



Why Should Electric Power Co-ops Incentivize Geothermal Heat Pump Installations and How Should They Go About Developing a Program?

The current “best practices” of co-ops to encourage use of geothermal heat pumps consists primarily of offering rebates to customers for installing energy efficient appliances, systems, and retrofits. There are a few co-ops that offer “loop leasing” programs designed to induce the customer to install or retrofit their HVAC systems with geothermal heat pump systems. Delta-Montrose Electric Association (DMEA), a Tri-States member, was the first to initiate such a program. Since then, only 3 other co-ops have offered such a program although many other co-ops and even investor owned utilities are now indicating a serious interest.

In a “loop-lease” program, a co-op like DMEA will install the ground loop for the building owner at no up-front cost to the customer, and will charge the customer a flat fee each month on his electric bill for the “loop lease.” The loop lease monthly charge will vary from customer to customer, based on the cost of the loop (to DMEA). The loop cost, along with the corresponding monthly lease payment, will vary widely, depending on the size of the geothermal system and the difficulty of the installation. The monthly payment calculation is based on a 15-year amortization of the DMEA cost, plus a cost of DMEA capital. Typically, a loop system for a 2,200 square foot residence is about \$30 per month – which will continue ad infinitum. If the building is sold, the monthly loop lease payment is simply inherited by the new building owner. A building owner can opt out of the “lease” by paying DMEA reimbursement for their cost of installing the loop or by having DMEA shut off the valve to the ground loop, rendering the heat pump system inoperative.

The concept behind the loop lease, as is the case with more conventional rebate programs, is to make the initial cost of the high efficiency HVAC system more affordable to the building owner. The attractiveness of this to the building owner is that he can pay the monthly loop lease charge out of monthly energy savings provided by the more efficient HVAC system – putting the building owner in a more positive cash flow position.

DMEA has been using low-cost USDA funds administered by the RUS to “fund” the loop-leasing program. Currently there is proposed legislation called “Rural Star,” calling for \$5 billion in federal funds to be made available to “loan” to rural utilities for the purpose of financing energy efficiency retrofits. If this money does become available, it would be a low-cost source of capital to fund a program.

In addition to the obvious profit from the “loop financing” aspect, electric utilities can also make money through increased deployment of geothermal heat pump technology by reducing “peak energy consumption” by about 35% while picking up “load” during winter months for heating. (Because heating energy is usually provided by natural gas, propane, or heating oil.) By increasing the utility’s load factor, the electricity generation process can operate more efficiently, reducing power production costs. In many cases, overall electric company revenue can actually be increased while reducing peak electricity demand. There is also the “avoided cost” of building new generation capacity to compensate for the ever-increasing demand for

electric power. It is interesting to note that neither wind nor PV reduces “base-load” requirements – but geothermal heat pumps do.

It has been argued by many that the electric utility could actually “give away” the loops and still benefit financially by doing so. There are some other compelling reasons for a co-op utility to incentivize geothermal heat pump deployment:

- Some state regulatory bodies define geothermal heat pumps as “renewable energy” in addition to being an “energy efficient technology”, thereby helping utilities to meet their renewable energy portfolio goals, requirements, and commitments.
- By eliminating evaporative coolers in residential applications and by eliminating cooling towers in commercial applications, millions of gallons of water are saved.
- From an environmental perspective, enormous amounts of greenhouse gasses can be avoided.
- Base-load reductions provided by geothermal heat pump deployment can significantly delay the need to build more traditional electricity generation capacity.
- Enhance the co-op’s public image by creating immediate construction activity, thereby reducing unemployment and benefiting the local economy.
- Reduce the likelihood of PUC obtaining regulatory authority over co-ops by demonstrating positive and innovative energy programs.

It is clear that the primary reason that more energy efficiency projects have not been undertaken is because there is no readily available source of low-cost funds to finance long-term energy efficiency improvements. Rebates and tax credits are helpful, but without financing, most building owners can’t get to the rebates. And, unless there is a “tax appetite” by the building owner (which does not exist with 501 c 3’s and state or federal institutions) tax incentives are not an effective stimulus. If a utility, either a co-op or IOU, offered a 100% financing option to the building owner, dramatic deployment of geothermal heat pump installations could be achieved.

This plan would:

1. Be quick to initiate
2. Create the “green jobs” that the U.S. and state governments wish to achieve by putting building trades people back to work (e.g., excavation workers, electricians, plumbers, mechanical contractors, landscapers, HVAC techs, trucking, equipment manufacturers)
3. Save energy – both peak demand and consumption
4. Save dollars in utility costs
5. Reduce GHG emissions
6. Save water
7. Be a self-perpetuating program, in effect a “revolving loan fund”

A recent EnLink analysis of a single hospital, showing that an energy efficiency “make-over”, with geothermal heat pumps as the centerpiece, would save **annually**:

- 1,000,000 kWh of electricity
- 400,000 therms of natural gas
- 3,385,000 gallons of water

This is a prime example of the energy efficiency that could be undertaken if the utility offered “on-bill” financing for energy efficiency projects that could demonstrate that the improvement could pay for itself over the life of the improvement out of energy savings. Growth in green jobs, an increase in energy and water savings and improvement for the environment, not requiring taxpayer money and all earning an attractive ROI for the utility is an extremely attractive investment for a co-op.

With 15 years designing and installing GHP systems for different building types throughout the U.S., EnLink can develop the program for the utility and provide the turn-key design/build engineering and construction necessary in order to make this vision a successful reality.

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