CO-Z-ING UP TO THE CUSTOMER: HOW TO BREAK THROUGH THE FIRST COST BARRIER

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ABSTRACT

Delta Montrose Electric Association (DMEA) has often been described as one of the most innovative co-operative electric companies in the United States. Its groundbreaking CO-Z program is the most recent example of the entrepreneurial spirit that thrives in this southwestern Colorado electric cooperative.

Its program began as a way for DMEA to sell its members electrical services rather than just electricity. As it has grown, it has been transformed more directly into a program promoting geothermal technologies. Now called CO-Z, DMEA's current program, is enjoying unparalleled success. Installation rates are increasing and customers are becoming more interested geothermal technologies.

The CO-Z Program may be exported and adapted to other financing organizations fairly easily. It is an excellent customer retention and load-building tool regardless of the type of financing used to facilitate installations of GeoExchange.

This paper summarizes the steps DMEA used to design, launch, and refine its financing and marketing program. This paper provides utilities and energy providers, financing institutions, and other interested organizations with the blue print DMEA used to develop and refine its CO-Z Program.

Key Words: ***GeoExchange, geothermal, market barriers.***

1 INTRODUCTION

Delta Montrose Electric Association (DMEA) has often been described as one of the most innovative co-operative electric companies in the United States. Its groundbreaking CO-Z program is the most recent example of the entrepreneurial spirit that thrives in this southwestern Colorado electric cooperative.

DMEA serves 28,000 members in four counties in Southwest Colorado. Delta-Montrose Rural Power Lines Association was organized in August 1938. DMEA is a private, non-profit cooperative owned by the members it serves. DMEA has a history of developing innovative energy programs that have won praise and recognition at the regional and national level.

This paper summarizes the steps DMEA used to design, launch, and refine its financing and marketing program. Just as any home needs a correct blueprint in order to be built properly, so do marketing and financing programs.

2 UTILITY BARRIERS

The first step in initiating any new endeavor is to identify the opportunities and obstacles that currently exist. For DMEA, this required identifying the various market barriers to a successful GeoExchange program and then developing strategies to reduce or eliminate these barriers.

Specifically, DMEA had to address two separate types of barriers: the barriers associated with the changing utility marketplace and the challenges of successfully installing GeoExchange system profitably. These barriers are discussed next.

Table 1 summarizes the market barriers and challenges facing DMEA and these barriers were catalysts to accelerate the development of its Chauffage Program.

Table 1. Market Barriers Facing DMEA

Market Barrier	*Market Barriers Explanation*
Uncertain Market Prices	Electric prices were fluctuating as utilities were facing uncertain market demand and rising operating costs. Electric costs were no longer stable and predictable.
Industry Restructuring	The electric utility restructuring in the Investor-owned market left the co-op and municipal utility market in upheaval as well.
Increased Competition	Utilities were concerned about retaining large, industrial customers as new deals from deregulated utilities could lure customers away.
High First Costs	This market barrier was common for most premium efficiency equipment, but is an especially formidable barrier for GeoExchange systems.
Low Customer Awareness	Customers were not particularly interested or concerned in energy efficiency technologies, given the relatively stable energy prices. But, rising market prices made energy efficiency more important. However, most customers were still not aware of the lower cost and improved comfort that premium energy efficient technology, such as GeoExchange systems offer.
Lack of Qualified Installers	This was another stumbling block to developing a GeoExchange market since these installations required a longer learning curve, higher upfront training and equipment costs, and were a harder sell compared to standard HVAC technologies such as heat pumps and air conditioners.

3 GEOEXCHANGE TECHNOLOGY BARRIERS

Geothermal heat pumps, also called GeoExchange, are a promising technology that faces significant barriers. While it offers customers the opportunity to dramatically lower their heating, cooling, and water heating bills, proper installation remains a challenge. GeoExchange systems require installing either vertical or horizontal loops into the ground for heat-transfer, increasing the initial or first-cost.

This technology is not an easy sell and often requires equipment demonstrations to fully satisfy customer concerns.

These installations are also more complex that typical packaged air conditioning units. GeoExchange systems must be properly designed to operate correctly and have to be installed at the best possible price using lifecycle costing. This requires conducting an engineering and site analysis to identify the appropriate loop size, type, and equipment necessary. This also increases the amount of time and skill required to ensure that geothermal units are installed properly.

Despite these barriers, GeoExchange systems are a superior heating and cooling technology. These systems provide year-round comfort at a significant cost-savings. Furthermore, geothermal systems can be used in inventive ways such as providing snowmelt for driveways and parking lots and hot-water heating.

3.1 DMEA's Response

The Chauffage Program was DMEA's way to address these market barriers through a variety of program strategies. Figure 1 displays DMEA's translation of market barriers into specific program objectives.

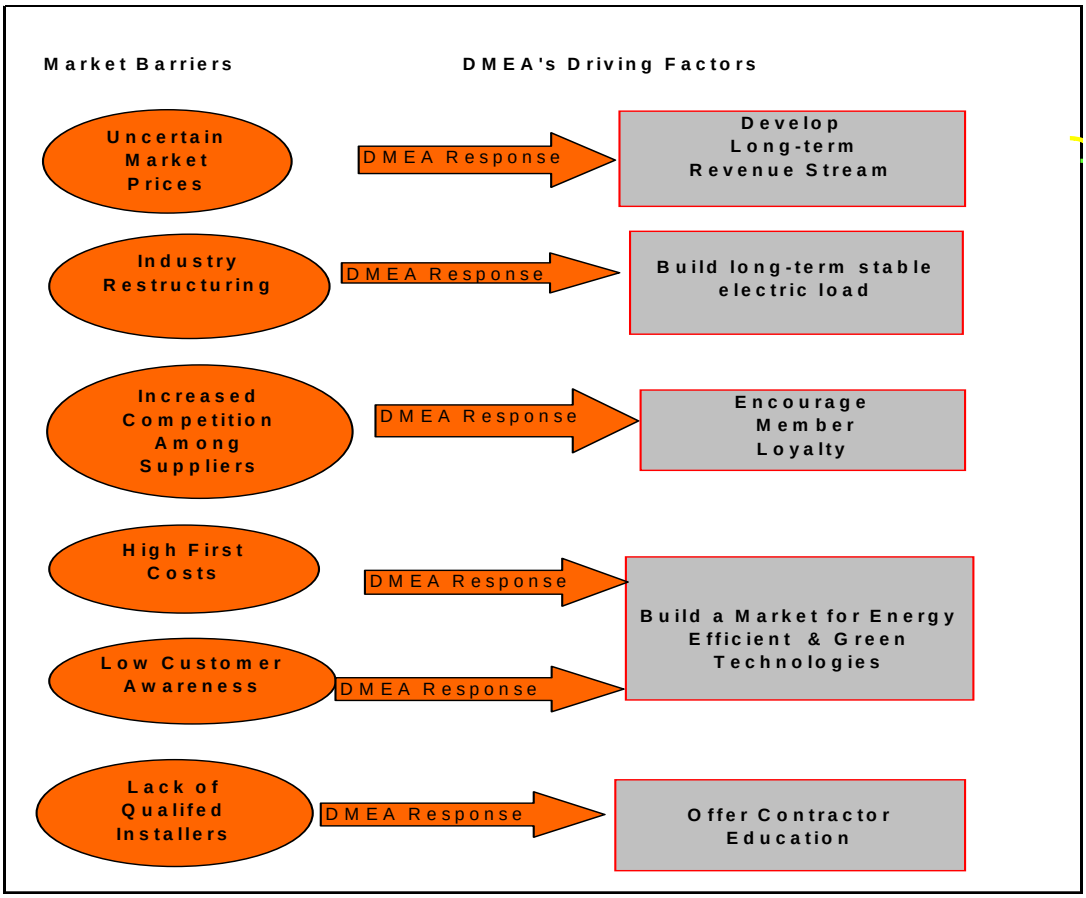

Fig. 1. Turning Market Barriers into Program Objectives

Several factors drove the development of DMEA's Chauffage Program. The program was launched in 1998 as a strategy designed to increase member loyalty, build profitable utility load, and promote a responsible energy efficient technology. These driving factors are summarized in Table 2.

Table 2. Driving Factors to Creating DMEA's Chauffage Program

Factor	Rationale
Ensure Member Retention	Concerns over utility deregulation and possible member losses motivated DMEA to develop a long-term member-retention strategy.
Pursue Load Building	DMEA wanted to build profitable electric load in a responsible and positive way.
Develop long-term revenue stream	The Chauffage Program would yield a monthly revenue stream for up to 50 years.
Build a market for an energy efficient technology (GeoExchange)	Developing this program would increase market demand for GeoExchange systems and create a competitive and thriving infrastructure.
Promote "Green" energy options to members	DMEA members are environmentally conscious and the GeoExchange System offered an environmentally friendly way to provide low-cost heating and cooling.

3.2.1 Ensure member retention

From DMEA's perspective, the best response to concerns about member retention and loyalty lied in developing programs that would further strengthen the bond between co-ops and their members. DMEA wanted to position itself as providing electric services, rather than merely providing electric power. For example, DMEA would provide its members with the by-products that electricity offers--conditioned space, light, and motor power--- rather than merely providing the energy to run that end-use equipment.

To further encourage member retention, DMEA created a clause in its Chauffage contract that said if a member switched electric providers then the outstanding note became due immediately. This strategy was designed to be a better deterrent to customer switching by providing a negative inducement.

3.2.2 Pursue load building

GeoExchange systems offer utilities the opportunity to build an off-peak load. Since the GeoExchange loop is warranted to last for 50 years, a GeoExchange customer will remain on the utility's lines for at least a half-century. That is especially appealing in today's market of increased competition and concerns for member retention.

These systems also offer utilities a way to convert gas and propane members to electric heat. This means increased sales for the co-op, often doubling the amounts of kilowatt hours (kWh) generated per customer, while building a stable and long-term load. GeoExchange systems offer members the benefits of controlled pricing and protection against the variations in propane and gas heating.

3.2.3 Develop long-term revenue stream

DMEA was also looking for ways to expand its revenue streams as competitive pressures increased. Structuring a program that would provide a monthly payment stream based on equipment leases and energy usage would generate new revenue sources. More importantly, this program could be structured to provide similar financing arrangements for a variety of emerging energy efficiency technologies such as fuel cells.

3.3.4 Build a market for energy efficient technologies

The utility was also looking for ways to encourage the installation of energy efficient technologies. The Chauffage Program provided DMEA members with the ability to reduce the first cost associated with installing premium energy efficient technologies, such as GeoExchange Systems. By reducing the first-cost barrier associated with geothermal heat pumps, DMEA hoped to be able to create a sustainable and lasting market for this technology.

3.3.5 Promote "green" energy options

DMEA staff viewed its Chauffage Program as an opportunity to promote an environmentally friendly "green" technology to its members. Given the importance of environmental conservation in Colorado, DMEA viewed this program as way to provide interested members with a "green" choice for heating and cooling.

4 CHAUFFAGE PROGRAM ELEMENTS

Compared to standard heating and cooling installations, GeoExchange installations are more complex, time consuming, and expensive. DMEA's response to the challenges in the GeoExchange market was use a standardized approach to control costs and to build the market. Its Chauffage Program used a created a menu-driven program that would offer standardized options for:

- Equipment configurations
- Installation
- Financing and
- Estimated energy usage costs

Table 3 summarizes these major program elements.

Table 3. Summary of Chauffage Program Elements

Program Elements	***Details***	
Design	Custom design of a geothermal system	Retrofits and New Construction Installations
Eligible Equipment	3-ton, 4-ton, or 5-ton GeoExchange Systems with SynDex or Paradigm units	
Installation	Outside loop	SynDex Conversion from A/C or Paradigm
Financing Terms	50-year "lease" on outdoor loop and outside equipment	Easement on property to protect loop field
Energy Credit Rate Lock	An energy credit rate lock, adjustable in 5-year intervals based on the system's estimated cost and energy usage	
On-going Maintenance and Repair	Provided to all systems that are financed through the Chauffage Program	

4.1 The Target Market

DMEA viewed its Chauffage Program as a way to target both new construction and existing home (retrofit) markets. Targeting the retrofit market offered a new opportunity to increase GeoExchange installations in DMEA's service territory, while installations in the new construction market would allow DMEA to reach new members as they moved into its territory.

4.2 Installations

On April 21, 1998, DMEA created its Intermountain Energy One Services (IMEOS) installation subsidiary to handle geothermal installations generated by the Chauffage Program.

Although GeoExchange units may be installed in a variety of loop configurations including horizontal, vertical and pond, DMEA wanted to focus on horizontal loop installations.

Given the narrow program focus on both equipment and loop configuration, DMEA staff believed that the installation costs could be standardized based on "worst case" conditions. This is a significant departure from most GeoExchange programs in which installation prices vary based on soil type, and unit size.

DMEA staff believed that although the individual installation prices may vary, over time these installation costs would "average out," just as the cost of electricity and electric service extensions are based on an "average cost."

4.3 Financing Terms

To offset the higher first costs associated with GeoExchange installations, DMEA provided interested members financing for the outdoor portions of the installation--specifically the loop installation and the split-system unit.

DMEA's financing was a lease with an easement. Under this arrangement, DMEA originally required a lien and easement on the property to secure its investment.

The financing portion of the Chauffage Program was optional: As not all members either wanted or needed this financial assistance. In fact, several members were reluctant to allow DMEA to either have a property lien or an easement. In these cases, the member either self-financed the installation or rolled it into their mortgage.

4.4 Energy Rate Lock

DMEA developed a rate lock mechanism in its Chauffage Program to calculate the monthly fixed price for conditioned space. The goal of the total monthly fee was to be competitive with propane prices using conventional heating and cooling equipment. As part of its Chauffage Program, DMEA offered participants a flat monthly fee to cover their heating and cooling costs. This rate was fixed for a five-year period based on calculated energy costs and rates. The term of five years was chosen so that DMEA could periodically bring all of its Chauffage contracts back to actual cost at one time.

Members were billed for their total electric usage and then received a monthly heating or cooling allowance based on estimated monthly usage of the GeoExchange system. Members exceeding the monthly allowance would be charged the prevailing market rate for electric usage above the monthly allowance. In this way, DMEA was trying to provide its members with "guaranteed" (or fixed) heating and cooling costs.

DMEA determined this flat monthly rate by the estimating annual usage of the GeoExchange System. The Chauffage payment was based on the calculated annual cost and the goal was to make equal or beat propane costs at $1.00 per gallon.

4.5 Equipment and Maintenance Costs

The final element of the Chauffage Program was to provide DMEA members with an equipment warranties and perpetual maintenance services. However, this provision was only offered to members that participated in the Chauffage contract. Members who purchased the geothermal installation outright or those that paid off their systems early were no longer eligible for equipment maintenance, repair, or replacement.

4.6 Marketing and Promotion Activities

DMEA focused on increasing awareness among two target groups: its members and heating, air conditioning, and ventilation (HVAC) dealer and contractors. Member outreach included sponsoring events surrounding the installation of a GeoExchange unit. DMEA also promoted this technology in its periodic newsletter to all co-op members, in radio and print advertising, and through participation in home shows and energy education events.

Activities targeting HVAC contractors included providing training on the various standards and specifications necessary to install geothermal heat pumps. But these initial training efforts were not particularly effective.

4.7 Program Results

DMEA has developed a successful and enduring GeoExchange Program. As of September, 2003, DMEA has installed more than 200 GeoExchange units throughout the Western Slope in Colorado. Most installations were purchased directly by customers while 45% were financed using the CO-Z Program tools.

As this program gains traction in the market, it continues to undergo changes and refinement to make it even more successful. The major refinement has come in switching financing tools.

4.8 Changing Financing Tools

In 2002, DMEA decided to drop the Chauffage lease agreement entirely and switch to a more straightforward consumer loan document. Table 4 illustrates the revised CO-Z Program elements as it is currently offered by DMEA.

These changes in the CO-Z Program have sharpened its focus on eliminating barriers in the GeoExchange market. The program has become more tactical. Developing Intermountain Energy One and switching financing tools have made the CO-Z Program more flexible and responsive to its members. This program is also more effectively addressing both market and GeoExchange barriers.

Table 4. Revised CO-Z Program Elements

Program Elements	***Details***		
Design	Custom design of a geothermal system	New Construction and Retrofits- wider range of installation types	
Eligible Equipment	*Whatever* GeoExchange equipment is needed for the installation, both indoor and outside		
Installation	Outside equipment only	Inside equipment	Duct Work
Financing Terms	Amount of installation cost determined by customer	Filed as a monthly loan payment and a Second mortgage on the property if financed	
Energy Credit Rate Lock	Optional: Provided to CO-Z members but no longer required.		
On-going Maintenance and Repair	Optional: Provided only to members that opt for DMEA financing of at least $4,000.		

4.9 Comparing CO-Z Financing Tools

So which method is better--a Chauffage-type lease or a CO-Z Loan/Second Mortgage? The answer depends upon a number of factors including:

- The types of GeoExchange equipment
- The target market
- The current program operations
- The level of acceptable risk
- The type of customer relationship desired and
- The level of control over the equipment and loop desired.

Table 5 summarizes the advantages and disadvantages associated with each financing option.

While the loan has provided more flexibility for DMEA, it does not mean that all GeoExchange financing has to be offered as second mortgages with property liens. Moreover, the concept of leasing the GeoExchange loop may be a viable financing alternative, especially if targeting a retrofit market where the utility's risk can be confined to outdoor equipment. These financing agreements must conform to the applicable Federal regulations.

Table 5. Comparing Chauffage Leases and CO-Z Loans

Pros	Chauffage Lease	CO-Z Loan
Allows utility to retain ownership in outside equipment	√	
Offers innovative financing arrangement for the retrofit market	√	√
Allows the utility to focus on selling services rather than products	√	
Maintenance and repair costs are covered in the monthly payment	√	√
More flexible financing tool		√
Allows the customer to determine the amount and payment terms		√
Interest payments are tax deductible		√
Reduces the first cost barrier for installation of GeoExchange systems	√	√
Cons	**Chauffage Lease**	**CO-Z Loan**
Requires filing an easement on the property	√	
May not be acceptable method for utility financing according to Federal regulations	√	
Complicates the sales process	√	
"Locked in" the pricing of the outdoor equipment in order to standardize the lease payment	√	
Requires filing a security interest in the property in the form of a Second mortgage		√
Requires members to finance a minimum amount to qualify for maintenance and repair costs		√
Requires full disclosure including "Truth-in-Lending" and 3-day right to cancel notices.		√

5 LESSONS LEARNED: CRITICAL SUCCESS FACTORS IN DEVELOPING CO-Z

For the CO-Z Program to be successfully implemented in another organization would require the following elements:

1) Installation guidelines to ensure system performance especially if there is an "energy rate lock" guarantee;
2) Defined procedures for customer processing, as documented in this case study;
3) A long-term commitment to educate employees, members, and potential partners on the benefits of GeoExchange installations; and
4) Established relationships or partnerships with an installation contractor.

It is especially important for the financing organization to have some type of quality control in the installation process. DMEA's commissioning policy is designed to provide installation contractor, the customer, and the financing organization with some assurance that each installation will conform to the program requirements. Without this feature, DMEA could be opening itself up to financial liabilities if the installation was not completed properly. At the very least, the negative word-of-mouth from botched installations could deter program sales.

This issue of quality control will be very important for any organization that is considering using the CO-Z Program. As a DMEA staff member explained. Commissioning is a way to judge the risk of the investment, and therefore needs to be included in any CO-Z Program.

While this paper focused on using the CO-Z to finance GeoExchange systems, it is not limited solely to this technology. Indeed, as DMEA staff point out, this financing program with its focus on energy efficiency could be .adapted for any high dollar, high value energy efficient technology where first cost is the barrier to equipment upgrade. In fact, DMEA plans to modify the CO-Z Program in the future when it begins offering fuel cell installations through Intermountain (albeit in a few years).

Essentially, the CO-Z Program is designed to encourage members to install a technology that will provide long-term benefits for the utility, the financing organization, the contractor, and the homeowner. Now that’s an innovative idea.