

GEC **GLACIER ELECTRIC** COOPERATIVE, INC.

410 East Main Street, Cut Bank, MT 59427
406-873-5566 or 406-338-5400
www.GlacierElectric.com

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.

Flathead Electric Cooperative offers a rebate program for part of the cost of implementing 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 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. In order to receive a rebate the system must be installed by an approved installer on our list.

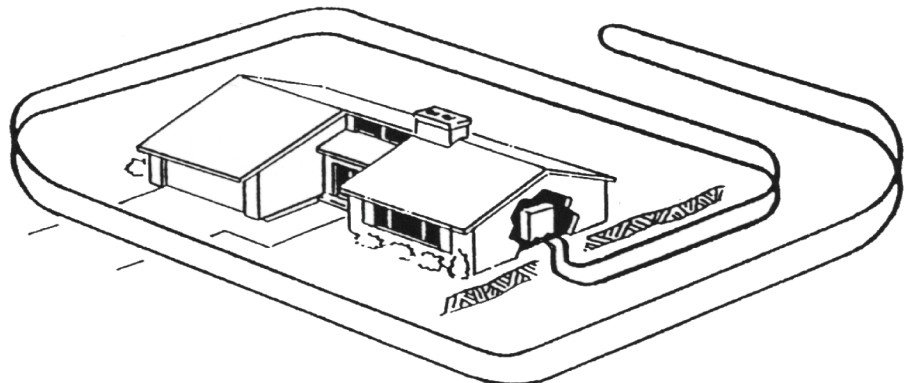
Q. What about tax credits?

A. Ground source heat pumps qualify for a Montana tax credit of \$1,500.00. Please see Montana's Tax Form ENRG-A.

The Federal Tax Credit is 30% of the system cost. Please consult your tax advisor for details.

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.



Horizontal Loop System

Glacier Electric Cooperative, Inc.

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?

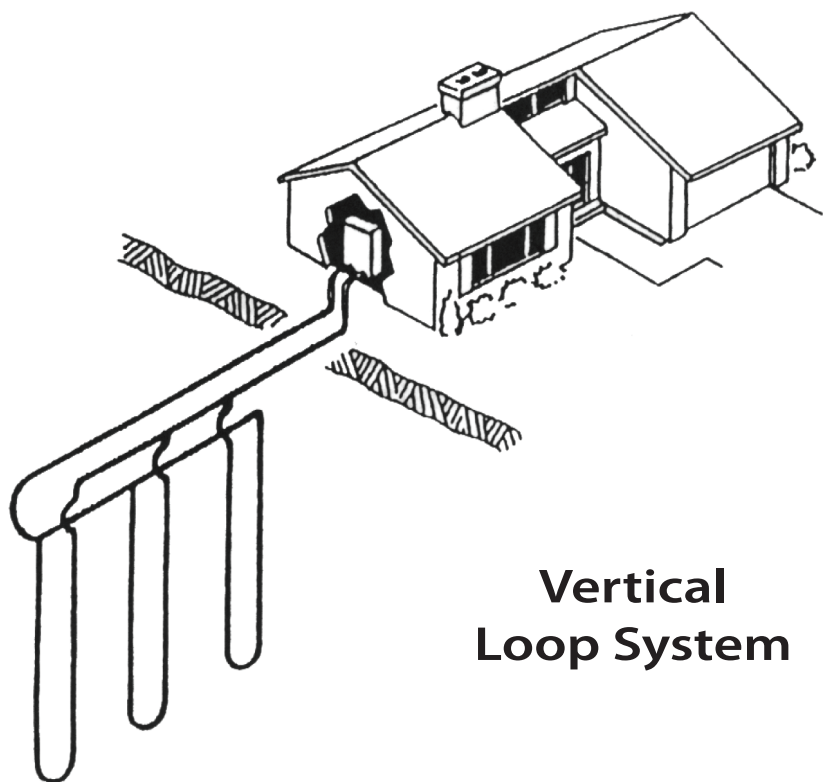
A. An open loop system is also known as a "pump & dump" system. If you have an abundant water supply, you can pump this water supply through your system, use the heat from it and then put the water back into the aquifer.

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

A. Yes, by using a device called a desuperheater, some types of heat 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 how much it will cost for my home?

A. To find out your costs please contact one of the installers on our approved installers list. They will be able to help you with an estimate.



**Vertical
Loop System**

**Geothermal Heat Pump Installers can be found on
our approved installers list.**

Residential Ground Source Heat Pump Rebate

Thank you for inquiring about our energy efficient Ground Source Heat Pump Rebate program. Glacier Electric Cooperative will pay you a \$3,000 rebate if you purchase and install a closed-loop or an open loop system.

- Replacement of an existing ground source heat pump with a new ground source heat pump does not qualify for rebate.
- The majority of ductwork must be located in the basement or a conditioned crawlspace.
- If the crawlspace has vents they must be sealed.
- Only one geothermal rebate per home regardless of the number of systems installed.
- Installer must be IGSHPA accredited or provide proof of successful completion of an IGSHPA installers workshop and exam.

Here's how to qualify for the rebate:

1. Purchase a geothermal system and have it installed by a vendor on our approved installer list.
2. Fill out the rebate form. (See back)
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: Glacier 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 Glacier 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: Glacier Electric Cooperative shall have the right to verify equipment installed on the premises. These residential energy efficiency programs are ongoing as part of Glacier Electric Cooperative's continued commitment to energy efficiency. The programs are subject to change without notice.



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\$3,000 Residential Ground Source Heat Pump Rebate

Date ____/____/____

Name and Address for Rebate Check:

Account # _____

Name: _____

Address: _____ Phone: _____

 City State Zip

Name and Address where installed:

Name: _____

Address: _____ Phone: _____

 City State Zip

To be filled out by an approved installer:

(will be returned if incomplete or missing forms)

Manufacturer: _____ (attach a copy of invoice)

I have attached copies of:

☐ **Manufacturers Start up Form & IGSHPA #** _____
 (Must be done for approval) Date Faxed to PTCS: ____/____/____

☐ **New Geothermal PTCS Heat Pump Start-Up Form**
 (found on the PTCS website) Date Faxed to PTCS: ____/____/____ Approval # _____

☐ **PTCS Duct Sealing Form** (if duct sealing is required)

☐ **Balance Point Work Sheet and Whole House Heating & Cooling Calculation (ACAA Manual J)**
 or

☐ **PTCS Heat Pump and Central Air Conditioner Sizing Calculator**

☐ **Copy of AHRI Certificate**

☐ **Vendor Invoices**

Installer Company Name: _____

Installer Signature: _____ PTCS# _____

I certify that this system was installed in accordance with Flathead Electric Cooperative specifications.

Home Details:

- ☐ **Site Build**
☐ **Manufactured Home**

Foundation Details:

- ☐ **Crawl Space**
☐ **Half Basement**
☐ **Full Basement**

Build Date:

- ☐ **Pre 1980**
☐ **1980-1992**
☐ **Post 1992**
☐ **New Construction**

Type of Loop:

- ☐ **Open**
☐ **Closed**

ARI Efficiency Rating: _____

C.O.P.: _____

I certify that this heat pump was purchased and installed at the above address. I will allow a representative of Glacier Electric Cooperative, Inc., to verify installation of the heat pump. I understand that it is my responsibility to install the heat pump to meet all applicable codes. Glacier Electric is free from all liability arising from the installation or operation of this heat pump.

Buyer Signature _____

Date _____

Co-op Representative Signature _____

Date _____

* Allow up to 4 weeks for processing.

June 2012