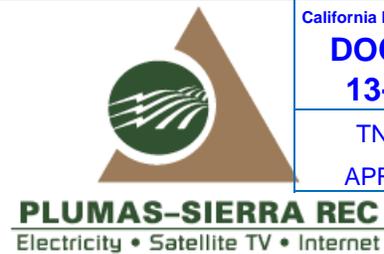


Plumas-Sierra Rural Electric Cooperative

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Corporate: www.psrec.org



California Energy Commission

DOCKETED
13-IEP-1P

TN # 70550

APR. 29 2013

Ownership: Plumas-Sierra is a member-owned electric cooperative with more than 8,000 customers.

Service territory: Operates in Plumas, Sierra, and Lassen Counties, California, and a portion of Washoe County, Nevada.

Background

The Sierra Nevada Mountains, with its rugged terrain and breath-taking views, are home to one of the industry's first and most dynamic geothermal heat pump programs. Plumas-Sierra REC has a long and distinguished history of developing innovative energy services promoting renewable energy sources.

Plumas-Sierra developed one of the first geothermal heat pump programs in California. It also installed the first all-geothermal subdivision in California, and developed the first loop-lease program.

History

Reasons for program, past/recent activities/programs and or primary drivers. Plumas-Sierra was interested in promoting geothermal installations as a way to build load and move customers to a more environmentally friendly heating source. The current geothermal program evolved from a pilot program started in 1993. This pilot began as an experiment to test the effectiveness of offering a long-term loop lease to offset the higher installation cost of geothermal heat pumps. Paying the loop cost over time significantly reduces the upfront expense of a geothermal installation and makes geothermal a more price-competitive option. The pilot ended in 1996 and a full program was launched in 1997 with some major changes.

Relevant Program Name and Description

GeoExchange Heat Pumps

Plumas-Sierra offers a 30-year non-transferable interest free loan and the monthly payment is added to the customer's monthly electric bill. The amount of the loan is based upon the size of the loop installed as part of the geothermal system.

The program includes price points to allow for installations from three to ten tons. The pricing schedule is summarized in the following table. Plumas-Sierra has installed systems up to 40 tons and sets those price points on a case-by-case basis. In 2007-2008, Plumas-Sierra will be installing its largest residential system ever at 27 ¼ tons.

Monthly loop lease charges billed to member on their electric bill:

Example of GeoExchange Monthly Loop Lease Payments		
Heat Exchanger Size	Horizontal Loop	Vertical Loop
3 ton	\$12.45	\$24.95
4 ton	\$14.95	\$29.95
5 ton	\$17.95	\$36.95
6 ton	\$20.45	\$41.65
7 ton	\$22.95	Maximum loan at 6-ton price point
8 ton	\$25.95	Maximum loan at 6-ton price point
9 ton	\$28.95	Maximum loan at 6-ton price point
10 ton	\$31.95	Maximum loan at 6-ton price point

(Maximum loan is \$14,994.00 – Members are billed for any overage)

Since many of the GeoExchange installations are in vacation homes customers are able to leave their heating on all winter long. This reduces their level of concern with frozen pipes or having to winterize the home. Since geothermal heat pumps are so cost-effective, the customer’s heating bills remain relatively low even though they are operating throughout the winter months.

As an additional incentive to the interest-free loan for both new construction and retrofits, Plumas-Sierra offers an 85-gallon Marathon Water Heater (an over \$800.00 value) with every GeoExchange heating system installed. Plumas-Sierra is then able to obtain the water-heating load, which is an advantage to the cooperative and the member. About 98% of customers take advantage of the water heater, but if they choose not to, they receive a \$500.00 credit on their electric bill or a \$500.00 check.

Although the installation cost for a geothermal system is about 10% higher than a conventional HVAC installation, (with the loop lease) the combination of the free water heater and lower monthly energy bills has made this a highly appealing program to PSREC’s members

Dates Offered: Full program since 1997

How/Where Marketed:

Plumas-Sierra provides a comprehensive marketing package that is provided to prospective customers, including a CD, an internal PDF outlining the program and brochures developed from the Geothermal Heat Pump Consortium.

Plumas-Sierra sums up their marketing philosophy in this way; they attempt to make geothermal heat pumps very easy to understand, using terms that a layman would understand, but an engineer would not be insulted by. This approach has made the geothermal system the product of choice when building a new home in Plumas-Sierra’s territory. More and more builders in their service territory are coming on board everyday. Plumas-Sierra has one of the highest ratios of installations for any utility in the United States. In one subdivision, 60% of the new homes built installed geo. The cooperative’s innovative loop lease program has also led to new and retrofit installations in modular and manufactured housing.

How Customer Signs Up: Interested customers sign up through PSREC.

Number of Customer Sign-ups: Since 1997, Plumas-Sierra has installed over 2400 tons of geothermal in over 440 sites. Ninety projects were completed by 2001 which consisted of a town home subdivision and golf cottages. Other projects included a 10,000 square foot vacation home, an Animal Rescue facility, five mobile homes, a PSREC board of director's home and several employees' homes. Plumas-Sierra averages 30-35 geo installations per year.

Plumas-Sierra has also retrofitted several golf course clubhouses in the area. They have also arranged geo installations in Community Centers, Rural Health Care facilities, Community Water Service Districts and Volunteer Fire Departments.

Plumas-Sierra has been successful in gaining a following in the manufactured home industry. A large percentage of these affordable homes are retrofitting and installing geothermal systems...people are ordering their homes with the standard propane or electric furnace they are required to take due to code and then replacing them with GeoExchange systems.

How Service is Delivered and Billed: Plumas-Sierra controls costs by coordinating the scheduling of the drilling to minimize cost while maximizing effort. This strategy allows drillers to come in, drill all the planned installations and then leave. Every attempt is made to schedule drill jobs by subdivision to accommodate the driller. This reduces the cost per drill job substantially.

Key Vendors/Partners/Allies: Plumas-Sierra has developed strong relationships with manufacturers, suppliers, HVAC contractor/installers, drillers and builders throughout its service territory. These relationships have contributed to the program's phenomenal success.

There have been times when we have had so many requests for installations that our contractors could not keep up with demand. The contractors had to either refuse work or only work for one particular builder. In 2006, Plumas-Sierra arranged training for three additional geothermal contractors, increasing their qualified geo installers to eight.

[Whitehawk Ranch](#) looks earthward for heating and cooling homes on the ranch the pine forests and rolling hills of Mohawk Valley in Plumas County, California have long been home to native wildlife. From conception, this planned development has been designed with rigid environmental specifications and the highest quality standards. The result is a planned development of 124 single-family home sites, 248 luxury town homes, 50 villa suites, 32 country estates, golf course and equestrian center which lends itself to the aesthetics of Mohawk Valley. Check out the case study web page at www.waterfurnace.com/whitehawk.htm

Key Reasons for Success/Failure: Plumas-Sierra's geothermal program is successful because the utility has developed successful strategies to:

- **Reduce first-cost barrier.** The loop lease program effectively reduces the upfront installation cost. Plumas-Sierra has developed a chart comparing propane costs with geothermal costs. This has been highly effective at demonstrating the savings with geothermal. Plumas-Sierra's customers can install the loops for the geothermal system and receive a free 85-gallon hot water heater for as low as \$12.45 a month (interest free, non-transferable over 30 years). While this doesn't cover the cost of the interior unit, it certainly makes geothermal an attractive option.

- **Foster trade ally development.** Plumas-Sierra has developed a good relationship with builders, because they know the integrity of the co-op. In the beginning, some builders wouldn't even talk to us, but now they exclusively recommend GeoExchange because the coop is straight-forward, helps to coordinate the entire process, and have provided them with definitive rules for installations.
- **Familiarity with equipment and installations.** The cooperative's excellent track record with geothermal installations is due to the fact that they are familiar with the geology of the area, knowing what conditions to expect when then drill rig arrives on site.
- **Teamwork.** The enthusiasm for geothermal is contagious. The engineering and energy services departments work well together to promote geothermal installations with both customers and builders.

LESSONS LEARNED

- **Foster good relationships.** Plumas-Sierra's experience demonstrates the importance of fostering good relationships with the contractors. By creating an infrastructure, everyone benefits—the manufacturers, installers, drillers, the utility—and most importantly, the customers.
- **Patience pays off.** This program also illustrates that patience pays off. The utility had to change the mindset of the current user in their territory. Education is key to the success of the program, as builders and customers continue to not understand how geo works. Fossil fuel prices in Plumas-Sierra's territory are extremely high, so customers and builders are now realizing that geothermal is their best option not only for the environment, but for savings on customers' energy bills.

Future Enhancements Planned/Anticipated:

The cooperative continues to improve and expand the program. PSREC helped to streamline the permitting and approval process with Plumas County. Setback requirements to water, sewer and leach fields have been adjusted making installations easier and more cost effective. They will also continue to recruit new geothermal contractors and experienced drillers.

Best Way to Learn of New Developments: (website, news releases, Ruralite, and conferences)

Key Staff Individuals:

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