

Refrigerator Early Retirement, Replacement and Recycling With Community Partners

Diane Ferington and Kate Scott, Energy Trust of Oregon, Inc.

ABSTRACT

This paper describes pilot efforts undertaken by Energy Trust of Oregon, Inc. to conduct early retirement and recycling of inefficient refrigerators and to replace these units with new energy efficient models. These efforts are intended to determine the best design approach for a collaborative delivery model to implement refrigerator programs that deliver significant cost-effective energy savings while achieving multiple end goals of the various participants in the transaction chain. This paper discusses program design, implementation details, end results, key variables and lessons learned. Some distinguishing characteristics of pilot design include actual in-home refrigerator metering, use of targeted direct mail for marketing, collaborative partnership with a low income weatherization agencies, predetermined replacement models and a retail partnership for the purchase, delivery and recycling.

Included is an analysis of the first pilot's income levels served, sharing of savings per unit and in total, and a discussion of total cost as well as incentive pieces being paid to the various actors involved in the identification, replacement and recycling process. This paper also includes complete design details including required agreements, forms, and procedures. Readers should gain from this paper an understanding of how they might implement such an effort in their service territory.

Overview of the First Pilot

In the fall of 2007, Energy Trust of Oregon and Community Action Program East Central Oregon (CAPECO) collaborated in an effort to help residents of Pendleton, Oregon, replace their inefficient refrigerators with new Energy Star models. Refrigerators targeted for replacement were those 10 or more years old with a minimum usage of 1,000 kWh per year. Energy consumption for each refrigerator was determined by means of in-home monitoring of the unit using a plug-in energy monitoring device. The device was left on the refrigerators for a period of 24 hours and energy usage was based on the average reading during that time. All refrigerators being replaced were recycled by the local sanitary service in accordance with the Environmental Protection Agencies standards. In-home monitoring visits also included the optional installation of up to six free compact fluorescent bulbs, and leave-behind materials with information on additional ways to conserve energy.

Background of the Organizations

In 2002, the Energy Trust's doors opened for the purpose of investing in cost-effective energy conservation as well as installation of renewable resources and encouraging energy market transformation. As a non-profit organization created by legislative action Energy Trust has oversight by a Board of Directors and the Oregon Public Utilities Commission. The activities of the organization are funded through an energy restructuring law that requires investor owned

electric utilities to collect a three percent public purpose charge. Energy Trust serves customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas, and Avista.

CAPECO is a non-profit community organization in Pendleton, Oregon, dedicated to serving low-income households. Founded nearly twenty years ago, their proclaimed mission is “to mobilize human and financial resources to benefit the citizens, businesses, and communities” in their area. Their breadth of service includes programs for local workforce development, senior services, and also energy and weatherization programs. The community service and weatherization components worked closely with Energy Trust to implement this pilot effort.

Goals and Mission

The goal of the first pilot was to recycle at least 150 and no more than 225 inefficient refrigerators and replace them with new, efficient models, while remaining within a budget of \$100,000 and achieving a minimum of 100,000 kWh of savings. The mission of the pilot involved a combination of key aims. A priority when considering how to implement the program was a desire to reach low-income residents. Reaching lower incomes was a factor in determining our energy savings assumptions for the pilot, as savings assumptions for a low-income home vary from the assumptions for a standard-income home. For the refrigerator in a low-income household, it is assumed that a) the household will use their existing refrigerator until it has completely ceased to run, and that b) when the necessity to replace their refrigerator arises, the household will replace it with an inexpensive refurbished model which would likely also be inefficient or at minimum use far more energy than a new refrigerator would. These assumptions were taken into account during the planning phases of this effort. However, for the purpose of this pilot, although we were targeting a low-income demographic, we did not make low-income a requirement for participation. This was so as not to exclude other parts of the population who wanted to participate, and to ensure we met our goal for quantity of refrigerators replaced. Allowing “any income” participation also enabled the marketing approach of direct mail we intended to use for this pilot.

Energy education was also a component of this pilot. By installing free CFLs and speaking to participants about how to conserve energy and save on power costs, we hoped to increase awareness of energy efficiency and behavioral practices to reduce home energy consumption. The effort also focused on promoting beneficial relationships within the community revolving around energy efficiency. This included supporting local non-profit low-income weatherization agency, CAPECO, allowing them to further reach out to the community. The pilot allowed CAPECO to use Energy Trust funds for the replacement of refrigerators and use their Department of Energy and other funds for weatherizing low-income dwelling units. Because economic stimulation is an important element of all Energy Trust activities, we selected a independent locally owned Sears franchise as our retailer, therefore ensuring that the money exchanged in these efforts would ultimately remain within Pendleton and support the local economy. Additionally, the entity that Sears used to deliver the new refrigerator and pick up the old one for recycling was a local company.

In conjunction with these aims was the overarching intention to explore and demonstrate the cost-effectiveness of a replicable program design, which could be adapted and implemented in other locations.

Program Design

Initial marketing was done with a direct mailing which explained the refrigerator replacement offer, including details such as eligibility criteria, cost to participate and next step action. Residents who were interested in participating were directed to call a number at CAPECO's offices which was set up especially for this pilot. A CAPECO representative responded to callers' interest with a set of pre-screening questions to determine if the customer was eligible and likely had a high usage refrigerator. The pre-screening questionnaire included the following questions:

- Are you a resident of Pendleton?
- Are you a customer of Pacific Power?
- How old is your refrigerator?
- Do you rent or own your home?
- Are you intending to purchase a new unit if you are eligible?

If the customer is determined eligible, the CAPECO representative schedules a visit to their home to monitor their refrigerator's energy usage. During this home visit, the CAPECO representative hooks up an energy monitor to the participant's refrigerator, and completes the data sheet with project attributes specific to that home including such details as type of fuel for space heat, utility account number, whether there is air conditioning and if so, where it is located. Because the savings booked per unit installed contained assumptions such as space heating fuel, and whether there is air conditioning, these were important details to capture for this first pilot. Additionally, CAPECO offers to install up to 6 free CFLs in high-usage lighting sockets in the home and talks to the resident about lowering energy use, leaving behind materials with information on how to save energy in their home.

The CAPECO representative returns after 24 hours to disconnect and read the monitoring device, and inform the participant whether their refrigerator qualifies for replacement based on the reading. If the monitor indicates that the refrigerator uses 1,000kWh or more annually, the CAPECO representative labels the refrigerator with an identification number, and presents a qualification certificate to the participant marked with the same I.D. number. The certificate includes information such as name, address, type of refrigerator being replaced, and identification number labeled on refrigerator, to ensure a participant may only replace the exact unit monitored. The participant then brings the certificate to the Pendleton Sears franchise to purchase one of the pre-determined qualifying models which Energy Trust has agreed to buy-down. (See list of qualifying models below, table 1.)

Table 1. List of Qualifying Models

Make	Model Number	Size	Energy Usage	Retail Value	Customer Pays*
Kenmore	67872	18.2 cu.ft.	407kWh/year	\$569.99	\$234.49
Kenmore	67182	20.6 cu.ft.	432kWh/year	\$619.99	\$276.15

*Estimated customer price—customer may opt for different color or in-freezer ice-maker which does not affect energy usage, at their own added expense.

Sears arranges with the customer sale and delivery of the new refrigerator, and charges the buy-down amount to a Sears Commercial One credit account set-up by Energy Trust, which

Energy Trust pays upon receipt of invoice. Included in the charge from Sears to the Energy Trust is the cost of the delivery of the new refrigerator, pick-up of the old refrigerator and recycling of the old unit to EPA standards. The remaining balance is paid by the customer. If the customer desires an ice maker or special color of the same model, they may pay the additional charge for such features. At the time of delivery, a Sears agent removes the old unit and brings it to the local sanitary plant where it is recycled. Sears is responsible to present Energy Trust with a letter of decommissioning for each refrigerator recycled.

Roles of Key Players

The roles and responsibilities of each party involved were as follows:

- Energy Trust:
 - Create, distribute and pay for marketing materials to solicit participation in program
 - Order CFL inventory shipped to CAPECO at no cost to CAPECO
 - Receive and process paperwork, including monitoring forms, replacement forms, recycling certificates, invoices, and other implementation communications
 - Queue and send out incentive payments to CAPECO and Sears Commercial One account
- CAPECO:
 - Respond to incoming calls inquiring about program and participation
 - Pre-screen interested parties over the phone to determine likelihood of qualification and intent to act on offer if eligible, based on pre-written set of questions
 - Schedule home monitoring visit if customer qualifies based on phone screening
 - Perform monitoring, data gathering, capturing customer signature and optional CFL installation
 - Distribute qualification certificate to customer if refrigerator qualifies
 - Fill out monitoring forms completely at time of monitoring, and return forms to Energy Trust on a weekly basis, as well as provide monthly reports in the first week of each month
 - Communicate about eligibility, participation and monitoring
- Sears:
 - Handle purchase transactions with customers who have qualifying certificate
 - Bill Energy Trust appropriate amount for each unit purchased on Sears Commercial One account
 - Deliver new refrigerator, remove old refrigerator
 - Recycle old refrigerator and provide verification certificate to Energy Trust
 - Fill out replacement form for each customer who purchases a refrigerator through the program and provide to Energy Trust in a timely manner

To define these different roles, Energy Trust established a Memorandum of Understanding (MOU) with both Sears and CAPECO which clearly defines the expectations and responsibilities on behalf of each organization. This proved to be one of the most critical pieces in the effort, and included specific language with respect to the forms processes, time frames,

delivery of services, terms of payment, and the definition of what constituted a “monitored refrigerator,” a “qualifying refrigerator” and a “successful replacement.” These definitions were an important part of the agreements.

Payment Pieces

The design of financial incentives paid out by the Energy Trust is as follows:

- \$50 monitoring fee. This fee was paid to CAPECO for each refrigerator monitored. This amount was intended to reimburse the agency for time spent monitoring, traveling, and on the phone to potential participants. This fee was paid regardless of whether the refrigerator qualified for replacement.
- \$3.25 CFL incentive. This fee was paid to CAPECO for each CFL bulb installed. The CFLs were provided to CAPECO by Energy Trust at no cost.
- \$75 successful replacement incentive. This fee was paid to CAPECO for each refrigerator replaced by an eligible participant who followed through with the offer. This was intended to be an incentive to CAPECO to strongly encourage participation and to prevent unnecessary time spent monitoring homes that would be unlikely to follow through with the offer. Having a larger incentive for acting on the offer encouraged both screening in advance for qualification and intent to follow through on the offer because the fee would not be paid if the refrigerator did not meter at 1,000 kWh or greater or if the participant did not follow through with the purchase.
- \$250 refrigerator incentive. This was paid to Sears to buy-down the retail cost for each new refrigerator purchased, significantly reducing the cost for the customer.
- \$35 delivery fee. This fee was paid to Sears for the delivery of the new unit as well as removal of the old unit.
- \$45 recycling fee. This fee was paid to Sears for the recycling of each old unit. Sears held an agreement with a recycler who was independent of Sears, however it was easier to pay Sears directly for this component and place recycling documentation requirements in the Sears MOU. This made Sears accountable for the recycling while eliminating another party for the Energy Trust to have to coordinate with, while also supporting natural market relationships, which is important for market transformation purposes.¹

This adds up to a maximum of \$474.50 per replaced refrigerator in costs to Energy Trust, with \$330 to Sears (\$250+\$35+\$45) and between \$50 and \$144.50 to CAPECO depending on if the qualified participant opted for CFL installation, and if they acted on the offer. Other costs associated with the effort included marketing (about 4% of total costs), travel (less than 1% of total costs), and time put in by Energy Trust staff.

Payment Processes

Incentive payments are processed at the Energy Trust on a weekly basis in accordance with the MOUs established with CAPECO and Sears. Upon receipt of each monitoring form

¹ Most retailers have recycling relationships and it’s better to work with the retailer having them manage the desired level of recycling compliance, so as to not interfere with this natural market relationship.

with complete project attribute data including site information, number of CFLs installed, utility account number and customer signature, a \$50 payment for the monitoring plus \$3.25 per installed CFL is made to CAPECO. Additionally, another payment of \$75 is paid to CAPECO for each qualified customer that has made a replacement purchase, once Energy Trust has received notice from Sears of the purchase and a completed monitoring form from CAPECO. Often both the monitoring and purchase will fall in the same week. All individual payment pieces for a given week will be paid in a single check with detail by customer name itemized on the check stub.

Sears payments followed the same weekly processing; however it was a bit different in that the fees going to Sears for refrigerator buy-down, delivery & pick-up and recycling were always in the amount of \$330 charged to a Sears Commercial One credit card in Energy Trust's name at the time of customer purchase. Sears then faxed Energy Trust a copy of the individual customer purchases which were then matched up with monitoring forms by customer name and address. Our accounting department received Sears Commercial One invoices for each purchase transaction. For each refrigerator that had been purchased which had a completed monitoring form to match, a check was sent to Sears Commercial One. As was sometimes the case, payments could not be made for purchases of refrigerators which lacked complete monitoring forms, due to items such as lack of utility account number, customer signature, or other required project details, and in these instances CAPECO was required to acquire all missing data in order for the payment to be made.

In addition to the complex matching of project to invoice to credit card billing, the Energy Trust, as a new customer to Sears, had a modest account balance of \$5,000 and this line of credit proved to be inadequate to accommodate the spikes of purchases and delay in complete monitoring forms. At one point Energy Trust had customers wanting to act on their certificate to purchase a new refrigerator but unable to do so due to no available credit line. Fortunately CAPECO had a credit line and the purchases then diverted to their credit card, however the Energy Trust needed to then establish two Sears Commercial One credit account payees and technically speaking did not have MOU language to support this. However this was overcome with a few e-mails documenting permission and the creation of new measures in the Energy Trust's project tracking and payment system. Needless to say this particular method of processing the refrigerator portion of the payment, by credit line with retailer, is not the recommended path we desire to take in the future. The preferred approach would be direct 30-day terms with a retailer.

Marketing Strategies

Our primary marketing action was a targeted direct mailing to 2,222 homes on postal routes in lower-income neighborhoods in Pendleton. This mailing included a flier with information about the offer and the product, as well as a cover-letter signed by the executive officer of CAPECO with more detailed information on how to participate. This mailing resulted in the majority of responses and eventual participants.

Near the end of the effort, a supplemental black and white advertisement was placed in the regional newspaper (The Eastern Oregonian) and ran three days a week over the course of three weeks. This was intended to be the last push to meet our participation goal, however Sears also ran a short radio advertisement briefly in the midst of the pilot which may have helped bring participants, but evaluating this is difficult due to lack of screening for how participants heard

about the program. As well Energy Trust was not informed about the radio spot until after the fact.

There were also follow-up marketing oriented communications to participants who had been monitored and qualified but had not yet acted on the offer. After qualified participants had not acted for about three weeks, a CAPECO representative would give them a reminder call and ask whether they still intended to participate, and encourage them to do so. When the pilot was three weeks out from the end-date, a second letter went out to qualifying participants who had not yet replaced their refrigerator encouraging them to do so before an extended dead-line date. These two follow-up methods combined resulted in nearly all of the remaining qualified homes replacing their refrigerators before the end of the pilot. The second letter “*end of pilot*” mailing also served as a final notice to act now and affirm the fact that the offer was not open-ended but had a deadline to act by, which is important from customer service and legal obligations view points.

Statistics & Analysis

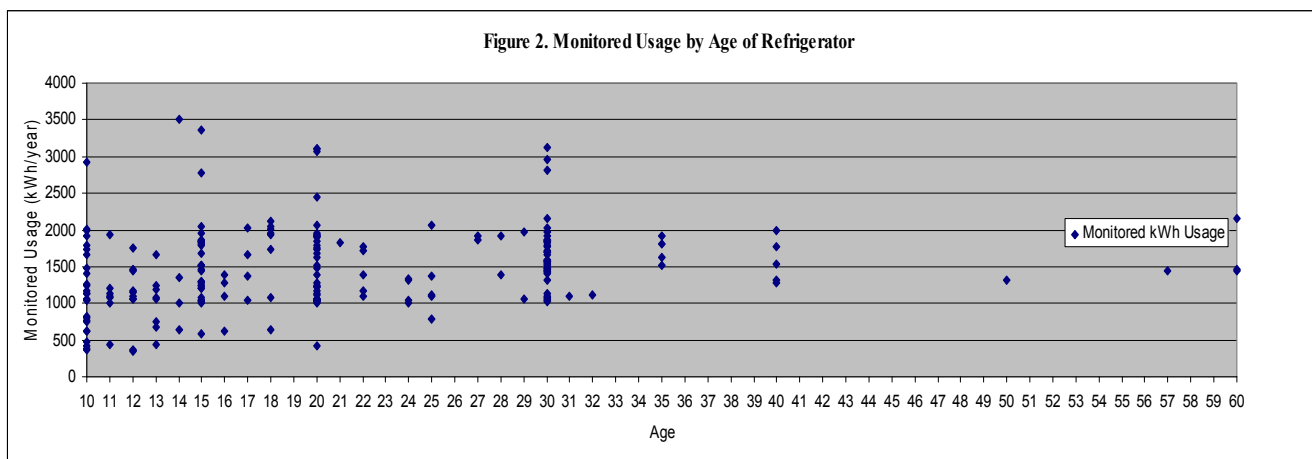
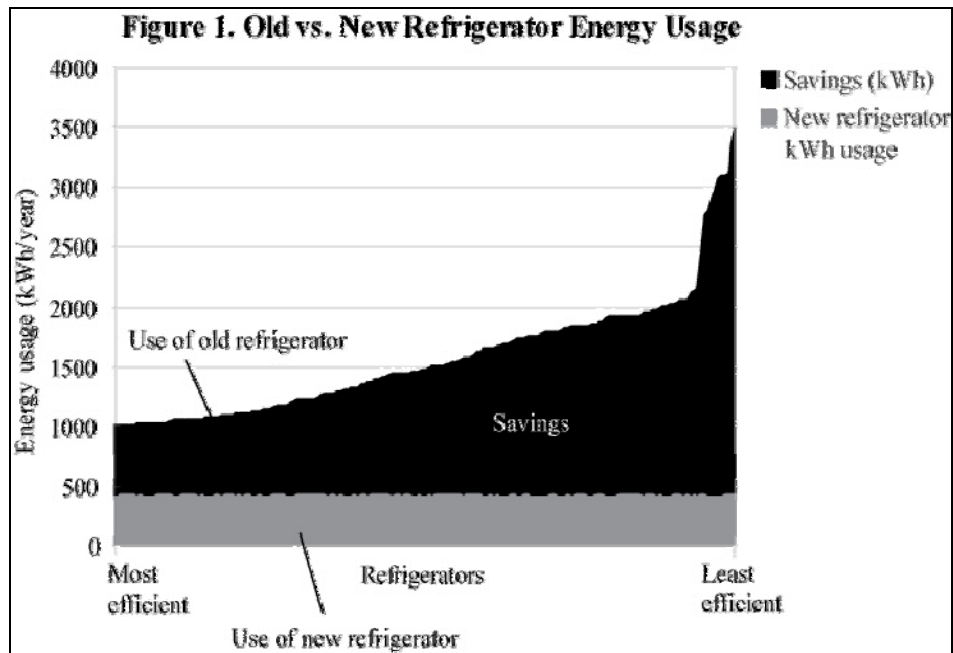
Savings & Usage

Energy Trust assumed a savings of 980kWh/year per refrigerator with a measure life of ten years. This number is based on the assumptions that the majority of participants would be low-income and therefore less likely to replace their current refrigerator with a new efficient model, and also includes about a ten percent reduction based on heating fuel mix, percentage with air conditioning, and the pilot location’s climate for interactive effects. These interactive effects will vary for different regions and climates with different energy needs, for example, in a very warm climate where air conditioning is constantly run, a more efficient refrigerator will produce less heat, therefore reducing the energy demand for the air conditioner as well. The interactive effects for this pilot were specifically determined for Pendleton’s individual climate and energy patterns.

In terms of actual kilowatt hour per refrigerator usage for units replaced in this program, monitored values ranged from 1,008 to 3,504 kWh/year, with an average usage of 1,568 kWh/year. Before taking into account interactive effects, this resulted in actual savings ranging from 576 to 3,072 kWh/year, averaging 1,146 kWh/year per refrigerator. (For a visual of actual savings range, see Figure 1.)

Do-Not-Qualify Rates and Non-Action Rates

Interestingly enough, we did not see as much correlation between the age of the refrigerator and its usage as was initially expected. In each age group there were large differences between energy usage, however the majority of refrigerators which did not qualify were ten years old. (For age of refrigerator compared to energy usage, see Figure 2.) We also found that the pre-screening phone questionnaire was very effective in eliminating customers who would not qualify or follow through with refrigerator replacement, and as a result the Do-Not-Qualify (DNQ) rates were lower than expected for the effort. Of the 214 refrigerators monitored, only 22 did not qualify (10.28%).



Furthermore, the actual monitored kWh usage of the total monitored sample (214) averaged at 1,461 kWh/year, which would have resulted in an average savings of 1,046 kWh/year per refrigerator. The average monitored kWh usage of the actual qualifying sample (192) was 1,568 kWh/year, an average savings of 1,149 kWh/year. In effect, monitoring and eliminating refrigerators which used under 1,000kWh/year only increased our savings by an average of 103 kWh/year per unit. Considering the cost of monitoring, in future efforts it may be more cost-effective to pre-qualify refrigerators without the time and cost of in-home monitoring visits. This possibility will be investigated in further efforts.

Of the 192 monitored participants who did qualify and receive a certificate, only eight did not *act* on the offer (4.17% of the qualifying sample, 3.74% of the total sample). Combined, unacting participants and DNQ participants equaled about 14% of the total sample. These percentages were lower than initially expected, and indicated successful control mechanisms in place during implementation. However, in subsequent programs if it is a concern that DNQ and

Non-Action rates may be higher than desired, there are certain actions which may lower these rates, and possibly increase cost-effectiveness and productivity.

One identified way of increasing action rates would be to play a more direct role in connecting the qualifying participant to the retailer. This could perhaps be accomplished by placing the order for them or with them at the time of reading the monitored results, or aiding with the purchase process in other ways acceptable to the retailer. Offering a higher incentive on the new refrigerator would also lower the number of participants who do not act—the majority (63%) of the non-acting participants lived in low- or moderate-income homes, and likely could not afford to take advantage of the offer even at the much reduced cost.

To lower DNQ rates, one possibility would be to raise the age limit of the refrigerator to 11 years or older, as 41% of units which did not qualify were 10 years old. A second, simpler possibility would be to do away with the 1,000 kWh/year requirement, and in effect, do away with the in-home monitoring visits (as discussed earlier) and rely on pre-screening.

The time and money saved in this regard would enable Energy Trust to offer a slightly higher incentive for replacement, and therefore make the offer more accessible to low-income households. Discontinuing monitoring is a possibility that will be explored in future refrigerator replacement efforts. However using the information gained from the monitoring efforts in the first pilot was critical to influence the direction of future efforts and was a necessary investment for the initial pilot.

Income Levels Served

Of the 184 refrigerators replaced, 40 (22%) were in low-income homes, and 22 (12%) were in moderate (60-80%)-income homes. These homes constitute 34% of the homes served with new efficient refrigerators. This percentage fell significantly short of our goal to reach a majority of low- to moderate-income residents of Pendleton. Given the dependence of assumed savings on reaching this demographic, in future efforts the low-income attribute will become a requirement for participation and verified during the pre-screening process or else the assumptions will need to be adjusted and with new savings values to determine the amount of dollars that can cost effectively be used in an “any income” effort. The next pilots will likely include targeted low-income requirements but without in-home monitoring.

Cost-Effectiveness

As the first in a series of pilot efforts for refrigerator replacement, it was expected that the levelized cost for our initial pilot would be relatively higher than usual. After calculating in interactive effects and using a 5.2% discount rate, the levelized cost for the refrigerator replacement portion of the pilot came to 5.6¢. Without the cost of monitoring, the levelized cost goes down to 4.9¢. The program came out with a Societal benefit-cost ratio (BCR) of 1.56, and a Utility System BCR of 2.04. (For a table of inputs into the cost-benefit calculations, see Table 2, below.) It is important to point out that this effort achieved a 95% success rate, and that in future efforts costs are expected to be significantly lowered as implementation methods are improved and incentive amounts are decreased. With this in mind, it is expected that the cost-effectiveness of each subsequent effort will improve.

Additionally, a factor that will vary by region and affect the cost-effectiveness and BCR estimates is the cost of energy in a given area. The particular climate that this pilot occurred in

happens to be rich in hydro-power, and costs of energy are relatively low in the Pacific Northwest. In areas where energy is more expensive, creating a refrigerator replacement program with optimal BCRs may not be difficult.

Table 2. Cost-Benefit Calculations

Measure	Measure Lifetime	Annual kWh Savings	Total Cost	ETO Incentives	Utility System PV of Benefits	Societal PV of Benefits	Combined Utility System BCR	Combined Societal BCR
Refrigerators	10	189,834	\$78,697	\$74,445	\$122,526	\$114,982	1.65	1.46
CFLs	7	78,183	\$5,638	\$3,487	\$37,133	\$30,695	10.65	5.44
Total Program		268,017	\$84,334	\$77,932	\$159,659	\$145,677	2.05	1.56

Discussion of the Different Cost Pieces

There were several cost pieces which proved to be higher than necessary. It was determined that the \$50 monitoring fee could be lowered, as well as the \$75 successful replacement incentive, based on the fact that those numbers exceeded the recipient's actual cost of implementing and monitoring in this particular effort. In addition, after comparison with other potential pilot efforts it appears that the \$45 recycling fee is relatively higher than standard fees in demographically similar areas. Recycling services in other parts of the Energy Trust territory have been found to range from \$15 - \$35 with one location charging only \$5 if serving low income households is a requirement.

Results

Below is a summary (Table 3) of our initial goals compared to the end results of this pilot. Overall the effort was a success, particularly as a model of how to emulate similar efforts in the future by implementing lessons learned.

Future Efforts

Energy Trust has implemented a second-generation refrigerator replacement pilot in Roseburg, Oregon, which began in 2008, with local low-income agency Umpqua Community Action Network (UCAN). This effort takes advantage of the lessons learned from our Pendleton pilot and promises to be more successful in achieving desired cost-effectiveness, while reaching 100% low-income homes, and the volume of refrigerators replaced will be closer to 300 and expanded upon with proof of success and demand. Differences include requiring participants to be low-income, the decision not to offer CFLs in order to put more money towards replacing refrigerators, the required length of monitoring shortened to three hours, and the addition of a smaller 15 square foot model. Also, local retailer South Stephens Appliance is able to offer substantially lower prices on energy efficient refrigerators, therefore making the effort more affordable to take advantage of. South Stephens Appliance has also agreed to direct 30-day terms for payment, which will facilitate a smoother payment process. Other cost pieces that will vary:

Table 3. Initial Goals vs. Final Results

Initial Goal	End Result
Replace at least 150 and no more than 225 inefficient refrigerators with new energy efficient models	Replaced 184 inefficient refrigerators with new energy efficient models
Achieve energy savings of at least 147,000 kWh/year by replacing inefficient refrigerators	Refrigerator replacement resulted in 210,927 kWh/year in energy savings
Install up to 6 compact fluorescent lights in homes monitored to help residents reduce energy use	Installed a total of 1,073 CFLs resulting in energy savings of 78,183 kWh
Remain within the budget of \$100,000 for complete effort	Completed effort spending \$95,000
Target low- to moderate-income homes	Replaced inefficient refrigerators in 40 low-income homes and 22 moderate-income homes, totaling 34% of refrigerators replaced

- \$30 monitoring fee. UCAN is able to employ existing staff members to implement this program, as well as leverage a combination of other funds. Appointments are arranged geographically as to distribute monitors in conjunction with existing weatherization programs, therefore lowering implementation costs for this effort.
- \$50 successful replacement fee.
- \$30 delivery fee.
- \$5 recycling fee. The retailer communicated to the local recycling plant about our effort and they agreed to offer a discounted recycling rate for this effort because it is targeted at helping low income families.
- \$178, \$210, or \$249 estimated customer cost, depending on the size of refrigerator purchased.

Improved cost-effectiveness will allow Energy Trust to reach more low-income homes with our dollars and expand quotas to achieve higher energy savings. This will also serve as a further pilot effort to learn from and explore how to implement similar programs in other areas, and on larger scales.

Conclusion

This paper was written to demonstrate the process Energy Trust went through to deliver a collaborative effort at refrigerator retirement/replacement that leveraged various market actors to achieve cost-effective energy efficiency. There are many ways that other similar efforts can be molded to meet local needs of a given market and individual organizations. The clearer all participants in the effort are about the expected outcomes and each organization's role in the process, the smoother the program will operate. The MOUs were of key importance in establishing these roles and made each participant's responsibilities clear. Understanding how different pieces of the effort can be adjusted to involve and/or leverage additional market actors is valuable in achieving multiple objectives through a single effort; however the mechanics of maintaining the quality of service and simplicity of the offer while capturing the necessary information all need to be considered as the number of organizations involved in the transaction grows. The following section outlines some important questions to consider if you are thinking about designing a similar effort.

How to Adopt this Program

There are many things to keep in mind when considering how to adopt similar efforts in different areas and service territories. Many aspects may change based on location, the organizations involved and funding availability. Several important things to consider in the planning phases would be:

- What will your requirements for participation be?
- Who is your funding source? For example, if it's a utility, do participants have to be customers of that utility?
- How will the monetary transactions take place and what are the required triggers?
- What organizations will you be working with? Are there opportunities in your community to leverage other actors, not only other non-profits and local retailers, but perhaps tapping local waste funds, working with the DEQ, or seeking out grant funding opportunities?
- Who is your target audience? For example, is it low-income homes, or perhaps a community project?
- Think carefully ahead of time about what information you want to capture from the participant: what will be useful in evaluating the project's success and cost-effectiveness?
- What amounts for the different cost-pieces does it make sense to pay? How much will it cost to monitor homes and who will be delivering this service? Are you able to find deals with a local retailer and recycling service—how much will the delivery and recycling costs be?
- What kind of savings can you capture per refrigerator? What are the interactive savings effects in your market?
- Will you require a refrigerator to be monitored and meet a certain energy usage? What length of time will you monitor the refrigerator?
- Will CFLs be part of your effort? What about energy education?

If you have further questions about elements of this paper or questions about specific items mentioned but perhaps not gone into enough detail due to paper length requirements please contact either Diane Ferington, diane.ferington@energytrust.org or Kate Scott, kate.scott@energytrust.org.