GEOFORCO-OPS
A GEOEXCHANGE INITIATIVE

Starting or Improving a Geothermal Heat Pump Incentive Program

This guidebook is meant to provide the electric cooperative information on how to start a new geothermal incentive program or give ideas to a cooperative that is looking to enhance or change their existing program. Much of the information contained in this document is based off successful programs from cooperatives around the nation.

GeoExchange is here to help and has people on staff with years of experience or we can put you in contact with other cooperatives that are running successful geothermal incentive programs.

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I. Organizational Buy-in on Geothermal Heat Pump Technology

a. Determine how the upper-level administration and board feel about the benefits of geothermal technology (CEO, CFO, Engineers, Board). Do they fully understand the technology and the benefits for your utility and your membership?
    i. Create a presentation for your management team and/or the board that focuses on the benefits for the cooperative.
        1. Demand reduction (show graphs and scenarios based on number of geothermal heat pumps on a system)
        2. Increase in revenues based on a scenario that converts a percentage of gas heating systems to electric.
        3. Decreases in carbon and other GHG emissions based on how many geo systems are installed.
        4. Load Factor improvement benefits (if the utility has a lot of members that heat with gas)
        5. Alternative renewable that you can promote to the membership that only benefits, not hurts, the cooperatives bottom line.
    ii. Create a second presentation or have alternate slides demonstrating the benefits to the members.

b. **If the program is approved consider tracking all geothermal installations with details about the system size, what it replaced or competed with, and any other detail that can help when calculating long term benefits of the program.*
    i. An annual summary of the number of units and the associated savings should be developed, even if not required.

II. Develop Rebate Program Rules and Requirements

a. Decide if you are going to have criteria that must be met to get the rebate.
    i. Sizing Requirements: Delta T parameters based on set indoor/outdoor temperatures. The Delta T criteria will determine if you want the geothermal unit to heat 100% of the

time (likely using a larger unit) or whether you will allow a supplemental heating source to kick in during extreme weather conditions. This type of unit will heat only X% (less than 100%) of the time and then use electric strip heat to supplement the heat output.

1. Example: 70° Indoor Temperature / -10° outdoor temperature = 80°Delta T (Depending on your geographical location, the higher Delta T's can result in a unit that is able to provide heat 100% of the time)
2. *This decision may depend on your overall goals of the program. If reducing your peak demand on the utility level is important, you want to restrict any electrical resistance use in the heating system.
   *Sizing to 100% heating load can reduce or eliminate future high bill discussions because there will be no electric resistance heating involved.
3. Decide if you will require submission of a design calculations (Manual J report).

ii. Loop Requirements: Depending on soil conditions or the climate in the area, you may consider requiring a minimum length of loop material for each type of loop install. This can help ensure the geothermal heat pump will perform as expected during extreme weather events. (Ex: verticals must be drilled 200' instead of the standard 150' for the area)

1. You may also require a loop design to be submitted using easily accessible software. This loop analysis will confirm the unit will perform as sold.

iii. Ductwork Requirements: Ductwork can be in many locations and there are potential issues that can arise if it is not properly installed or maintained. Potential issues may be lack of insulation, leaky connections, or poor design. You may wish to request a few things.

1. Must be insulated in appropriate areas such as attics, crawlspaces, and unheated basements.
2. All joints must be taped or use mastic to seal leaks.

3. No flex pipe may be used on main trunklines due to inefficient airflow.

iv. Emergency Heat requirements: Even if a unit is sized for 100% heat capacity, the option of 'emergency' strip heat may be allowed. However, since the strip heat will cause issues with overall demand, you may wish to require certain restrictions.
    1. Emergency strip heat must be put on a separate breaker that is turned off unless loop pumps fail.
    2. Emergency strip heat must not be wired in until a failure occurs, and it is needed for temporary heat.

v. Inspection Requirements (cooperative and/or local requirements): The utility inspection may be nothing more than an onsite visit to verify the unit that was submitted for rebate was the unit installed.
    1. Require proof of passing local inspection.

vi. Training Requirements: What kind of certifications must the contractors have for their installations to qualify for the rebate.
    1. Example: Contractors must be trained by IGSHPA or another agency to qualify for a rebate.

vii. Do you allow open loop systems or DX systems? Open loop systems (a.k.a.; pump and dump) may not be allowed in your jurisdiction and must be properly installed and maintained. DX (Direct Exchange) systems can have corrosion issues in the loop piping in certain areas of the country.

b. Create Program Requirement documents that can be kept on file and/or handed to contractors and/or members. (Not recommended it be made policy or it is harder to adjust in the future).
   Example: ***(See Sample Form #2 in Section VII)***
c. Consider creating a checklist to track all your requirements. This will assist in making sure you cover all that is supposed to be done and will also be a record for future questions.
   Example: (See Sample Form #1 in Section VII)
d. Show the process a contractor and member need to follow to get the rebate.
    1. Examples:

a. You may wish to have the manual J report turned in before the project starts so that any issues can be addressed before completion.
b. All invoices must be turned in once the unit is installed and active.

e. Decide on a rebate amount and other incentives you may wish to pair with a rebate.
Example: (See Example #1 in Section VII)

III. Outreach to Contractors

a. Call and/or visit local contractors that install geothermal heat pumps.
b. Vet the contractor:
    i. How many have they installed?
    ii. Can they provide customer references to judge the quality of their work?
    iii. Are they IGSHPA certified installers? (many contractors will go through a training that is channeled through their manufacturing brand that is actual IGSHPA training)
c. Give the contractor the requirements document you created so they know what is expected.
    i. You may want to consider hosting a contractor meeting at your cooperative to meet all the participating contractors and lay out the rules and requirements.
        1. Consider making this an annual event to keep your contractors updated on changes to your programs or the industry.
d. Have a blunt conversation with each contractor that it is a privilege and advantage to be on the contractor list. Being on the list is free advertising. Make sure they also understand that if they don't follow the rules or if there are constant issues with the installation or sizing you will remove their name from the list.

IV. Create a Qualified Contractor List

a. This list is something you can hand to your membership when asked who installs. You are not promoting any one contractor, but you still

retain some input because you would not allow an undesirable contractor to be on the list.

b. It is this step that can allow you to have as much control over your program and contractors as you desire.
    i. Example: Require contractor to be certified installers and submit certification certificates before the system can qualify for a rebate.
    ii. Example: Require all contractors to give written verification that ductwork is sized properly for the unit installed (retrofit issues mostly)
    iii. Example: Require all contractors to give written verification that they have installed the proper amount of loop no matter the number of bores or trenches.
c. Make sure to keep the list updated. Add and subtract as needed and keep contact information up to date.
d. It is likely a member will ask your opinion on different bids. You can advise as a neutral party to compare bid details, but never share these details with other contractors.

V. Marketing Your Geothermal Rebate Program

a. Add a section on your website that covers your geothermal rebate program. This should be with other rebates but have a section of its own.
    i. Have a section that explains how geothermal heat pumps work.
    ii. Have a section that explains all the benefits of geothermal heating and cooling.
    iii. Have a section that discusses all the requirements that must be met in order to qualify for the incentive.
b. Create ads to run on your social media platforms.
    i. Create new ads or look to organizations like GeoExchange, IGSHPA, and your state association for any ads they are willing to share.
c. Put articles about geothermal in your monthly newsletters, statewide magazines, or any email blasts you send to members.

d. Mention your geothermal incentive programs on your bills either as a bill stuffer or if you get a limited amount of free space for a small message.
e. Hold Energy Efficiency Events to educate your members on how they can save energy and highlight geothermal.
f. If your Annual Meeting has areas for information tables or booths, consider adding one that covers energy efficiency or your cooperative's rebate programs.
g. Work with your statewide organization, G&T, and/or sister cooperatives to create a promotional campaign. This can give you discounts on advertising through bulk purchasing.
h. Make sure any employee that has contact with the membership has basic knowledge of geothermal technology and your available incentives and requirements (consider GEO 101 training through IGSHPA)

VI. Department Tasks & Knowledge

a. CSR, MSR, Front Desk Employees
    i. Should have basic knowledge of how geothermal heat pumps work and the benefits (GEO 101 from IGSHPA can provide education).
    ii. Should be familiar with the details of the incentive programs (cost per ton, flat amount, rate, etc.).
    iii. Should know that there are requirements that must be met to be eligible for the incentive (they do not need to know the details).
    iv. Main Task – Provide enough information to keep the member interested in the technology and then transfer the member to a more knowledgeable person if the cooperative has such an employee (Member Service or Energy Efficiency Tech).
b. Communications Employees
    i. Should have basic knowledge of how geothermal heat pumps work and the benefits (GEO 101 from IGSHPA can provide education).

ii. Should be familiar with the details of the incentive programs (cost per ton, flat amount, rate, etc.).
iii. Should be familiar with the requirements that must be met to be eligible for the incentive.
iv. Main Task – Promote the program through the website, social media platforms, written documents, etc....

c. Member Service & Energy Efficiency Tech Employees
    i. Should have basic knowledge of how geothermal heat pumps work and the benefits (GEO 101 from IGSHPA can provide education). *Higher levels of education can be beneficial and received through IGSHPA)
    ii. Should be familiar with the details of the incentive programs (cost per ton, flat amount, rate, etc.).
    iii. Should be familiar with the requirements that must be met to be eligible for the incentive.
    iv. Main Tasks –
        1. Provide the member with all details about the technology, the program incentives, and requirements.
        2. Develop and maintain contractor list (if applicable).
        3. Develop relationships with the local contractors and make sure they understand your utility's requirements.
        4. Make sure all requirements of the program have been met (Maintain checklist if applicable).
        5. Track all installed systems and related information (if applicable).
        6. File all documents related to the project (invoices, load calculation reports, inspection reports, etc.).
        7. *Optional – Run whole house Manual J calculations to double check the contractor sizing.

d. Staking Engineer Employees
    i. Should have basic knowledge of how geothermal heat pumps work and the benefits (GEO 101 from IGSHPA can provide education).
    ii. Should know that there are incentive programs available (do not need to know the details).

iii. Main Task – Inform new members that are building a structure that geothermal heat pumps can have financial benefits and there are incentives available to offset some of the upfront costs.

e. Key Account and/or Economic Development Employees
   i. Should have basic knowledge of how geothermal heat pumps work and the benefits (GEO 101 from IGSHPA can provide education)
   ii. Should be familiar with the details of the incentive programs (cost per ton, flat amount, rate, etc.).
   iii. Main Task – Encourage existing or new key account members to utilize geothermal heating and cooling in their buildings. Use the benefits (financial, GRECS, less equipment, lower maintenance, improved grid stability) as a tool.

VII. Program Tracking

a. Maintain a spreadsheet that tracks all the geothermal heat pump rebates and associated information.
   i. Member Name and Map location
   ii. System Size and contractor that did the installation.
   iii. If it uses electric strip heat for emergency or supplemental heating.

b. The information in this spreadsheet can be used for future analysis of the program and as reference for future questions. ***(See Sample Form #3 in Section VIII)***

VIII. Sample Forms

(Forms shown on following pages)

Sample Form - #1

XYZ Electric Cooperative Geothermal Install Checklist

Member Name: _____

Member Address: _____ **Date:** _____

GHP Size: _____

- ☐ Manual J Report Submitted
- ☐ Design Criteria Used (Delta T - 70°)
- ☐ Loop Lengths 200' per bore
- ☐ Insulated Duct in unconditioned space
- ☐ Emergency Heat on separate breaker (in off position)
- ☐ Contractor Verification that existing ductwork is adequate
- ☐ Invoices Submitted
- ☐ County Inspection Completed
- ☐ Cooperative Inspection Completed

Project Notes: _____

Sample Form - #2

America's Electric Cooperative

Requirements for GHP Rebate

The following requirements must be met before a rebate will be issued. All noted documentation must be included with the rebate form.

Geothermal Heat Pump – Residential Installation Requirements

1. All geothermal systems will be sized using the following criteria.
    a. Indoor air temperatures will be figured at 70° and outdoor temperatures at -5°(Delta T of 65°)(This is a minimum criterion and can be figured with a higher Delta T).
    b. Manual J Report using the above criteria must be submitted.
2. All geothermal systems allow emergency strip heat, but it must be installed on a separate breaker that stays in the off position unless needed.
3. If the geothermal rebate is for a retrofit, all ductwork systems must be checked and a signed affirmation saying the system is adequate must be submitted by the contractor.
4. All installed systems are subject to inspection by the cooperative before a rebate may be issued.
5. All invoices must be submitted (including loop field installation if separate from the unit installation).

Example #1

Set Amount / Ton

- Jo-Carroll Energy (IL): $700/ton for new units, $500/ton for replacement units (replacing existing geothermal with new geothermal)
- La Plata Electric Association, Inc (CO): $550/ton for new units, $300/ton for replacement units.
- Nishnabotna Valley Rural Electric Cooperative (IA): $1400/ton for new units, $750/ton for replacement units. (Commercial and residential both get up to 30% of the total cost up to a max of $10k (R) and $75k (C))

Set Amount / Ton with Other Incentives

- Dakota Electric Association (MN) $400/ton plus 20% more/ton if done by a Master Installer. (cooperative has a list of master installers)
- Lorain-Medina Rural Electric Cooperative (OH): $800/ton for new units, $400/ton for replacement units. Heat Pump rate applies to usage after the first 1k kwh's.

Flat Amount Per Unit

- Cherryland Electric Cooperative (MI): $2500/unit

Flat Amount Per Unit with Other Incentives

- Carrol White REMC (IN): $1500 + $2000/ closed loop system, offers $150/install to the contractor. Offers Loop Buy Program to offset upfront costs.
- Coles-Moultrie Electric Cooperative (IL): $250/unit, $0.07/kwh heat pump rate (regular residential rate is $0.104/kwh)

Other Incentives

- Clinton County Electric Cooperative (IL): offers a $7.50/month credit on the bill if a geothermal heat pump is installed.
- Adams Electric Cooperative (PA): $0.055/kwh rate for heat pumps.
- Tri-County Electric Cooperative (IL): offers a Geothermal Loan Fund that maxes at $30k.

Sample Form - #3

GSHP-Ground Source Heat Pump		T-Smart Thermostat							Cooperative Rebate Amounts:	$300.00
EWHR-Electric Water Heater Replacement		NHWH-New Home Water Heater								
									G&T Rebate Amounts:	$3,000.00
	Member Rebate								Total Rebate Amounts:	$3,300.00
Date	**Name**	**Location #**	**Item**	**Amount**	**Check #**	**Date Sent to G&T**	**G&T Rebate**	**Date Returned**		
3/6/2024	John Smith	15-03-0013	GSHP	$3,000.00	22658	3/8/2024	$2,000.00	3/24/2024		
3/6/2024	Joe Smith	16-12-4425	EWHR	$50.00	22695					
3/8/2024	Rhonda Jones	18-02-2369	T	$50.00	22753					
3/9/2024	Bill Rogers	15-06-0006	NHWH	$200.00	22754					

Residential