

Cutting the Refrigeration ‘Juice’ in Pacific Northwest Groceries

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ABSTRACT

In the Pacific Northwest, energy consumption for refrigeration in grocery stores is 1.5 billion kWh per year (DOE 2003). The grocery sector in the Pacific Northwest varies in the size of store, location, and margin available for store owners to fund energy efficiency projects. To curb the consumption of energy in this sector we must understand how to:

- Approach independent grocers and national supermarket chains about energy efficiency;
- Create an effective approach for working with rural and urban customers and
- Appropriately set incentives to help drive energy efficiency market transformation.

This paper will provide an overview of how Bonneville Power Administration (BPA) and the third party implementer, Portland Energy Conservation, Inc. (PECI), worked together to meet challenges in this hard-to-reach sector, resulting in 38.9 mm kWh savings throughout the Pacific Northwest in FY2009, about 8.5% of BPA’s annual agency-wide energy efficiency program target. The paper highlights successful approaches employed by field energy analysts for customers in areas as diverse as Seattle, Washington to Cutbank, Montana. The paper will discuss leveraging utility knowledge when working with regional and national grocery chains, tools to help manage working with over 85 regional utilities, and how the market can be transformed with strategic choices for incentive levels and the introduction of new technologies. Readers will gain an understanding of how BPA and PECI worked with utilities to help promote this Program and how BPA and PECI collaborated to progressively increase delivery towards BPA’s overall energy efficiency program targets.¹

Introduction

In 2007, BPA hired PECI to provide the EnergySmart Grocer Program to its Pacific Northwest utility customers’, and include the program in its energy efficiency portfolio. BPA’s EnergySmart Grocer Program generates substantial energy savings for end use customers of participating public utilities². BPA’s program offers energy efficiency audits to commercial retail stores with refrigeration, educates customers as their energy efficiency consultant, and assists customers with implementing and incenting energy efficiency projects. BPA knew there was a great opportunity to bring energy savings to its utility customers in the grocery sector,

¹ BPA sets energy efficiency program targets based on fiscal years (October 1-September 30). BPA had energy efficiency program targets of 52 Mwa in fiscal years 2008 and 2009. The program helped achieve 2% and 8.5% respectively towards those targets. In fiscal year 2010, BPA increased their agency-wide energy efficiency program target to 82 Mwa and to date the program has achieved about 4% of this target.

²Customers with facilities over 5,000 square feet have saved an average of 50% of program kWh total and customers with less than 5,000 square feet (independent groceries, convenience stores, restaurants, schools and other facilities) saved the remaining 50%.

because the market was historically underserved. BPA also knew that its utilities wanted a program that would focus on customers' needs, showcase the utility as the service provider, and provide a consistent line of communication about program activities between PECI and the utility. BPA believed funding this Program was instrumental to bringing energy efficiency to what had been a hard to reach commercial market.

PECI leveraged seven years of experience of administering EnergySmart Grocer programs in California and Puget Sound³, but quickly learned that working with customers in the Pacific Northwest would require a different approach. PECI and BPA anticipated the key challenge; the sheer size of the BPA territory meant servicing approximately 200,000 square miles and expecting trade allies to travel to rural areas to work with customers. However, there were many additional challenges that surfaced after program launch. First, the number of utilities expected to sign up for the Program tripled from what was originally projected. This created a challenge to initially deliver high energy savings while the Program was recruiting more businesses to participate in the program. Second, the Program increased the number of relationships and activity with national accounts grocery chains. As detailed later in the paper, the Program approached national account customers differently than independent business owners. This created a challenge to communicate the different approaches to the individual utilities. Third, there were economic factors that created challenges, including the deep economic recession that impacted grocers and their bottom lines and a dramatic rise in gasoline prices that effected trade allies' ability to travel to rural areas. BPA and PECI partnered to develop solutions to address and, in most cases, overcome these challenges.

This paper begins by providing an overview of the energy efficiency opportunity with the commercial sector and commercial refrigeration in the Pacific Northwest. Next, the working relationship between BPA and PECI for the EnergySmart Grocer Program is explored in order to show how a trusted partnership and coordination between BPA, PECI, and the individual BPA utilities produced a Program with record breaking annual energy savings in the Pacific Northwest of nearly 80 million kWh⁴, or lifetime energy savings of almost one billion kWh. Then, the paper looks at how PECI adapted to different customer types and developed customized approaches to meet the needs of Independent, Regional and National Supermarket chains, as well as customers in rural and urban areas. Finally, the paper examines a promotion developed to help bring energy efficiency to independent and convenience store owners which resulted in helping transform the market for these measures.

Energy Efficiency Opportunities in the Pacific Northwest

In the next 20 years, the Pacific Northwest will increase from approximately 13 million to 16.7 million people and as a result, electric load will increase from approximately 21,000 average megawatts to 28,000 average megawatts. In order to meet this increase in demand the first strategy of the region's power planning body, the Northwest Power and Conservation

³ The EnergySmart Program with BPA works in regions in the Puget Sound such as Seattle City Light, Snohomish Public Utility District and Tacoma Power and Light. These are utilities that are outside of Puget Sound Energy.

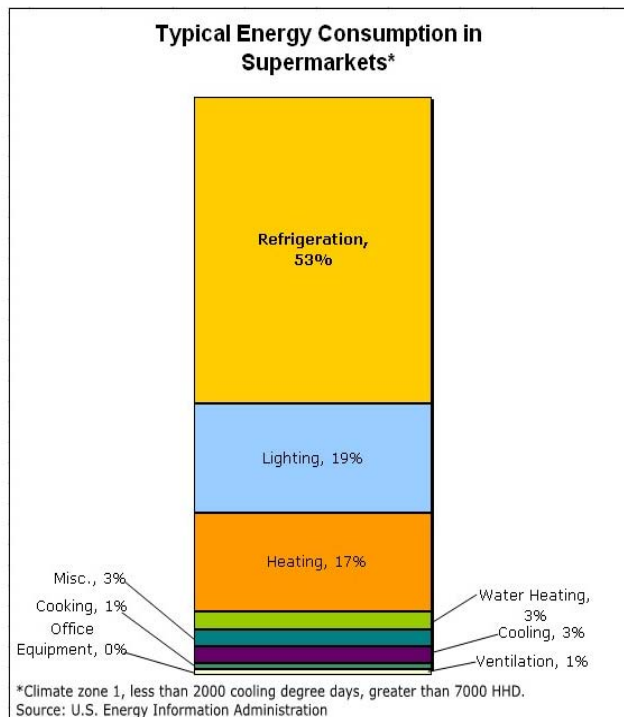
⁴ This is kWh savings from March 2007-April 2010.

Council⁵, is to “[d]evelop cost-effective energy efficiency aggressively - at least 1,200 average megawatts by 2015, and equal or slightly higher amounts every five years through 2030.” (Northwest Council 2010). 85% of new load in the next 20 years can be met with energy efficiency and the commercial sector will be able to deliver over 1,400 megawatts of energy efficiency to go towards meeting the increasing load (Northwest Council 2010).

Because BPA is the main provider of electricity to the region’s 144 public utilities, BPA is responsible for ensuring Public Power’s 42% share of the region’s goal. BPA is motivated to provide it’s customers with programs to promote energy efficiency. BPA sets targets for its individual energy conservation Programs and these targets flow into each of the parties who work with them. One of the areas where BPA believed there was untapped energy savings was with the commercial grocery sector, specifically commercial refrigeration.

Energy use related to refrigeration in grocery stores is high, typically accounting for over half of a supermarket’s consumption, as shown in Figure 1. Nearly every BPA utility has a grocery store and/or commercial refrigeration which resulted in a large opportunity to target an energy efficiency program.

Figure 1. Typical Energy Consumption in Supermarkets



Source: U.S. Energy Information Administration and ASH2C Map of Climate Zones
<http://www.ash2c.org/ash2c/facilities/e2c/cs/index.html>⁶

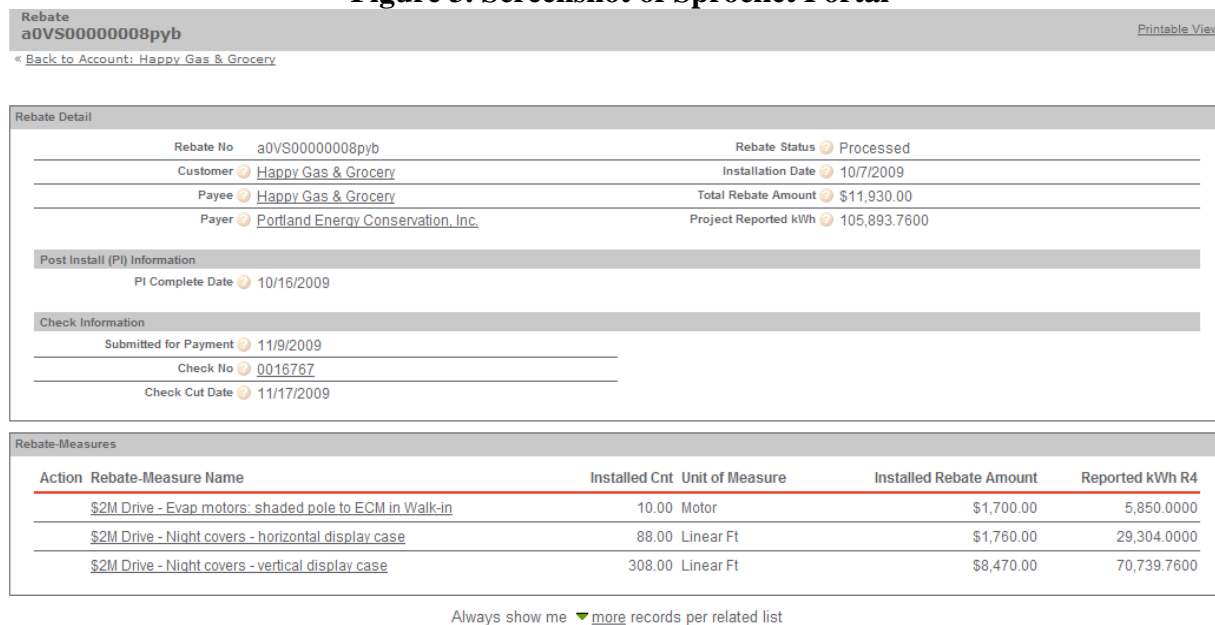
⁵ The Northwest Power and Conservation Council develops and maintains a regional power plan and a fish and wildlife program to balance the Northwest’s environment and energy needs. One of their three main tasks is to “develop a 20-year electric power plan that will guarantee adequate and reliable energy at the lowest economic and environmental cost to the Northwest.”

⁶ Data is based on climate zone 1, less than 2000 cooling degree days, greater than 7000 HDD. Program also works in Climate zone 2, less than 2000 cooling degree days, 5,500 to 7,000 HDD and Climate zone 3, less than 2000 cooling degree days, 4,000 to 5,499 HDD. The percentage of energy consumption for refrigeration would only minimally change in zones 2 and 3.

PECI and BPA management communicate several times each week and have an in-person Program update meeting every month. This communication covers Program performance, contract discussions, setting and reviewing incentives, new technology and customer service topics. Peci management has communication at least monthly with six BPA Energy Efficiency Representatives. The challenge is maintaining communication about on-going Program field activity and energy savings results with over 85 BPA utilities who work with the program. This is particularly important to BPA since the BPA Energy Efficiency Representatives have regular contact with utilities and they need a source for fresh data for the Program's activities. The program also communicates with utilities about program promotions, kWh saved to date, and kWh opportunities for upcoming projects. At any given time there can be up to 100 projects in play.

The Program meets this communication challenge with Field Energy Analysts and Program Coordinators providing periodic customer activity updates to individual utility representatives when they are working with a utility's customer. Peci has also developed an on-line tool, the Sprocket Portal, that provides up to the minute information about audits the Program has performed, revisits that Field Energy Analysts have made with customers and measures that the Program has rebated. Utilities and BPA can log in at any time to see their updated information. Figure 3 shows a screenshot that a utility would be able to see for one of their accounts. This screenshot shows general account information, measures the customer has implemented, when the rebate happened, if a post install inspection happened and when, the rebate dollars and kWh savings per measure and project total basis.

Figure 3. Screenshot of Sprocket Portal



Source: Portland Energy Conservation, Inc. 2010

Both parties work closely on marketing the Program to utilities, end use customers and trade allies. BPA reviews and comments on any marketing material developed at Peci for the EnergySmart Grocer Program. This process happens in order to confirm that a marketing piece adequately highlights BPA's and the local utilities' role in delivering the program. This can be a

particular challenge when working with over 85 utilities. In order to address this issue, some marketing materials, such as the Program website and letters that accompany rebate checks, include utilities individual names and logos. The Program also pre-releases marketing messages to utilities so that they will have advance notice if they receive a question from one of their customers.

Both parties are committed to bringing new technologies to the Program's measure portfolio. This is a joint commitment because while PECEI helps vet, monitor, test and present measures for approval to the Regional Technical Forum⁷, measures must also be approved by the BPA for adoption into the program. The BPA has a rigorous approval process and data tracking and reporting systems to update before a new measure can be added to the Program. If the two parties were not in agreement about the importance of new program measures, the EnergySmart Program would not adapt to meet the changing needs of the market. The BPA also encourages evaluation and measurement of measures to confirm that kWh savings remain accurate for measures in the Program. For instance, program field staff suggested the deemed energy savings for walk-in ECM motors seemed low. This was confirmed through M&V field tests performed by BPA engineers. These discoveries triggered a review of the energy savings which found that the energy savings was originally based on a wattage of motors that was lower than what was actually found in the market place. Follow up measurement and verification studies found additional energy savings for walk-in and reach-in refrigerated case ECM motors. This updated analysis was brought to the Regional Technical Forum and additional savings for ECMs were later approved.

Supporting Unique Approaches for Different Customer Types

Both BPA and PECEI understand the need for different approaches to reach various end use customer types, as well as rural and urban customers. The Program allows for flexibility to work with national grocery chains, regional grocery chains, independent grocers, convenience store chains, individually owned convenience stores, restaurants, and other non-typical customers with refrigeration loads such as schools, churches, retirement homes, hospitals and amusement parks. The Program also allows the flexibility to approach each of these customers in a way that will maximize relationship building and promoting energy efficiency.

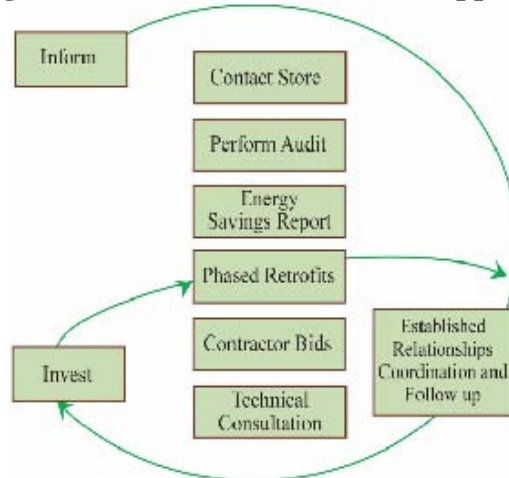
Approach with Independent and Regionally Owned Businesses

The approach that the Program takes with independent and regionally owned businesses is PECEI's Inform to Invest Approach (aka I-to-I). Inform to Invest means that Field Energy Analysts work closely with utility customers to inform them about energy efficiency and Program savings potential, analyze their energy infrastructure, and personally follow up to ensure that their investment in new measures realizes the desired energy savings. This approach gives store owners the confidence and guidance to take action on energy saving opportunities. The Inform to Invest approach encompasses contacting a store, performing an audit and providing the customer an energy savings report. After the Energy Savings Report is presented the Field Energy Analyst discusses what measures the customer is interested investing in. After they discuss the potential retrofits, the Field Energy Analyst assists the store with obtaining bids

⁷ The Regional Technical Forum is an advisory committee established in 1999 to develop standards to verify and evaluate conservation savings.

and consulting with the contractor and customer to ensure that the products qualify for incentives. This is a multiple touch approach for educating the customer to invest in energy efficiency. Figure 4 illustrates the Inform to Invest approach.

Figure 4. Inform to Invest (I to I) Approach



Source: Portland Energy Conservation, Inc. 2010

The Inform to Invest approach is supplemented with several unique knowledge points that the Program provides its staff. For example, PECE provides education classes to its field and internal staff on “Being a Grocer” taught by former independent grocers. In this class the attendees learn what the priorities are for grocers, how to sell energy efficiency while understanding grocers’ margins, and how to build a lasting relationship with the customer. The training explains the importance of store profit and loss statements and how the FEA’s presentations are different than other people who approach a grocer, i.e. not a sales approach, rather to work with them as their energy efficiency consultant. The Program also emphasizes the importance of having continuity with the Field Energy Analyst assigned to certain regions, an imperative to success of the program. Stronger relationships with utilities and customers are built over time and benefit by keeping Field Energy Analysts in the same territories.

The Field Energy Analysts also place importance on working with a store’s existing trade ally or helping them find one if they need it. Working with local trade allies benefits the local economy of the town the grocer works with and also secures a quicker turnaround if equipment fails or if the grocer has follow up refrigeration needs. In 2009, the Program also found that for some rural contracting companies, the energy efficiency projects that were generated by the Program allowed the companies to hire new employees or to keep their current employees in an economy where they would have otherwise had to have let them go.

Leveraging utility knowledge about their local stores and regional chains is also helpful. The Program has found that, while not required, some individual utilities are very interested to help the Program by introducing EnergySmart Grocer to their customers and attending site visits and audits. This support helps build Program credibility with customers.

Approach with National Supermarket Chains

The Program also works with national supermarket chains. The approach used with national accounts is different than with the local or regional grocers.⁸ Using a team solely dedicated to national account chains, time is spent navigating national account chain structures to build corporate relationships, identifying and educating decision makers and, in some cases, working with other third parties who are contracted out to manage a chain's rebates. Equally important, the Program investigates whether the chains contract out their refrigeration operation and maintenance and/or energy efficiency needs. In those cases, the Program works again to establish relationships with trade allies and determine who the decision makers are concerning energy efficiency investments.

A major challenge for the program concerning national accounts is the need for utilities to be informed about the new developments occurring with their national account customers, while also balancing the need for national account customer's confidentiality around their projects. The Program has met this challenge by bringing the utility in as a partner who can help with other measures beyond refrigeration if a chain is working on a Program project. Another challenge the Program finds with national accounts is being able to react quickly when they make their final decision to move with a project. In some cases, this requires quick field deployment to start auditing or reaching stores to conduct post-install inspections. The Program has met this challenge by hiring a team of Field Technicians who are available to travel long distances and work exclusively on auditing and project verifications rather than working with customers in an inform to invest approach.

Effectively working with Rural and Urban Customers

When BPA partnered with PECI to implement the EnergySmart Grocer Program throughout the Pacific Northwest, one of the biggest obstacles that both parties knew would have to be addressed was how to effectively balance and deliver the Program to utilities of different size and geographic location. Important questions were asked about how many Field Energy Analysts could sufficiently cover a territory based on customer volume or location, how to get trade allies out to rural areas to serve energy efficiency projects, and what key similarities and differences the grocers had among these regions.

The Program found that while urban and rural customers had clear differences, they also had similarities and the Program could leverage its knowledge across all customer relationships. First, it is common that all customers the Program works with have a very low net profit margin, sometimes less than 1%. These customers typically require payback periods of three months to two years.

Another similarity that the customers have is a lack of available staff time to work with the Program. While data shows that refrigeration is the highest energy consumer in a grocery store, grocers and business owners are juggling dozens of critical decisions every day and they often see their electric bill as a fixed part of their operating costs. The Program found that in order to get grocers and business owners to invest in energy efficient measures, the Program

⁸ Stores larger than 5,000 square feet (majority of which are typically national accounts) accounted for 50% of the program kWh savings, stores less than 5,000 square feet accounted for 31% of the program kWh savings and convenience stores, restaurants and other facilities accounted for 19% of program kWh savings.

needed to offer compelling incentives, be a regular presence in the grocer's store and become a trusted energy efficiency partner. Repeat visits to customers during convenient times during the work day are important to establishing the trust.

While there are similarities between customers in rural and urban territories, customers in rural areas face unique challenges. The Program has found that rural grocer sales are seasonal and are impacted by shifting populations supporting farming and agriculture. There is an influx of people during harvest, typically from April through the end of September, and as a result there is an increase in the local economy, especially for the local grocery store. The Field Energy Analysts are responsible for knowing their local economy and in some cases, the crops and how well the crop is doing for their territory. Timing the visits and investment discussions when the grocers see an increase in their business is very relevant to the Program's success.

Another key difference between some urban and rural utilities is the cost per kWh of electricity. For instance, a rural utility commercial customer could pay a rate as low as 1 cent per kWh versus an urban utility customer who could pay a rate of 6 cents per kWh. Customers with extremely low kWh rates challenged the Program's Field Energy Analysts because they generally had a much longer return on investment when compared to a customer with a higher kWh rate. However, through the incentives available and return visits to build program trust, Field Energy Analysts were able to deliver energy savings to these customers. For example, for a central Oregon utility where customers pay 1 cent per kWh, the Program was able to help generate 500,000 annual kWh savings. The low cost of energy also impacted where some national account chain stores would plan to do major projects. Generally, they would concentrate their energy efficiency work in areas where they faced the highest electric rates, and best return on investment.

One of the most significant challenges the Program had was motivating trade allies to implement energy efficient measures in rural areas. The challenge was trade allies either did not have the energy efficient product knowledge or an unwillingness to travel long distances to implement energy efficient measures due to the high transportation costs involved. The Program tried a Sales Performance Incentive Fund (SPIF) which was a promotion geared to give trade allies a cash bonus to travel to rural areas and implement energy efficiency projects. The SPIF program was introduced at a time when gas prices were inhibiting trade allies' ability to drive to rural areas. While the Program offered a SPIF for projects in both rural and urban territories, the rural territories had a higher SPIF available. Contrary to the promotion's intent, due to the higher number of projects available in urban areas, more trade allies in urban territories benefited compared to the trade allies in rural territories. After this trend became apparent, the Program ended the SPIF program.

The Program also tried reaching out to trade allies to educate them about how to implement energy efficiency measures, and inform them about who manufactures and sells these products. After gathering lessons learned from a trade ally training conducted earlier in the Program, the Program found great success with hosting a series of trade ally trade shows. The Program learned that trade allies were more willing to attend events that were hosted early in the morning, where breakfast was provided, and which contained sales information and sales strategies to help them grow their business from trained experts. Here, the Program connected trade allies with manufacturers to help answer technical product questions. The program also learned the importance of making several repeat attempts to invite trade allies to an event. Leveraging this knowledge, the Program offered a series of successful trade ally trade shows located in several easy to reach regional hubs. In a recent trade show that focused on energy

efficient LED case lighting and case motors, over 50 trade allies attended three trade shows throughout the Pacific Northwest. This was an increase of over 35 compared to the prior year, reflecting better outreach, and greater interest in the program by the trade ally community.

Working with Associations

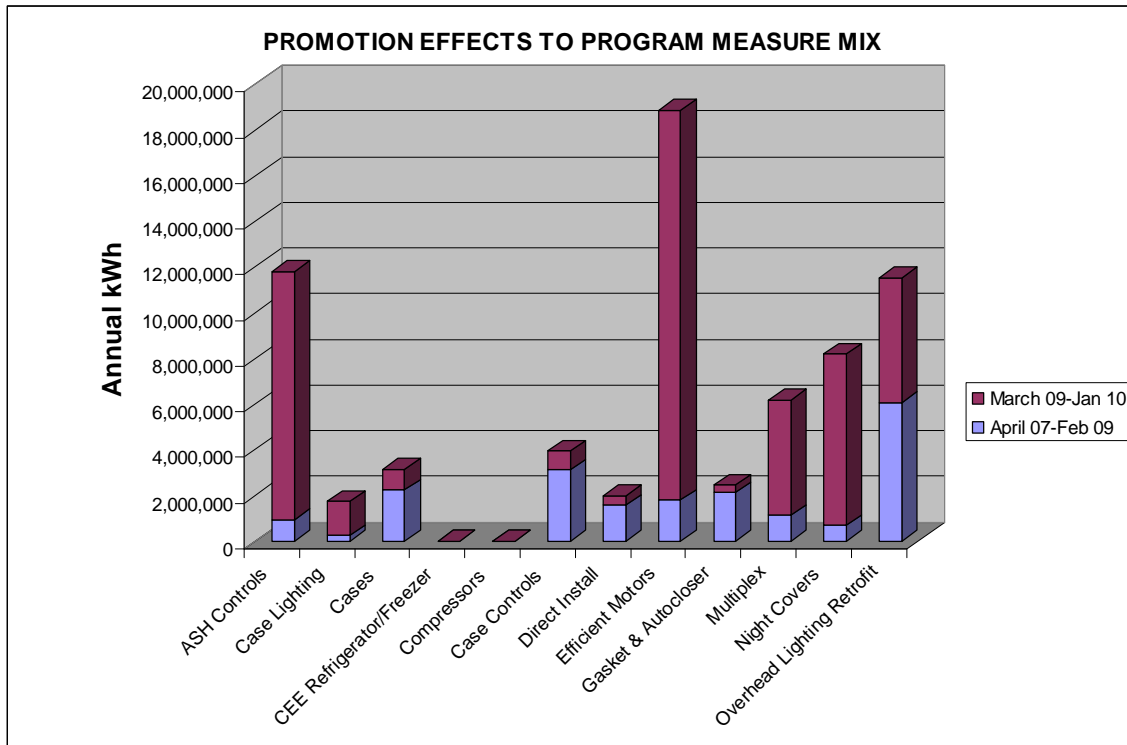
The Program recognized how cultural sensitivities also impact both rural and urban territories. Cultural groups have strong concentrations throughout the Pacific Northwest and the Program worked at making connections with associations who had members who could benefit from the program. The Program created partnerships with various grocers associations throughout the Pacific Northwest. In one association chapter alone, there are 950 members. The Program found that association members were very interested in reduced operating costs as a benefit from energy efficiency, and was able to leverage language skills and trusted word of mouth referrals to work with members. While these connections were very fruitful for both parties, developing the relationship took over a year and a half to gain traction. The Program realized over one million kWh savings in working with these customers and the associations members saved approximately \$120,000 to help keep their businesses competitive.

Promotions to Drive Energy Efficiency and Market Transformation

In the spring of 2009, the Program conducted its first incentive promotion called the \$2 Million Drive for Savings, which focused on increasing the incentive amounts for program measures, most significant of which were efficient motors, ASH Controls and nightcovers. The promotion, which lasted ten months, was developed in response to low adoption rate for energy efficient measures for independent grocers and convenience store owners. As part of this promotion, the Program had the support of BPA to raise incentives for approximately half of the program's measures. By offering increased incentives for measures that could be implemented as a package (motors and ASH Controls), the result was an increased adoption for implementing these measures.

The promotion was very successful with the energy savings that it delivered. The promotion exceeded expectations with one month generating 7 million kWh and another generating 11 million kWh. Figure 5 shows that the majority of savings came from efficient motors, anti-sweat heat controls and night covers.

Figure 5. Promotion Effects to Program Measure Mix



Source: Portland Energy Conservation, Inc. 2010

The program was also still able to maintain its incentive cost effectiveness while offering these increased incentives by not surpassing a target of 12 cents per kWh. Prior to the promotion, the program’s incentives averaged 8.25 cents per kWh compared to the months during the promotion which increased to 10.85 cents per kWh.

In order to have a successful promotion, flexibility was important for both the BPA and the Program. The promotion required many administrative changes to both BPA and Program systems such as updating all rebating systems and data bases with new incentive amounts and marketing and promotion of the new incentives. BPA demonstrated its flexibility by analyzing and approving increased incentive amounts and both parties had their systems updated to reflect the new incentive amounts within two months, and in time for launch of the promotion.

As with any program “first”, there were many lessons learned to carry over to future promotions. The Program learned that it must appropriately time the promotion so that it does not coincide with the busy summer season of refrigeration trade allies and also major holidays for the grocers. The Program also learned that it needed to have the appropriate support staff available to process a high volume of rebates that came in as a result of the promotion.

Trade allies also learned how they work with program promotions so that they could increase their businesses. Some trade allies wanted to secure their supply and they purchased products in bulk. This created a supply shortage in the market for certain Program measures. Also, trade allies purchased products without having the commitment of all of their customers at the time of purchase. This left some trade allies reaching their limit on lines of credit until they were able to get customers’ approval and install all of the products they had purchased. In a

subsequent promotion, the Program worked closely with manufacturers to confirm supplies were ready at the time of a promotion and educated trade allies about the importance of receiving approvals on projects before purchasing large volumes of products.

Promotion Creates Market Transformation

As the promotion was coming to a close the Program found that trade allies were more agile at installing measures, thus decreasing labor costs, and the manufacturers were decreasing their product costs due to the high volume of sales. Towards the end of the promotion, the amount of total project costs for motors and night covers were dropping and approaching the incentive amount for each measure. An example of this was a high producing nightcover manufacturer who dropped their price for night covers to align with incentive costs. The program was able to reach the majority of the market for installation of night covers with the promotion and the manufacturer continued the lower cost of the night covers post-promotion. This was the indicator that the market had been transformed for these measures and the Program was able to follow-up by decreasing incentive amounts after the promotion ended, without experiencing a snap-back in measure costs.

Conclusion

Through the customer focused and goal driven relationship of PECCI, BPA and the BPA utilities, the BPA EnergySmart Grocer program has saved millions of kWh throughout the Pacific Northwest in the grocery sector. The interest and commitment of all of the key players to bring energy efficiency to this underserved sector was the platform for this high kWh savings. All of the key players were committed to working through expected challenges and maintained flexibility when meeting unexpected challenges. Finally, identifying unique ways to approach independent grocers and national supermarket chains about energy efficiency, creating an effective approach for working with rural and urban customers and appropriately setting incentives to help drive energy efficiency market transformation enabled the program to become a trusted partner with the Pacific Northwest grocery sector. This partnership, which produced significant results, will help continue to provide future energy efficiency savings for the Pacific Northwest.

References

DOE. Department of Energy. 2003. http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set19/2003pdf/e05.pdf

NW Council. 2010. http://www.nwcouncil.org/energy/powerplan/6/final/Ch4_021010.pdf

NW Council. 2010. <http://www.nwcouncil.org/energy/powerplan/6/overview.htm>