted into usable heat for the home.

Q. How much can I save?

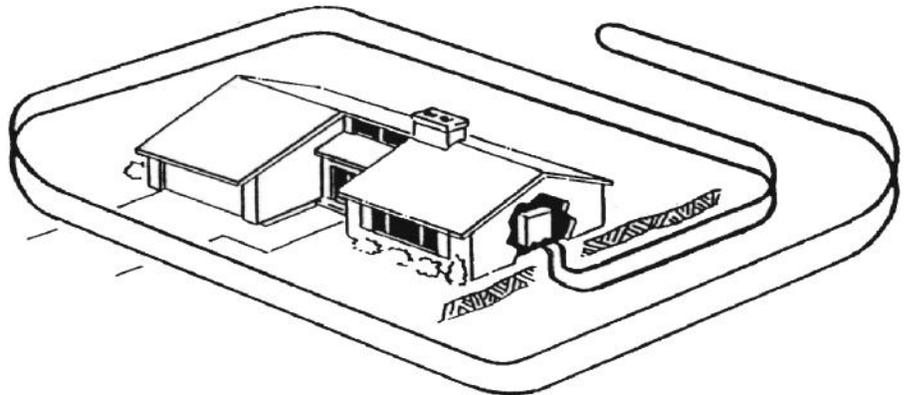
A. A ground source heat pump is three to four times more efficient than a conventional furnace. The unit is moving heat not creating it, so the only electricity being used is to run the compressor and fans. It will cost less to operate than a high efficiency natural gas furnace or wood stove, and much less than a propane or electric furnace.

Q. What applications are eligible for a rebate?

A. Only in new construction or the replacement of an existing forced air electric furnace or an existing air source heat pump.

Q. What about tax credits?

A. Ground source heat pumps qualify for a Montana income tax credit of \$1,500. See Montana's Tax Form ENRG-A. Federal tax incentives are a whopping 30 percent of the system cost. Verify your system qualifies by asking your dealer for a Manufacturer's Certification of tax credit eligibility, and talk to your tax advisor.



Horizontal Loop System

Q. What about a financing program?

A. Montana's Department of Environmental Quality offers an Alternative Energy Revolving Loan Program. You can get more information at www.energizemontana.com or call 406-841-5243.

Q. What incentives are offered by the Co-op?

A. You can receive a \$3,000 rebate.

Q. How does the cooling work?

A. In the cooling mode, a ground source heat pump takes heat from indoors and transfers it to the cooler earth. You can change from heating to cooling with a flick of a switch on the indoor thermostat.

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Ground Source Heat Pump Program

Q. How does it connect with the earth?

A. The actual connection is made either through groundwater - an open loop system like a well, or an underground, closed loop system. Most installations use a closed loop.

Q. How does the closed loop work?

A. The closed loop uses a continuous loop of a special plastic pipe, buried to make contact with the ground.

Q. Where is the buried loop located?

A. That depends on land availability and terrain. Most closed loops are trenched horizontally in yards adjacent to the house.

Q. How deep and long are the trenches?

A. Trenches are normally four to six feet deep. Plastic pipe is placed in the trench in multiple layers. Trench length will depend on size and insulation levels of the house.

Q. Do I need separate ground loops for heating and cooling?

A. No. The same loop works for both. The only thing that happens when changing from heating to cooling, or vice-versa, is the flow of heat is reversed.

Q. What if there's no room for a horizontal loop?

A. Closed loop systems can also be vertical. Holes are bored to about 120 to 180 feet. U-shaped loops of pipe are inserted into the holes, and the holes are backfilled with sealing solution.

Q. What is the pipe made of?

A. Closed loop systems should only be installed using high-density polyethylene or polybutylene plastic. These pipes are inert to

chemicals normally found in the soil, and are guaranteed for 50 years. PVC pipe should not be used under any circumstances.

Q. What is an open loop system?

A. An open loop system is also known as a "pump & dump" system. If you have an abundant water supply, you can pump this water supply through your system, use the heat from it and then put the water back into the aquifer.

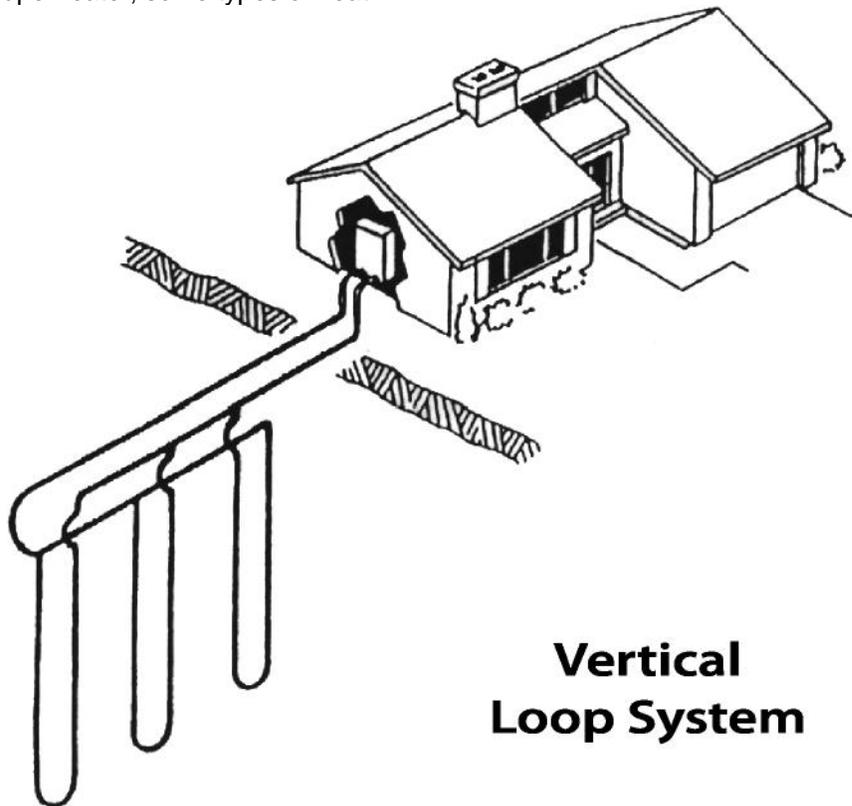
pumps can save you up to 50% of your water heating bill. Desuperheaters are standard on some units, and optional on others.

Q. How can I find out more information?

A. Call the Coop office. We can tell you which installers specialize in ground source heat pumps. Only approved installers qualify for our rebate program. Call Brent Holder @ 889-3301.

Q. Can a ground source heat pump also heat water?

A. Yes, by using a device called a desuperheater, some types of heat



Vertical Loop System

Geothermal Heat Pump Installers

Lincoln Electric's approved installers are listed on our Certified Heat Pump Contractor List.



**Lincoln Electric
Cooperative, Inc.**

Your Touchstone Energy® Cooperative 

Residential Ground Source Heat Pump Rebate

Thank you for inquiring about our Ground Source Heat Pump Rebate. Lincoln Electric Cooperative will pay you a \$3,000 rebate if you purchase and install a ground source heat pump using an approved contractor. **Only applications eligible for a rebate are in residential new construction, or the replacement of an existing forced air electric furnace, or an existing air source heat pump. Replacement of an existing ground source heat pump with a new ground source heat pump does not qualify for rebate. Note: If the majority of ductwork is installed in an unconditioned or vented crawlspace the ducts must be insulated and sealed to PTCS program requirements by an installer approved to do duct sealing (Must have Duct Sealing checked on Certified Heat Pump Contractor List).**

Here's how to qualify for the rebate:

- 1) Purchase a geothermal system and have it installed in an approved application by a vendor on our Certified Contractor List.
- 2) Fill out the rebate form on next page.
- 3) Have your installer fill out the form verifying that the system meets the specifications.
- 4) Have your installer attach the appropriate information as referenced in the form.

Disclaimers: Lincoln Electric Cooperative hereby disclaims any and all implied or express warranties (including but not limited to implied warranties of merchantability or fitness for a particular purpose) and shall not be responsible for any representation or promise with respect to the equipment, materials, or labor required for the installation of the equipment on the premises, or the cost of such equipment, materials, and labor.

Release: As part of the consideration for this agreement, participant hereby releases and shall indemnify, hold harmless and defend Lincoln Electric Cooperative from any and all claims, losses, harm, costs, liabilities, damages, and expenses (including attorney's fees) of any nature whatsoever arising directly or indirectly out of or in connection with the installation of space heating equipment at the premises or any material and labor required for such installation.

Verification: Lincoln Electric Cooperative shall have the right to verify equipment installed on the premises. These residential energy efficiency programs are ongoing as part of Lincoln Electric Cooperative's continued commitment to energy efficiency. The programs are subject to change without notice.