An Evaluation of Energy Trust of Oregon's Refrigerator Recycling Program

A Report Prepared for
Energy Trust of Oregon

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January 2010

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Executive Summary

Overview of the Program and the Evaluation

This report presents the results of a process and market evaluation of Energy Trust of Oregon's (ETO's) Refrigerator Recycling Program. The Refrigerator Recycling Program was implemented in the middle of 2008. This report provides an overview of its first full year of operation.

The Refrigerator Recycling Program provides incentives to customers to recycle old refrigerators and freezers. Removing older refrigerators and freezers from the grid can substantially reduce the load on the grid, producing significant electric and environmental benefits.

The units are removed from customer premises without charge. They are taken to a recycling center where they are de-manufactured. The purpose of the evaluation is to examine the results of the first year of operation with an emphasis on the January to June 2009 period, to assess the operation of the program, and to make recommendations for changes and improvements.

This report is based on in-depth interviews with ETO staff, contractors, and other actors. Program participation data obtained from JACO was evaluated and used extensively in producing this report. The results of an August 2009 survey of 307 households that participated in the program between January and June of 2009 are also included.

First Year Accomplishments

From June 2008 to the end of June 2009, the program removed 7,089 units, 5,563 of which were refrigerators (78 percent). The mean consumption at manufacture was 1,087 kWh per unit for refrigerators and 1,070 kWh per unit for freezers. The estimated gross annual savings for the first year of operation for the program using kWh consumption at manufacture is 7.2 GWh, and the consumption assuming degradation is 11.5 GWh. We estimate that without the program, 46 percent of the units would still be on the grid, and 47 percent would have been taken off the electrical grid during the year or at some point in the near future. What would have happened to the remaining 7 percent of units is unknown.

Summary and Recommendations

After a slow start in 2008, the program significantly increased the number of units that it was removing in the first half of 2009. This represents significant progress. The program is achieving its goal of removing older refrigerators. According to the survey, only a small percentage of the units (15 percent) that were removed were working but had not been plugged in.

An important reminder of how much is left to do is the fact that participant households still had an average of 1.37 refrigerators after they participated. **It is recommended that more attention and resources including some research resources be focused on increasing the number of second units being removed.**

A key marketing event was a bill insert in the Pacific Power service territory. The data show that participants are most likely to become aware of the program through bill

inserts and contacts at appliance stores. Media marketing produces many fewer sign ups although it may be important for building awareness and longer-term participation. The bill inserts are particularly important in targeting households for second unit removal. **It is recommended that marketing resources be concentrated on bill inserts, direct mail, and contacts through appliance dealers and to a lesser extent on other forms of marketing.**

Convenience was the most important motivation for participating in the program followed closely by the incentive. Slightly more than 80 percent of participants say they would have participated without an incentive. Concern about the environment is also a factor in people's decision-making. **It is recommended that marketing efforts stress ease of use and the convenience of the program.**

There are information gaps. Slightly more than a third of respondents did not know about the cost of operating a second refrigerator. **It is recommended that cost savings from not operating a second refrigerator be included with the incentive when presenting the benefits of the program.** The annual operating savings may be as much as six times the value of the incentive.

Customers used both the telephone and the Internet to sign up for the program. The telephone was used most frequently. Customers cited convenience as a key reason for using the telephone. There is also a clear correlation between the amount of Internet use and using the Internet to sign up.

Many people were not aware that they could sign up online and indicated that if they had known that, they might have used the Internet. There are also some hints that people may prefer the human interaction. We believe that the telephone option will continue to be the preferred method for the foreseeable future. **It is recommended that ETO maintain the telephone option and enhance it if possible. It is recommended that the ETO make the Internet option more visible to potential participants.**

Without a nonparticipant disposer survey, it is difficult to judge the value of the collaboration with Sears to remove appliances and recycle them when new appliances were delivered. There is good evidence that information provided by the retailer is an effective way to reach one segment of customers. There is also evidence that there are benefits for both ETO and Sears. It appears that JACO and Sears worked together effectively. The process evaluation shows that some of the concerns about reducing net-to-gross when working with retailer appliance dealers can be effectively addressed. **It is recommended that ETO continue to work with Sears to recycle appliances. It is recommended that ETO consider including one or two additional new appliance dealers. It is also recommended that ETO conduct a nonparticipant disposer survey that will provide data to help assess the degree of free-ridership associated with working through appliance retailers.**[1]

Customer satisfaction with the program is quite high. Ninety percent or more of the respondents said that they were completely satisfied. On the flip side, only one percent expressed complete dissatisfaction with the program. Compared to other types of programs, these satisfaction scores are quite good. One hundred percent of respondents said that they would participate again. Scheduling and removal received

[1] Free-ridership occurs when customers who would have had their units removed by the appliance dealer without an incentive receive an incentive to have it removed. More generally, the appliance program should result in an increased number of units removed from the market that wouldn't have been removed through some other channel.

good ratings. There are a few areas where improvements may be possible. One of these is increasing the percentage of people who are contacted shortly prior to the scheduled removal. **It is recommended that ETO examine the ratings and see if there are other areas where improvements could be made.** We warn against spending significant resources to make improvements that may result in few gains in satisfaction. It is important to address the concerns of people who complain but they are literally the one in one hundred.

The tracking system and the data flows were examined. Currently the resources expended on quality control are necessary, but some basic changes would reduce the need for these requirements. **It is recommended that some method of obtaining customer names and addresses be worked out with the utilities as soon as possible.** Not having the names of account holders is a serious detriment to good customer service.

It is recommended that if it has not already happened that addresses be normalized before they are sent to JACO.

There are capabilities in the JACO software to conduct brief surveys with customers. In fact, we believe that JACO may already do some of this for its own purposes. **It is recommended that ETO take advantage of these capabilities to gain real time feedback. We have provided some recommended survey questions to be asked of customers when they call. It is recommended that a rigorous protocol be established to do this.**

We have provided some detailed recommendations concerning the structure of JACO's databases. **It is recommended that these or something similar be implemented if the capabilities are not already incorporated into the software.**

It is strongly recommended that ETO and PECI staff visit the JACO call center to see how the operation works. It is also recommended that ETO provide briefings to the JACO call center staff on their needs and reasons for needing quality data. These steps will lead to an increased understanding and better operations.

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EnergyTrust of Oregon

MEMO

Date: February 22, 2010
To: Board of Directors
From: Sarah Castor, Evaluation Project Manager
Kendall Youngblood, Residential Sector Manager, Efficient New Homes and ENERGY STAR® Products Program
Subject: Staff Response to the Evaluation of the Refrigerator Recycling Program

Since the Refrigerator Recycling initiative began in June 2008, it has become one of Energy Trust's most popular offerings for residential customers. Evaluation findings noted that the majority of refrigerators and freezers collected were more than 20 years old, representing significant energy savings for the program and electric bill savings for participants.

As recommended, the program plans to place emphasis on secondary units, and bill inserts will be used to do this when space is available, given the effectiveness of this form of advertising. Current marketing materials promote the potential bill savings of recycling and the convenience of participation and will continue to do so.

The online sign-up option is currently featured on our website, along with phone sign-up information, so we see limited options for making the web option more visible.

Based on the success of coordination with Sears, the program is in the process of developing recycling arrangements with other new appliance retailers.

The lack of normalized address data for utility customers, and to a lesser extent customer names, was identified as a source of difficulty in scheduling pick-ups and processing incentives. Program staff have begun work to ensure addresses are normalizes before they are sent to JACO, and we anticipate that this will resolve most errors.

With the success of the Fast Feedback survey for commercial programs, Evaluation will be rolling out Fast Feedback for refrigerator recycling participants this spring. The survey will provide quick results on program satisfaction and customer feedback.

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1. Introduction

1.1 The Energy Trust's Refrigerator Recycling Program

The Refrigerator Recycling Program is available to eligible customers on a first-come first-served basis in Pacific Power and Portland General Electric (PGE) service territories.

In 2008-09, the program targeted residential customers for removal of inefficient but functioning (meaning still cooling) 10 to 30 cubic foot refrigerators and/or freezers. The goal of the program is to reduce energy consumption and coincident peak demand by accelerating the removal of less efficient refrigerators and freezers from the grid. There is no age requirement but the program implicitly targets units greater than 10 years old and especially units older than 15 years. Pre-1993 refrigerators use two to three times the energy of the most recent models before taking into consideration the effects of degradation. Additional goals of the program are to educate customers about the energy efficiency benefits of recycling older refrigerators and freezers and the non-energy benefits from recycling in an environmentally friendly manner. For example, compared to more recent refrigerators, pre-1993 refrigerators are at higher risk of losing their refrigerant. A molecule of refrigerant in pre-1993 refrigerators and freezers has 7,000 times the green house effect of a molecule of CO2.

The program accepts refrigerators and/or freezers that have either been replaced by another refrigerator or freezer and/or represent second, third, and even fourth refrigerators that are being discarded. The program offers free pick-up of the appliance and a $30 cash incentive for participation. A program contractor picks up and disposes of the refrigerators in an environmentally safe manner.

1.2 Overview of Logic Models

In this section, the refrigerator recycling program is presented using a logic model. Typically a logic model includes a graphic and a written description of the program. A logic model represents two interrelated logics (or two causal sequences) associated with a program in a two dimensional space. A sequence of key program activities is presented in one dimension. For instance, the development of the program infrastructure must occur before the program is marketed; the program must be marketed before customers can be recruited, etc. It is implicitly assumed, if not always stated, that there is feedback from later to earlier activities.

The second dimension is the logic associated with activities. This logic says that resources are required for an activity to occur; the activity occurs and produces outputs; partners and target audiences react to the outputs producing outcomes (short-term outcomes), and the outcomes produce additional outcomes, and long-term outcomes or impacts (energy savings, demand reductions, etc.). Like the sequence of activities, there is an implicit assumption that there is feedback between the later and earlier elements in the sequence. The long-term outcomes (impacts) reflect the goals of the program. Logic models that are complete identify partners, target audiences, and external factors that influence the program. Examples of external factors are changes in refrigerator prices or the marketing and disposal practices of large retailers that may influence the market for used appliances.

1.3 A Refrigerator Recycling Program Logic Model

Figure 1 is the logic model for the Refrigerator Recycling Program. In this logic model, the activities are oriented in the horizontal direction and the performance spectrum or logic of the activity in the vertical direction.

1.3.1 Activities and Outputs

Because they are so closely intertwined, we will discuss the activities and outputs together. The blue area (second from the top) displays the main program activities:

- Develop program infrastructure
- Promote or market the program
- Process inquiries and requests for appliance removal
- Pick up the appliances
- Recycle the units
- Process the incentives

Program infrastructure development activities involve such things as gathering market knowledge, setting the goals for the program, designing the program, establishing program rules, developing the marketing approaches and content, and establishing the institutional and operating structures that are needed. The outputs associated with infrastructure development activities include marketing materials, tracking systems, the contracts for the program implementation firms, and a functioning program operation. In this case, PECI is the implementation contractor and handles the marketing but sub-contracts pick-up to JACO. In addition Applied Proactive Technologies provides circuit riders to contact appliance dealers in Oregon.

Program promotions educate and draw targeted customers into the program. The outputs of program promotions are bill inserts, advertising placed in print media, television and radio advertisements, public spots that are placed or played on radio or television, news releases, media events that attract the news media, information provided to appliance retailers who make it available to customers, and the program website.

Another key activity is *processing inquiries and requests for appliance removal*. Customers call an 800 number or sign up online. JACO has software that it uses to manage scheduling and incentive tracking. The software depends on having the name and address of all customers in the service territory being served. In other service territories this information is updated weekly. In this instance, Pacific Power and PGE supply addresses but not the names of customers. ETO takes this information and loads it onto a secure file transfer protocol (FTP) website for JACO to download into their scheduling system. This occurs on a monthly basis.

Customers place a call to the recycling contractor's call center, sign up via the contractor website, or arrange with an appliance retailer (there was only one such retailer at the time of the program) for a removal at delivery. Upon receiving a call, call center personnel verify the customer's address, and then enter the customer's name because the name is not supplied to ETO by the utilities. The names are often not rendered accurately. The address check verifies that the customer is an eligible utility customer. The call center personnel also ask questions to verify that the unit is operable and that

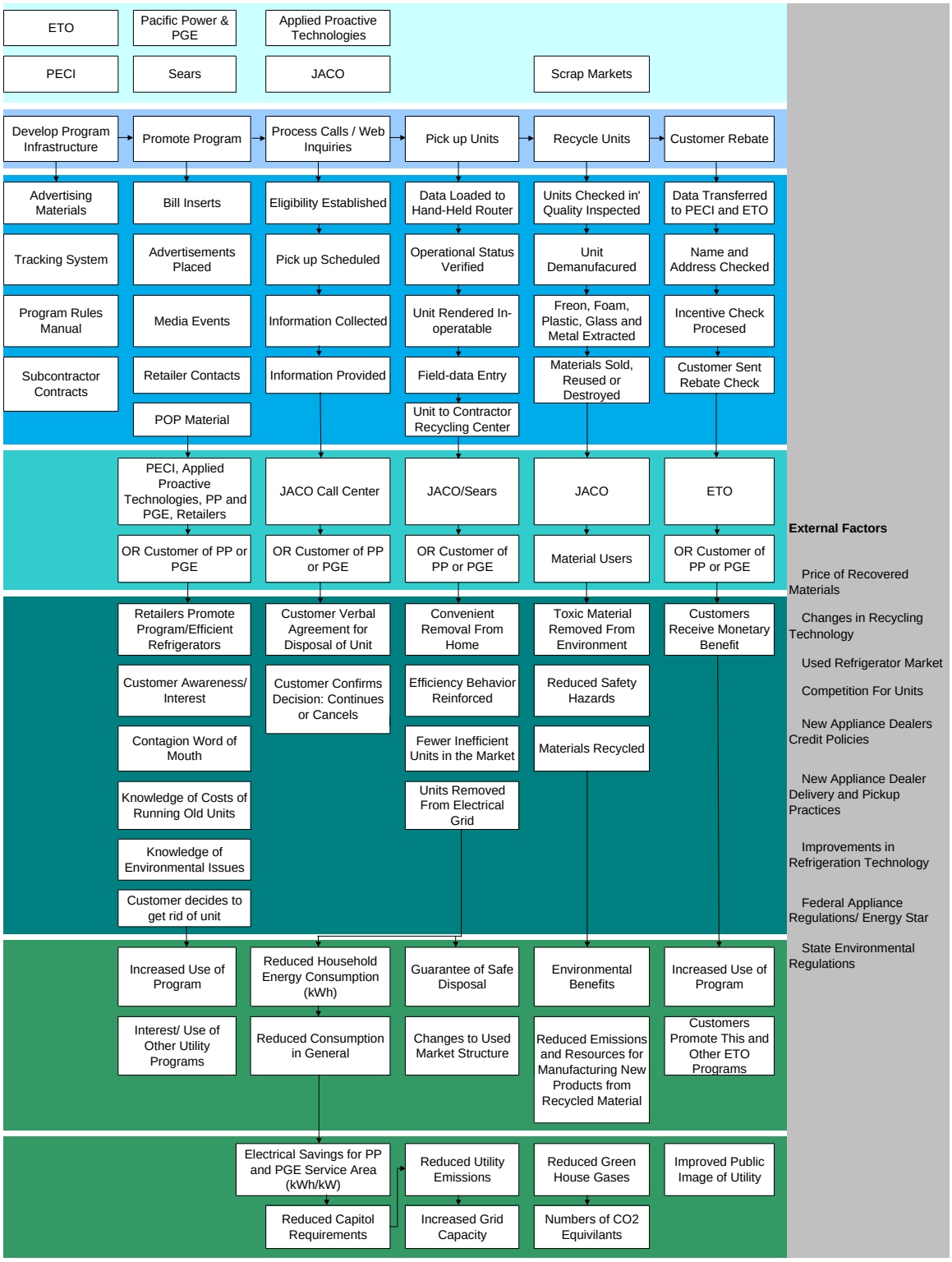

Figure 1 Logic Model of the Energy Trust of Oregon Residential Appliance Recycling Program

the unit is within the specifications of the program and collect some information about the unit.

If the unit is to be removed by the program, the call center then schedules the soonest possible day and time for appliance removal that is convenient for the customer based on a pre-established schedule of areas to be served. The customer is informed that they will receive an auto-generated reminder call 24 hours in advance and are told that the unit must be plugged in and operating so that the driver can verify that the unit is functional. Call center personnel also collect some additional information from the customers.

The call center also handles calls from customers who call to cancel or reschedule an appointment, customers seeking information, and customers needing an order number because they are having their units removed by an appliance retailer.

In the Web version of this activity, the customer signs up online by providing their name and address. The customer is presented with scheduling options on the screen and chooses a date. The dates correspond to a predetermined schedule for routing in specific geographic areas.

When the appliance retailer is to pick up the unit, the customer establishes a delivery date for the new appliance with the retailer. The customer receives an orange sticker at the store. The customer places a call to the call center and obtains an order number. In some instances, the sales persons may assist the customer with this. The customer (or the sales person) writes the order number on the sticker and places the sticker on the unit. The store clerk will have indicated in the retailer's computer system that the unit is a program unit and the logistics driver's delivery order will show that the driver is to remove a unit that is a program unit.[2] This sticker is designed to further alert the delivery driver that the unit is a program unit, to track the unit so that it is known that the unit was actually removed from a specific household and assigned to the program, and to insure that there are no unit substitutions after the unit is removed.

The key outputs of this activity are:

- Establishing customer eligibility
- Establishing the eligibility of the appliance
- Establishing an appointment for removing the unit from the customer's residence
- Collecting information from the customer
- Providing information to the customers / potential customers about the service.
- Establishing a tracking record so that the unit is tracked and an incentive can be paid.

The contractor *completes the pick-up of the unit(s)*. For the units being removed by the program, the contractor calls the customer 24-48 hours in advance to give them a four-hour pick-up window. The customers are reminded that the units must be plugged in to verify that they are operable. The call center operators usually try to speak directly with a person but will leave a message on an answering machine.

[2] Most of the large national appliance retailers contract with local logistics companies who may in turn sub-contract some of the pick-ups and deliveries. The employees who make the delivery are employees of a contractor rather than the retailer. Smaller regional and local appliance dealers may have their own pick-up and delivery operation.

The program is transitioning from a paper driven logistics system to a digital one. This transition is now complete but there were points during the year when the paper system was the primary system. In the paper system, a pick-up order is generated. The addresses are entered into the routing software and a route is generated. Drivers are given the pick-up orders and the route for appliance removal. In the digital version of the system, the routing is downloaded to a personal digital assistant (PDA), and the driver follows the routing. Drivers are encouraged to call the customers while in route before arriving at the pick-up location.

The pick-up crew arrives at the household to retrieve the refrigerators. The crew verifies that the unit meets all requirements of the program. The electrical cord is cut and the controls are smashed. The purpose of this is to prevent further use of the unit. The crews have found that some customers become emotional about this procedure so they will typically cut the cord but may wait until they are on the truck and away from the site to disable the controls.

JACO does not require that someone be home and will remove a unit if there is a note left on the machine specifically identifying it for removal. Approximately 15-25 units will be collected on a route on a given day, although this number can vary based on geographic location and time of the year. It is not unusual to have a few missed appointments (i.e., "last minute" cancellations, requests to reschedule, "no shows"). At the end of the route, units are taken to the recycling center for unloading and de-manufacturing.

In the paper version, the driver completes the information on the form and submits the paperwork on returning from the route. Drivers are not assigned a new routing until the previous day's paper work is completed. Once the unit is de-manufactured, the paperwork is sent by overnight mail for processing at JACO's location in Everett, Washington. In the digital version, the driver verifies or enters the characteristics of the unit and indicates that the unit has been picked up. This information is entered into the database at JACO's data center in real time. When the driver returns from the route, each refrigerator/freezer is electronically checked in and the information that the driver entered verified. For both versions, drivers must confirm the mailing address with customers and require customer signatures to indicate that the mailing address is correct.

Units that are removed by an appliance retailer are taken to the retailer's distribution center. Orange tag units are separated from other non-program units and appliances are stored in a trailer until they are picked up by JACO. Depending on volume, JACO makes runs to the distributor to remove the appliances. Such runs are typically once a day or less but can be more frequent if needed. Units are checked in at the recycling center by matching the tag number with a paper order number or by entering the order number into a PDA.

Recycling units involves removing glass and plastic components and parts containing polychlorinated biphenyls (PCBs) [3] and mercury from units that have them. The refrigerant is then pumped from the units. The refrigerant is stored in a container to be taken for safe disposal. For units with foam insulation, the case is opened to remove the

[3] PCBs were often used in refrigerator capacitors due to their electrical insulating properties prior to 1979 when they were banned. They have been demonstrated to cause cancer, as well as a variety of other adverse health effects on the immune system, reproductive system, nervous system, and endocrine system.

foam insulation. The foam is disposed of by taking it to be burned at a location that generates power and prevents the CFCs from escaping. The scrap steel and copper from the unit are sold to scrap dealers for recycling. Scrap prices are quite variable.

As noted above, JACO either sends the paper forms to be processed or uploads the data digitally in real time. JACO processes the data for the *incentive payment* and loads it onto the same FTP site that the utility customer information was transferred through. On a weekly basis, JACO posts an editable file representing the program data that PECI downloads, checks, corrects, and sends back to JACO. JACO posts a clean xml, which is imported into FastTrack, Energy Trust's incentive tracking software. The data is reviewed again by PECI and once any additional errors are corrected, the Energy Trust approves the incentive and a check is cut. The checks are sent to PECI who then mails the incentive check to the customer.

Different organizations handle these last steps in different ways. In some instances, the incentive checks are cut and mailed by the contractor. Other utilities prefer to cut the check in-house. This situation is somewhat different because of the quality control step involving PECI. This is dictated by ETO's concern for very low error rates.

1.3.2 With Whom and for Whom

The primary targets of this program are residential customers that own refrigerators and/or freezers. There is a cast of partners with whom the program works. In terms of program promotion, Energy Trust works with PECI to create and distribute all marketing materials and the participating utilities to create and distribute bill inserts. Energy Trust also works with Applied Proactive Technologies (circuit rider) to promote the program to retailers, train them, and make sure retailers are fully supplied with point of purchase materials.

JACO is responsible for the logistical support associated with removing and recycling the appliances. Sears is also involved in removing units from customer homes. JACO partners with other firms to dispose of the materials that are recovered from the refrigerators.

1.3.3 Outcomes

Outcomes are the result of partners and target audiences responding to the outputs of the programs.

In response to a visit from the circuit rider, retailers may respond by placing point of purchase recycling information on the sales floor. Sales staff may be trained to mention the program to customers or respond to customer inquiries.

There are potentially several benefits for retailers. Providing information about the incentive or benefits of recycling may result in increasing the likelihood of a sale of a new refrigerator. This may be particularly true of the retailer who partners with ETO to remove an old unit. The program may potentially benefit by broader awareness and attention to efficiency issues at the time of sale. This may include increasing the sale of new energy efficient appliances.

Beyond the benefits to the appliance retailers, the promotional aspects of the program may result in customer awareness of the program and the energy and environmental issues associated with older refrigerators. Promotion may also induce contagion as

customers who have heard about the program tell others about it, especially if there is a discussion among parties about what to do with an old refrigerator whether or not they have actually used the program. Contagion is one of the most effective forms of marketing.

Another outcome is the customer's commitment or agreement to have a refrigerator removed when the customer places a call to the call center or visits the website. The commitment is not iron clad as customers do change their minds and keep the refrigerator or dispose of it some other way.

Other short-term outcomes are the convenient removal of the unit from the home and the receipt of the incentive. The household is likely to feel good and be satisfied about the removal of the unit. The removal of the unit may result in a predisposition to engage in other efficiency behaviors. The unit is no longer or can no longer be connected to the electrical grid. There is one less unit that may appear in the used appliance market.

Other outcomes from recycling the unit are a reduction in toxic materials in the environment, a reduction in safety hazards, and the safe recycling of materials.

This program has a number of intermediate outcomes. Knowledge of the program may spread by word-of-mouth leading to greater interest in and use of the program. Knowledge of the program may also lead households to seek information about other efficiency programs and to use them. The removal of a unit or units may reduce household energy consumption and may reduce demand as well. The program reduces energy costs for the household.

The program may also lead to changes in the structure of the used refrigerator market. For example, the program may lead to fewer units available to used refrigerator dealers or may reduce the demand for used refrigerators as people learn about their consumption. The program may also lead to increased availability of recycled raw materials.

The long-term outcomes or impacts include a reduction in energy and demand at the grid level. In turn this may reduce the need for capital expenditures at the distribution or the grid level. Fuel costs are also reduced. The program also serves to reduce emissions from fossil-fueled power plants. The embedded energy in new products is reduced when the copper and steel in refrigerators is recycled and reused and environmental hazards associated with producing copper and steel from raw materials is reduced as well.

1.3.4 External Factors

External factors are those forces at work outside the program that can influence program results. There are a number of examples of how such factors have influenced this program in recent years. For example, the price of CFCs, which the recyclers have traditionally resold in the market, is declining as the demand for CFCs decline in response to the phase-out of these materials. Countering this trend are the prices of copper and steel. Copper prices were increasing rapidly until the beginning of 2008 when they declined some. Prior to 2008 steel prices increased in response to demand in Asia and elsewhere, although they have declined somewhat with the recession.

Changes in recycling technology may influence the market as well. For example, the giant shredders in use at some scrap metal companies are fully capable of shredding multiple refrigerators at once, reducing them to small pieces, and destroying the toxic gases from plastics and other items due to the high heat generated by the friction within the shredder. According to a representative from a scrap processing firm, such shredders pass emissions tests. Recyclers are considering technologies that can be imported from Europe to dispose of appliances. The imported technologies require large volumes of appliances to recycle within a reasonable distance to make them cost effective.

There have been changes in the used refrigerator market during the last ten years. The competition for used units may have changed as well. Most new appliance retailers no longer sell used units but instead contract with firms to recycle used units they have collected. These recyclers select units that can be resold and disassemble the units that have little value, the largest proportion of units they receive. These recycling firms contract with used appliance dealers to sell the desirable used units.

Used units re-entering the market must compete with the availability of credit and lower-cost new units, which may limit the price that can be charged for them.

Some states now regulate who can fix refrigerators because of the potential escape of greenhouse gases.

1.3.5 2008-09 Process Review of the Refrigerator Recycling Program

The 2008-09 process evaluation is intended to be forward looking, providing insight and guidance for continuously improving program processes and marketing. The purpose of the study is to examine program processes and customer response to the program and make recommendations for program improvements. Impact estimates are not a part of the evaluation although some simple estimates of the impacts have been provided.

The next chapters cover the following topics:

1. Process evaluation methodology and sample design
2. Appliance Recycling Program Use
3. Program Marketing
4. Response to Marketing
5. Sign Up Method – Telephone versus Online
6. Scheduling
7. Removal of Units Through Sears and Other Retailers
8. Program Satisfaction
9. Data Quality Issues

2. Process Evaluation Methodology and Sample Design

The process evaluation involved the following activities

1. In-depth interviews with program staff, other relevant Energy Trust internal staff, contractors, their subcontractors, and other individuals
2. Document review and analysis of participation and cancellation data
3. Deployment of a participant survey and analysis of marketing effectiveness, program awareness, and program satisfaction data, among other things

2.1 In-depth Interviews

Innovologie completed a set of interviews with program staff and others. The purpose of the interviews was to understand:

- Roles and responsibilities
- Interactions among the players
- Operations of the program
  - Marketing
  - Data processing and management
  - Sign up
  - Pick-up
  - Disposal
  - Rebates
- Perspectives on customer recruitment, participation, and satisfaction
- Perspectives on direct versus retailer pick-up
- Potential alternative strategies
- Improvements to the existing program

Before the interviews, Innovologie constructed an interview guide that was provided to the Energy Trust's evaluation project manager for review and approval. Interview guides can be seen in Chapter 13. Innovologie staff worked with the evaluation project manager to schedule individual appointments with those to be interviewed. Interviews were conducted with but not limited to:

1. The Energy Trust program manager
2. Energy Trust marketing contractor personnel
3. Other contractors that were identified
4. Representatives of JACO
5. Other market actors

The interviews took place in mid to late June 2009. Some interviews were conducted by telephone. The length of the interviews varied from 40 to 60 minutes. The interviews were conducted in a conversational format. The interview guide was used to make sure all topics were covered. With permission from the respondents, the interviews were recorded for purposes of verifying field notes.

2.2 Document and Data Review

2.2.1 Document Review

As part of the program review, Innovologie gathered and reviewed program documents. The documents helped:

- Gain an understanding of the history of the program
- Identify issues that may have arisen in the initial phases of the program
- Identify contract requirements for subcontractors
- Understand communication paths and marketing strategy

Through the Energy Trust, PECI, and JACO contacts, the following documents were obtained:

- Program plans
- Other communications among the participants
- Reports describing the program / the results of the program
- Marketing plans
- Marketing literature
- Marketing timeline and release dates

2.2.2 Database review

Innovologie completed a database review of records created by JACO for tracking. The review identified the data that are being collected, any additional data that may be needed for program management or evaluation, and examined the data for completeness and accuracy. The review also examined data flows (JACO/PECI/ETO), and their quality and timing.

2.3 Participant Survey

Innovologie conducted a survey of 307 households that participated in the Refrigerator Recycling Program. The survey was completed by telephone and was administered by OLC Global. The survey took slightly more than 10 minutes for the customers to complete.

A stratified random sample was drawn from Energy Trust's participant database. The sample contained quotas by method of program contact (online versus telephone), and appliance type (refrigerator versus freezer versus two units). The sampling quotas assume a 90 percent confidence interval, an accuracy of ± 10 percent, and a 50/50 split in the response for a binary variable. In addition, the sample was chosen so that a sub-sample of households that participated through the Sears logistics system could be examined as well.

Table 1 summarizes the population, the sample quota, and the number of completes against quota. Essentially all quotas were filled except for those households that signed up to remove two appliances online for which the population was exhausted before the quota was filled. There were 71 households in the sample that had a program appliance removed by Sears. The Sears sample was self-contained within the population.

Table 1 The Population, the Sample Quotas, and the Number of Completes Against Quota

Appliances Removed	Telephone	Web
One refrigerator removed		
Actual	2,618	418
Quota	67	59
Completes	75	59
One freezer removed		
Actual	697	92
Quota	62	40
Completes	61	40
Two appliances removed		
Actual	259	29
Quota	54	21
Completes	57	15
Totals		
Actual	3,574	539
Quota	183	120
Completes	193	114

Table 2 shows the sample disposition. Four hundred sixty-seven calls were resolved before the quotas were filled. Of those, 387 were eligible customers and the balance were primarily numbers where customers could not be reached. Three hundred seven surveys were completed (80 percent) with eligible customers. Eleven percent of eligible respondents initially refused or did not complete the survey, five percent of eligible respondents were replaced after six or more attempts, two percent were terminated for eligibility reasons, and one percent was not interviewed due to language barriers.

The remaining 83 customers were unreachable for a variety of reasons such as non-working numbers, wrong numbers, privacy management, and being non-residential/ business telephone numbers. This last group may include participants who provided a business telephone number so that they could be reached at the time of the delivery. Depending on whether you include households that were unreachable, the completion rate was 80 percent or 66 percent. These are very high completion rates.

Innovologie constructed a survey instrument that was reviewed by representatives of the Energy Trust, PECI, and JACO. The survey can be viewed in Chapter 14.

Table 2 Sample Dispositions

Disposition	Frequency	Percent of customers contacted	Percent of calls
Completed	307	80	66
Replaced after six or more attempts	20	5	4
Terminated for eligibility reasons	8	2	2
Initial refusal or break-off during the survey	44	11	9
Language barrier	5	1	1
Subtotal	384	100	
Non-working Number	29		6
Non-residential/business	9		2
Wrong number	18		4
Other telephone problem	9		2
Privacy manager	18		4
Subtotal	83		
Grand total	467	100	100

3. Appliance Recycling Program Use

This chapter summarizes program outputs for the period from July 2008 through June 2009. The following participant information is reported:

- Participation in 2008 and 2009
- Number of refrigerators and freezers recycled
- Characteristics of the recycled appliances
- Pre-disposal appliance use (primary versus secondary)
- Unit replacement
- Cancellations
- Participant demographics including:
  - Household size
  - Years in home
  - Size of home
  - Home ownership
  - Whether or not there has been a remodel within the last five years
  - Income level

3.1 Units Disposed Through the Recycling Program

The Refrigerator Recycling Program collected and de-manufactured 7,089 units resulting from 6,608 orders between June 2008 and the end of June 2009 (Table 3). Figure **2** shows the numbers of units collected each month. There was a spike in participation in May and June of 2009. Staff attributed this to response to an insert included in a utility billing. The evaluation team agrees that this was the cause in the higher interest in the program.

Table 3 Total Orders and Picked-up Units

	2008	2009	Total
Orders	1,771	4,837	6,608
Units collected	1,923	5,166	7,089

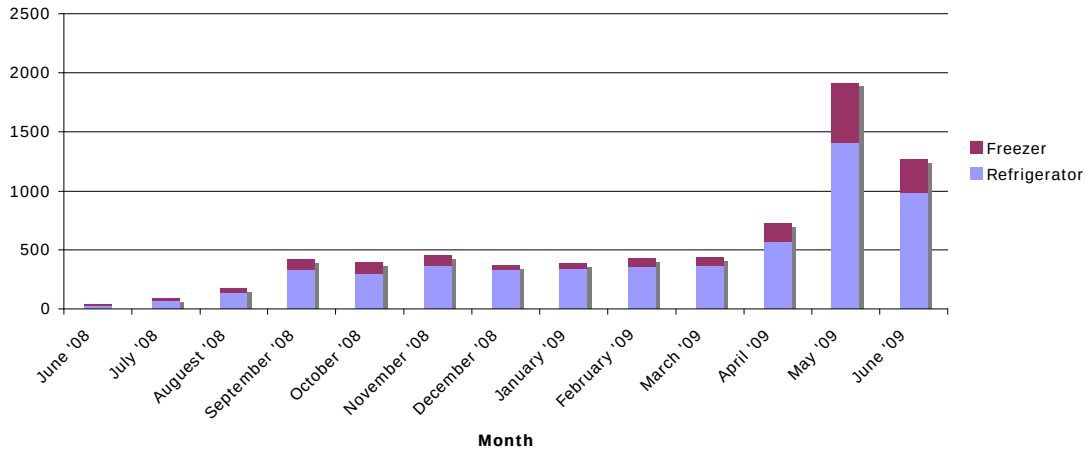

Figure 2 Units Collected Monthly in 2008 and 2009

3.1.1 What Was Ordered and Collected

Ninety-one percent of participants ordered one unit to be picked up in 2008 and 93 percent ordered a single unit removed in 2009 (Table 4).

Table 4 Total Percent of Pick-ups by Number of Units Removed from Households

Pick-ups	2008	2009	Total
1 unit	91	93	93
2 units	9	7	7
Total	100	100	100
N Orders	1,771	4,837	6,606

3.1.2 Appliance Type

For 2008 and 2009, 5,563 refrigerators and 1,526 freezers were removed (Table 5). The percent of total units that were refrigerators decreased slightly from 80 percent of units in 2008 to 78 percent in 2009.

Table 5 Total Units Collected from 2008 to 2009 by Program Year

Units	2008	2009	Total
Refrigerators	1,538	4,025	5,563
Freezers	385	1,141	1,526
Total	1,923	5,166	7,089

Table 6 presents a breakout by household of the combinations of appliances that were removed. Seventy-four percent of households turned in just one refrigerator while 18 percent of all households turned in one freezer. Three percent of households turned in two refrigerators, four percent turned in a refrigerator and a freezer, with only a small fraction turning in two freezers (33 total households). Except for the slight increase in freezers in 2009, the percentages for 2008 and 2009 are nearly identical.

Table 6 Percent and Type of Units Picked Up by Household per Year

	2008	2009	Total
Picked up one refrigerator	75	74	74
Picked up one freezer	16	19	18
Picked up one refrigerator and one freezer	4	4	4
Picked up two refrigerators	4	3	3
Picked up two freezers	1	0	0
Total	100	100	100
N	1,771	4,837	6,606

3.1.3 Characteristics of Units Removed

The program contractor records the type, age, size, and electrical consumption of each unit that is removed. The type and size is determined by visual inspection of the unit and model number. The age is determined through conversations with the homeowner, personal knowledge of the contractor personnel, and model number. The energy consumption is determined by comparing the model number with a look-up table containing the kWh usage at manufacture. The age and particularly the energy consumption are not always accurate and there is significant missing data for the energy consumption in the JACO database for energy consumption.

Top freezer refrigerators comprised 52 percent of the total units (Table 7), followed by side-by-side refrigerators (14 percent), and single door refrigerators (11 percent). Roughly 80 percent of the freezers, which represented 13 percent of total units in 2008 and 20 percent of total units in 2009, were upright freezers with the balance being chest type units.

Table 7 Style of Units Collected by Year

Type	2008	2009	Total
Top Freezer	56	52	52
Side-by-Side	15	14	14
Single Door	12	11	11
Upright Freezer	10	16	15
Bottom Freezer	4	3	3
Chest Freezer	3	4	4
Total	100	100	100
N	425	4,538	4,963

Approximately 60 percent of refrigerators were older than 20 years, as were 86 percent of freezers (Table 8). These units were much older than those disposed of through the 2004-06 California Statewide Program where the average age of units was 12 years (Reed, et. al.). Parts of that multi-utility program have been in operation for about 15 years and older refrigerators may have been fewer in number because of that.

Table 8 Age of Units Removed by Year

	Refrigerator			Freezer		
Age (years)	2008	2009	Total	2008	2009	Total
Greater than 20	62	58	59	86	86	86

16 to 20	18	19	19	6	7	7
11 to 15	12	12	12	6	5	5
6 to 10	8	11	10	2	2	2
Less than 6 years	0	0	0	0	0	0
Total	100	100	100	100	100	100
N	1,538	4,025	5,563	385	1,141	1,526

In terms of size, roughly 70 percent of all units (Table 9) were either medium or medium-large, which means they were between 15 and 22 cubic feet. Just fewer than ten percent were greater than 22 cubic feet.

Table 9 Sizes of Units by Appliance Type and Year

	Refrigerator			Freezer		
Size (cubic feet)	2008	2009	Total	2008	2009	Total
Small (<15)	18	21	20	22	22	22
Medium (15-18)	37	36	36	32	38	37
Medium-large (19-22)	36	35	35	31	33	32
Large (>22)	9	7	8	15	7	9
Total	100	100	100	100	100	100
N	1,538	4,025	5,563	385	1,141	1,526

As noted above, JACO associated model numbers with the at-manufacture consumption for approximately 63 percent of the units (Table 10). Thirty-six percent of these refrigerators used less than 900 kWh at manufacture, 33 percent used between 900 and 1,200 kWh, and 32 percent used more than 1,200 kWh. The mean consumption of the refrigerators at manufacture was 1,087 kWh (n=3,489). For freezers, the respective percentages for the groupings were 38, 28, and 34 percent of units collected. The mean consumption at manufacture was 1,070 kWh (n=456).

To better understand the potential effect of the missing data, the refrigerators were placed into categories of style, age, and size. The existing data were used to calculate the average consumption for units with each set of characteristics. The missing consumption values were then replaced with the average value for a unit of that size, type, and age. The average consumption of the missing units was then calculated. The average consumption for the missing units was 1,092 kWh for refrigerators and freezers. On the basis of this we concluded that the average values for cases with consumption data are adequate to fill in data to represent the entire population.

Table 10 Annual kWh Consumption of Units Picked Up per Year

	Refrigerator			Freezer		
Annual KWH	2008	2009	Total	2008	2009	Total
Less than 600	5	5	5	12	6	8
600 to 899	32	30	31	28	31	30
900 to 1,199	32	33	33	27	29	28
1,200-1,499	14	14	14	20	22	21
1,500 +	16	18	18	13	13	13
Total	100	100	100	100	100	100
N*	934	2,555	3,489	131	325	456

* 63 percent of refrigerator records and 30 percent of freezer records had data

Some additional analysis of the missing data was completed. It appears that JACO's look-up table has not been fully updated for the years from 2000 forward. By using the Kouba-Cavallo database, the team was able to fill in about 70 percent of the missing consumption data for units from the years 2000 to 2009. However, this is a very small percentage of missing records (6 percent). Pre-2000 records were checked to determine if the information was accurate compared to the Kouba-Cavallo database. Based on a sample, ten percent of the JACO records could not be found in the Kouba-Cavallo database. The energy consumptions in the sample of all of the records that were common to each of the data sources were accurate with respect to each other

within a kWh or two. Using the Kouba-Cavallo database we were able to identify consumption for another 20 percent of the sample records for units that did not have energy consumption data in the pre-2000 data but some of these were late model units. Based on this, it appears that there are a percentage of units for which data do not exist in either of the databases and that, in a high percentage of cases, the missing consumption data is due to faulty recording of the model numbers. Model numbers are often difficult to read and the data are transcribed which contributes to a high error rate. With the addition of the PDAs, it may be possible to read the bar codes for units that have them.

Peterson et. al., (2007) estimated that the refrigerators removed from households in California between 2004 and 2006 had a median consumption of 1.41 times the at-manufacture consumption and an average consumption of 1.5 times the at-manufacture consumption. This means that consumption of the units increases over time. As noted above, the refrigerators in that sample are slightly younger than the refrigerators in the current sample. Based on these data we estimate that the gross savings for a refrigerator including degradation is 1,631 kWh and 1,605 kWh for freezers. The estimated gross annual savings for the first year operation of the program using kWh consumption at manufacture is 7.7 GWh and the savings assuming degradation are 11.5 GWh.

Table 11 Gross Estimates of Savings Based on at-Manufacture Consumption and with Degradation

	Refrigerators	Freezers	Total
July to December 2008			
kWh per unit	1,078	1,053	
Number of units	1,538	385	
gWh savings at manufacture	1.66	0.41	2.06
gWh savings assuming degradation (savings at manufacture X 1.5)	2.49	0.61	3.1
January to June 2009			
kWh per unit	1,090	1,077	
Number of units	4,025	1,141	
gWh savings at manufacture	4.39	1.23	5.62
gWh savings assuming degradation (savings at manufacture X 1.5)	6.58	1.84	8.43
Total gWh July 2008 to June 2009 at manufacture	6.05	1.63	7.68
Total gWh July 2008 to June 2009 with degradation	9.07	2.45	11.52

3.1.4 Appliance Use and Replacement

When participants call to order a removal or at the time of removal, JACO asks participants some questions about their units. One of these questions is how the appliance was used prior to removal. Data were recorded for 77 percent of refrigerator records and 83 percent of freezer records. As displayed in Table 12, 15 percent of refrigerators and 19 percent of freezers were not in use in 2008 compared to 4 percent

and 6 percent respectively in 2009. Fifty percent of 2009 refrigerators were secondary units (meaning that they were a second, third, or fourth unit), which is up from 37 percent in 2008, while 45 percent were primary units, which is down from 48 percent in the previous year.

Table 12 Operation of the Units Prior to Removal by Program Year (JACO tracking data)

	Refrigerator			Freezer		
Use	2008	2009	Total	2008	2009	Total
Not In Use	15	4	8	19	6	9
Primary	48	45	46	26	48	42
Secondary	37	50	46	54	46	48
Total	100	100	100	100	100	100
N*	1,381	2,882	4,263	347	916	1,263

* 77 percent of refrigerator records had data and 83 percent of freezer records had data

The *participant survey* also included questions about how the units were being used before disposal. Two hundred forty-seven participants recycled 253 refrigerators in 2009; 56 percent were primary units, and 44 percent were secondary units. However, 3 percent of the secondary units had been secondary units for less than 6 months, so these were categorized as primary units. Given the amount of missing data from the tracking system, the high response rate for the survey, and data from other programs, we are inclined to believe that the survey data present a more accurate picture of pre-disposal refrigerator use.

JACO also asked householders if the unit being disposed was or will be replaced[4]. As with the last question, JACO did not record data for all units. Seventy-five percent of refrigerator records and 81 percent of freezer records had data. From June of 2008 to June of 2009, 64 percent of refrigerators and 42 percent of freezers were replaced (Table 13). Slightly fewer refrigerators were replaced in 2009 (63 percent) than in 2008 (67 percent). Compared to the JACO data, the *2009 participant survey* indicated that a higher percentage of refrigerators (77 percent) and freezers (52 percent) were replaced. Again, we are inclined to believe that the survey provides a more accurate estimate.

Table 13 Refrigerator or Freezer Replacements by Year (JACO tracking data)

	Refrigerator			Freezer		
Replace	2008	2009	Total	2008	2009	Total
Yes	67	63	64	42	42	42
No	33	37	36	58	58	58
Total	100	100	100	100	100	100
N*	1,353	2,805	4,158	340	894	1,234

* 75 percent of refrigerator freezer and 81 percent of freezer records had data

JACO also asked customers if the replacement unit was new or used. Seventy-two percent of refrigerator and 79 percent of freezer replacements were new (Table 14). The corresponding data for the participant survey are 82 percent of refrigerator and 87

[4] Replaced means that a new or used unit was substituted for the unit that was being removed.

percent of freezer replacements were new. About 18 percent of refrigerator replacements were used. This is consistent with other recent studies (ADM).

Table 14 Was Replacement Refrigerator or Freezer New or Used by Year (JACO tracking data)

	Refrigerator			Freezer		
New/Used	2008	2009	Total	2008	2009	Total
New	71	72	72	73	79	79
Used	29	28	28	27	21	21
Total	100	100	100	100	100	100
N*	314	1,760	2,074	52	377	429

* 37 percent of refrigerator records and 28 percent of freezer records had data

3.1.5 Cancellations

Other studies have shown that cancellation rates for programs such as this one can be in the range of 20 percent (ADM; Westberg; Reed, et. al.). Cancellations are a missed opportunity because of the resources expended to convince a customer to remove the unit without accomplishing it. The JACO data were analyzed to see if a pick-up was rescheduled after an order was cancelled or a refrigerator was not removed. Orders without a subsequent pick-up were deemed to be cancelled. From Table 15 we see that 19 percent of orders were cancelled in 2008 and about 15 percent were cancelled in 2009.

Table 15 Cancellations and Pick-ups per Year

	2008	2009	Total
Canceled Orders	19	15	16
Picked Up orders	81	85	84
Total	100	100	100
N	2,176	5,671	7,847

3.2 Who Are the Participants?

Based on the survey, we can describe participant demographics. This provides some insight into who is and is not using the program. The characteristics to be examined are:

- Home ownership
- Size of home
- Years in a home
- Number of residents in the household
- Number of children in the household
- Whether the home has been recently remodeled
- Total income of the household

Eight-six percent of the participants are homeowners (Table 16). This contrasts with a home ownership rate in Oregon of 64 percent. There are a number of reasons for this. Homeowners are more likely to have space for a second unit. Renters typically do not own a refrigerator and rental property owners typically supply a refrigerator.

Table 16 Participants Were Primarily Homeowners

Own/Rent	Percent
Own	86
Rent	7
Refused	7
Total	100
N	307

The median square footage of households participating in the program is 2,000 square feet. The most common size of participants' homes is in the range of 1,000 to 2,000 square feet (Table 17). Only a small percentage of participants had homes of more than 4,000 square feet. A substantial percentage (16.7 percent) of respondents did not know the square footage of their homes.

Table 17 Square Footage of Participant Homes

Home Square Feet	Percent
Less than 500	0
500 to just under 1,000	8
1,000 to just under 2,000	42
2,000 to just under 4,000	29
4,000 and up	5
Refused/Did not know	17
Total	100
N	307

More than 60 percent of participant households had one or two residents (Table 18). Twenty-eight percent had from three to five residents.

Table 18 Number of Residents in Participant Homes

Residents in home	Percent
1	19
2	44
3 to 5	28
6 or more	3
Refused	5
Total	100
N	307

Most of the households with three or more residents had from one to three persons in the household who were under eighteen (Table 19). However, it does appear that about eight percent of households with more than two persons were comprised entirely of adults. Generally we interpret these data to mean that participant households were adult households many of which are likely empty nesters. This would be consistent with other studies.

Table 19 Percentage of Participants with Residents Under 18 Years of Age

Residents under 18	Percent

0	77
1 to 3	21
4 or more	2
Refused	1
Total	100
N	291

Fifty-seven percent of the residents had lived in their current location for more than 10 years and 34 percent for more than 20 (Table 20). Twenty-four percent had lived in their current location for five years of less. One interpretation of these data is that residents with greater longevity in the current location are more likely to accumulate an extra refrigerator or freezer. It also suggests that recent arrivals may either purchase a new refrigerator or bring an extra when they move in, leaving one to dispose. There may be other explanations for these data.

Table 20 Participants' Length of Residence in Their Current Locations

Years in Home	Percent
0 to 5	24
6 to 10	13
11 to 20	23
20 or more	34
Refused	5
Total	100
N	307

Slightly more than 30 percent of the participants had remodeled their home in the last five years (Table 21). It is unclear whether remodeling may be related to having more than one refrigerator unit, but this is possibly the case.

Table 21 Percent of Participants Remodeling Their Homes in the Last Five Years

Remodeled Home	Percent
No	62
Yes	31
Refused	7
Total	100
N	307

After removing the households that did not report their household income from the income distribution, the most common household income that was reported (29 percent of the respondents) was $25,000 to just under $50,000 (Table 22). The next most common income group was households between $50,000 and just under $75,000 (25.5 percent). About 21 percent of participant households had incomes greater than $100,000. The median income was $60,575.

Table 22 Income Distribution of Participants

Annual Household Income	Percent	Valid Percent

Less than 25,000	7	10
25,000 to just under 50,000	20	29
50,000 to just under 75,000	17	26
75,000 to just under 100,000	10	15
100,000 to just under 150,000	9	13
More than 150,000	5	8
Refused	32	-
Total	100	100
N	307	

Respondents were asked how many refrigerators and freezers they had in their households at the time of the survey. This question was asked after the program unit(s) were removed by the program. Sixty-four percent of households reported that they had one refrigerator (Table 23). About 34 percent said that they had two or more units. The average number of refrigerators subsequent to the removal was 1.37. At least thirty-one percent of these households had more than one refrigerator. Approximately 46 percent of households had a remaining freezer. Not quite nine percent had more than one. The number of units remaining in a household after removal varied considerably with many reporting that they had just one unit left and many others reporting that they still had more than one unit.[5]

Table 23 Number of Units in Participant Households Once the Old Unit Was Removed

Number of units	Refrigerators	Freezers	Non-used Units
0	2	46	90
1	64	46	10
2	31	9	0
3	4	0	0
4	0	0	0
Total	100	100	100
N	307	307	307
Average	1.37	0.63	0.1

[5] This question was asked about refrigerators in general. Thus, some households could be including bar refrigerators or wine coolers.

4. Program Marketing

4.1 Introduction

Many utilities operate turnkey refrigerator recycling programs in which the contractor handles all aspects of a program including marketing, logistics, disposal, and rebates. Marketing for Energy Trust's Refrigerator Recycling Program is handled along with its other programs by a single contractor. This is done to utilize resources more efficiently and to ensure that Energy Trust has an active role in choosing a marketing strategy that corresponds to the overall strategy and branding of Energy Trust.

Energy Trust's marketing campaign is quite varied and includes many elements.

- Advertising
- Utility bill inserts and newsletters
- Home and remodeling shows and events, appliance events, and green and recycling events
- Field staff
- Retail location point of purchase displays
- Retail partnerships in which the trade allies promote the program to their customers
- General public relations including news releases and news stories carried on local stations
- Independent retailer contacts

Early marketing in the summer of 2008 focused on magazine ads in *Portland Spaces*, *Green Living of Southern Oregon*, the Sunday edition of *The Oregonian*, *Homes and Gardens NW*, and *Portland Monthly*, as well as media stories. In September 2008, television and radio ads were introduced and in October, outreach at various events and retailers was added. The centerpiece of marketing in November and December of 2008 was a television campaign. Also, the first bill insert was also introduced in December in Pacific Power bills.

The marketing strategy in 2009 included the following:

- Utility bill inserts in spring and mid-summer
- Public relations event(s) in Portland and Southern Oregon to re-launch the initiative
- Cross-promoting refrigerator recycling with the new refrigerator and freezer incentive
- Strengthened retail presence through customer-focused point of purchase materials and training and providing support materials to retail staff
- Refresh to television and print advertising campaigns
- Communicating with customers and potential customers to determine best practices for motivating consumers to participate

4.2 Staff Observations about Early Marketing Efforts

During discussions with marketing staff in June 2009, staff identified lessons learned over the first 12 months of the program:

1. The focus of the advertising needs to be more personal. Customers need to know exactly what happens in the program and how it benefits them. Customer comments suggested that the program seems too good to be true. Customers are confused about why they are getting something for free. And, customers don't know Energy Trust of Oregon.
2. The utility bill insert is a powerful tool. This became readily apparent after the PGE insert produced a large response in the spring of 2009. The Pacific Power insert wasn't as successful but it was done in December (as noted earlier), which is an off peak period for this type of program.
3. The major reason for not reaching monthly pick-up goals was a lack of awareness and understanding of the program. Staff suggested that this was due to the utility channel constraints and not the marketing strategy.
4. It is extremely helpful to talk personally to customers about their experience. Marketing personnel were able to have a booth at several events and talked to thousands of people and found that people were interested and excited but had lots of questions.
5. Environmental benefits are somewhat difficult to explain.
6. Marketing staff needs to work with JACO to get different data, specifically data asking customers why they participated.

Some of these observations have resulted in early changes to the program. In particular, some of the themes in the recycling materials were adjusted based on customer comments.

4.3 How People Find Out About the Program

In this section customer program awareness and how customers reported that they became aware of the program are reported based on the survey. Differences in awareness across customers with different characteristics are also discussed.

As part of the evaluation of Energy Trust's Refrigerator Recycling Program, a participant survey of 307 customers was administered. Customers were asked how they heard of the program. Their responses are displayed in Table 24. Sources of awareness were divided into five categories: appliance store, utility/Energy Trust, referral from friend/neighbor, media, and other. More definitive responses are reported under the main categories.

Unlike many utility refrigerator recycling programs, Energy Trust must deal with the challenges of not having regular and direct access to customers. For example, ETO does not send monthly billings and they have limited access to customer billing information. Energy Trust works collaboratively with both PGE and Pacific Power to market the program through bill inserts and utility newsletters. The greatest percentage of participants (38 percent) stated they learned about the recycling program from the Utility/Energy Trust. Most of these heard of the program through an insert with their utility bill (26 percent). This validates the staff observation that the utility bill insert was effective at informing customers.

Table 24 Percent of Customers Who Heard of Program Through Various Sources

Awareness	Category Percent	Sub-category Percent
Appliance store	24.6	
Utility / Energy Trust:	38.3	
Information that came with a utility bill		26.0
Information that came in a letter or brochure from The Energy Trust		4.2
ETO/Utility representative		4.0
ETO website		2.5
Pacific Power, PGE, or Other Utility website		0.7
JACO		0.9
Referral from friend/neighbor	9.2	
Media:	17.8	
Newspaper Ad		4.5
Radio Ad		0.4
TV Ad		4.8
TV News Story		0.3
Magazine Ad (Portland Spaces, Portland Monthly, Oregon Ho…)		0.4
Newspaper/Magazine News Story		3.5
Other website		3.9
Other:	3.6	
City representative		0.2
Past experience		1.7
Other		1.7
Don't know	6.5	
Total	100	
N	307	

The second most common source of awareness was through appliance dealers (25 percent). As noted above, ETO uses Applied Proactive Technologies, who provides a circuit rider to contact sales staff in retail appliance stores to encourage them to promote the program. Sears promotes the program in its stores and offers to remove program units when delivering a new unit. More information about the Sears collaboration is found in a subsequent section.

Media sources were mentioned third most often (18 percent). In general, about three to five percent of people reported that they learned about the program from each of the following: newspaper ads, television ads, news stories, and other non-program related websites. Individually, these channels produce relatively small numbers of aware participants. If this is paid media, there is some concern about the effectiveness of these dollars. It is not just the cost of buying the media space but the costs of developing advertisements as well. However, these channels may be important in terms of producing long-term general awareness, participation at a later date, and "buzz" among friends and neighbors. Finally, about nine percent of participants mentioned that they were told about the program by a friend or neighbor, and four percent learned about the program from some other source.

As can be seen in Table 25, there are some differences in how customers heard about the program depending on the type of appliance that the customers recycled. Direct utility/Energy Trust channels and appliance dealers were more common for those

recycling refrigerators while direct utility/Energy Trust channels were the most common source for those who disposed of freezers.

Table 25 Percent of Customers Who Heard of Program by Appliance Type

How Heard of Program	Refrigerator Only	Freezer Only	Total
Appliance store	29	10	26
Utility/Energy Trust	33	54	37
Referral from friend/neighbor	9	8	9
Media	17	20	18
Other	5	0	4
Don't know	6	7	6
Total	100	100	100
N	234	59	293

Table 26 shows the same distributions by whether the participant was disposing of a primary or secondary refrigerator. Participants disposing of a main unit were more likely to learn about the program from the appliance dealer, which is what we might expect because these participants are typically replacing a unit. Participants disposing of a spare refrigerator were more likely to hear from the utility, primarily from information that came in their bill or in the mail. Those disposing of a secondary unit also heard about the program through the media, from a friend or neighbor, and the appliance store.

Table 26 How Customers Heard about the Refrigerator Recycling Program by Pre-removal Refrigerator Use

How Heard About Program	Primary	Secondary/Spare	Total
Appliance store	38	13	28
Utility/Energy Trust	29	43	34
Referral from friend/neighbor	7	14	10
Media	17	18	17
Other	5	4	5
Don't know	5	9	6
Total	100	100	100
N	149	101	250

These differences are important when devising a marketing strategy. If one wants to target more spare units or freezers then the more direct contact through utilities and the Energy Trust are likely to produce a higher yield. If one wants to target primary units, then the appliance store is the preferred channel. Clearly, the bill insert, which reaches all customers, appears to be the most frequent source, and perhaps the most cost-effective although bill inserts are not inexpensive.

Respondents were asked whether they had considered discarding the refrigerator before hearing about the program. Seventy-six percent of the respondents (Table 27) had previously considered disposing of the unit. The marketing may have presented an easy-to-implement method for recycling their unit. For the 24 percent of participants who had not previously considered discarding the appliance, the marketing may have provided the information and the impetus to make the decision to get rid of the appliance. From a marketing standpoint, there are two distinct messages. One is that

the customer has an easy way to get rid of an old refrigerator or freezer. For customers who have previously considered discarding a refrigerator, this was probably the most important message. The other encourages the customer to consider disposing of that old refrigerator.

Table 27 Percent of Customers Who Had Considered Discarding Their Refrigerator Before Hearing about The Program

When learned of the Program	Percent
Had previously considered discarding appliance	76
Had not previously considered discarding appliance	24
Don't know	0
Total	100
N	307

5. Response to Marketing

Chapter 4 described the Energy Trust's marketing efforts and how participants heard about the program. This chapter examines customer response to marketing efforts. Using participant survey data, customers' reasons for participating and related factors that influenced their decision are discussed. The discussion then turns to what would have happened in the absence of the program. We examine what customers say about how they would have disposed of their appliances without the program and the factors that influenced that decision. Finally, we examine whether the appliances disposed of through the program would have remained or been removed from the grid.

5.1 What Motivates Customers to Participate in Appliance Recycling Programs

In the participant survey, customers were asked their primary and secondary reasons for participating. Thirty-six percent of the respondents gave a second reason and five percent offered a third. The first reason and the combined reasons are summarized in columns two and three, and four and five respectively in Table 28.

Table 28 Customers' Motivations for Participating in the Program

Motivating Factor	First Reason (Percent of Respondents)		Combined Reasons (Percent of Respondents)	
$30 cash / incentive payment	34		47	
Convenient / free pick-up	37		52	
Free pick-up service		11		17
Easy way/convenient/others don't pick-up/don't have to take		26		35
Environmentally save disposal/Recycled/Good for the environment	16		25	
Other	12		14	
Savings on electric bill		4		4
Recommendation of retailer/dealer		1		1
Utility sponsorship of the program		1		1
Never heard of any others/only one I know of		4		4
Other		2		4
Don't know	3		3	
Total	100		140	
N	307		430	

For the combined reasons (Table 28), customers said convenience (52 percent) motivated their participation slightly more often than the incentive (47 percent). When considering just the main reason, they chose convenience as the main reason slightly more often (37 percent) than the incentive (34 percent). Roughly a quarter of the participants stated that the environment was a motivating factor and about 16 percent said it was their first or main reason. Fourteen percent mentioned other reasons. The 'other' category included "not being aware of other options," "savings on electric bill," "utility sponsorship of the program," "recommendations from a friend or neighbor," or

"retailer," and "other unspecified reasons". An important point is that the number of respondents mentioning savings on the electric bill was very small (4 percent).

Customer characteristics were examined in relation to other factors to see how they might relate to motivation. For example, customers with more modest incomes might find the incentive more important than customers with higher incomes. Table 29 shows the percent of respondents identifying a reason by the respondent's income level. We hypothesized that as the customer's income level rose, the importance of the incentive would decline and the percentage choosing convenience would rise. There are differences but they do not vary consistently in accordance with our hypothesis. Thus, the incentive seems to be a motivator for those with incomes between $75,000 and $150,000, but not as much of a motivator at lower and higher incomes. Convenience was most important to those with incomes between $100,000 and $150,000, and slightly less important for those with incomes below $75,000. Finally, the environment seemed to be most important for those with household incomes between $50,000 and $75,000.

Table 29 Motivation by Household Income Levels (percent of households / multiple response)

Motivation	Less than 25K	25 to <50K	50 to <75K	75 to <100K	100 to <150K	More than 150K	Refused	Total
Incentive	43	28	47	59	58	47	52	47
Convenience	62	66	70	16	81	53	36	52
Environment	10	16	47	28	27	35	20	26
Other	14	15	13	6	0	18	21	15
Don't know	0	5	0	9	0	0	1	2
Total	129	130	177	119	165	153	131	141
N	21	61	53	32	26	17	98	308

Those who had a main refrigerator removed were slightly more likely to cite the incentive or the environment as a motivating factor (Table 30). Those who had a secondary or spare were much more likely to cite convenience as the motivator for their participation.

Table 30 Motivation by Whether the Unit Was a Main or Spare

Motivation	Main	Secondary/Spare	Total
Incentive	48	43	46
Convenience	45	59	51
Environment	27	23	26
Other	14	13	14
Don't know	3	3	3
Total	137	141	139
N	148	99	247

Those who had a freezer as opposed to a refrigerator removed were likely to say that convenience (52 percent compared to 46 percent) and the incentive (55 percent compared to 50 percent) were more important (Table 31). Those who had a refrigerator removed were slightly more likely to say that the environment was a motivator.

Table 31 Motivations by Type of Unit Removed

Motivation	Refrigerator only	Freezer Only	Total
Incentive	46	52	47
Convenience	50	55	51
Environment	25	22	25
Other	14	15	14
Don't know	3	2	2
Total	138	145	140
N	232	60	292

Those who replaced a unit were much more likely to say they were motivated by the incentive or the environment (Table 32) while those who did not replace the unit said that they were motivated by convenience (70 percent compared to 45 percent). That makes sense because this group would not have had the appliance dealer as source for removing the appliance.

Table 32 Motivations for Choosing the Program by Whether the Respondent Replaced the Unit that Was Removed

Motivation	Replace	Not Replace	Total
Incentive	48	42	46
Convenience	45	70	51
Environment	28	20	26
Other	15	10	14
Don't know	2	4	2
Total	138	146	140
N	228	79	307

5.2 What Customers Might Have Done in the Absence of the Program

One way to assess the impact of the recycling program is to examine what would have happened to refrigerator and freezers taken by the program if the program were not in place. Customers do have options: they can give a unit away; they can sell the unit; they can have a used appliance dealer remove the unit when purchasing a new unit; or they can haul or have the unit hauled away. Ultimately, we want to know what percentage of the refrigerators in the program would have remained on the grid if the program were not available.

In the participant survey, respondents were asked what methods other than the recycling program they considered for disposing of their appliance. Customers were asked their most likely alternative. Slightly more than 30 percent said they would have been likely to haul or have someone haul their unit to the dump or recycling site (Table 33). Twenty-six percent would have likely given their unit to charity or a private party. Eighteen percent would have had the dealer from whom they purchased a new appliance take the old one. Eleven percent would have sold it to a private party or appliance dealer, and about seven percent would have kept the unit.

Table 33 Percent of Respondents Selecting Alternative Options for Recycling Refrigerators

First Alternative Removal Option	Percent
Keep it	7.1
Give Away	26.0
Give it away to a charity, such as Goodwill Industries or a church	19.2
Give it away to a private party, such as a friend or neighbor	6.8
Sell	11.0
Sell it to a private party, either by running an ad or to someone you know	8.2
Sell it to a used appliance dealer	2.8
Have it removed by the dealer you got your new or replacement appliance from	18.4
Take or have taken to dump/recycler	30.1
Haul it to the dump yourself	9.9
Haul it to a recycling center yourself	9.4
Hire someone else to haul it away for junking or dumping	5.7
Hire someone else to haul to recycling center	4.8
Have city/community waste program haul it away	0.3
Don't know	6.9
Refused	0.5
Total	100
N	307

Units belonging to customers who would have kept their unit, given it away, or sold it were likely to have remained on the grid. Units belonging to customers who would have hauled it or had someone else haul it to the dump, used a recycling company, or used a community trash program were likely to have been removed from the grid. From the California Study Statewide Study (ADM, 2008; Dohrmann, 2007), it was determined that approximately 87 percent of the working units taken by appliance dealers find their way to recycling companies or the dump. Since these comprise 18 percent of the total, we assume two percent of these units would have remained on the grid (0.13 X 0.184). If the seven percent who would have kept their unit, the 26 percent who would have given it away, the 11 percent who would have sold the unit, and the two percent that would have remained with dealers are summed, then 46 percent of disposed appliances would have remain on the electrical grid and the remainder excluding the unknown appliances, 47 percent, would have been de-manufactured.

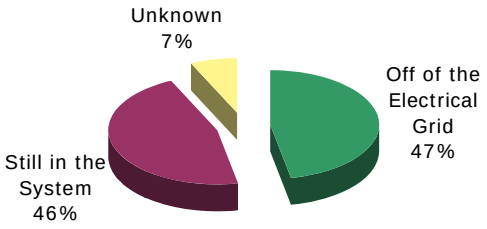

Figure 3 Where Program Units Would Have Ended Up Without the Program

6. Sign Up Method – Telephone versus Online

In other studies, we know that about 20 to 30 percent of respondents sign up for the program using the Internet. We have also learned that the percentage using the Internet does not seem to increase much above that level. We have also seen that people who sign up using the Internet are more likely to cancel their participation.

For Energy Trust's program, 24 percent used the Internet in 2008 and 14 percent used it in 2009 (Table 34). It is unclear why the percentage declined. It may be that the telephone sign up was the more visible of the two options.

Table 34 Sign Up method

Sign Up Method	2008	2009	Total
Web Sign up	24	14	17
Phone Sign up	76	86	83
Total	100	100	100
N	1,767	4,849	6,616

Those who signed up by telephone were asked if they have access to the Internet. Seventy-seven percent replied in the affirmative (Table 35). The respondents who signed up by telephone and had access to the Internet were asked if they were aware that they could have signed up online. Nearly half of those did not know that they could have used the Internet. Those who were unaware were then asked if they would have used the Internet if they had known about it. Slightly more than half of those said that they would have.

Table 35 Potential use of the Internet to Sign Up for the Program.

Internet Questions	Yes	No	DK/ Refused	N
Do you have access to the internet?	77	23	0	242
Were you aware that you could have signed up for the program online?	39	48	14	187
Would you have signed up online, if you knew that was an option?	51	42	8	114

We also checked to see whether the level of Internet use might have some effect on whether the respondents would sign up. Thirty-four percent of the respondents who signed up by telephone used the Internet less than 30 minutes a day (Table 36). Except for those who said that they don't know how much they use the Internet (4 percent), the balance of these respondents use the Internet 30 minutes or more.

Examining the responses of just those who answered the question about whether they would have signed up online, we found a positive correlation between the amount of daily Internet use and their willingness to sign up online (Table 37). Users who used the Internet more than 30 minutes daily were almost twice as likely to say they would have signed up online.

Table 36 Daily Use of the Internet

Minutes of Daily Internet Use	Participant Survey
Less than 30 minutes	34
30 to 59 minutes	27
1 to 2 hours	18
More than 2 hours	17
Don't know	4
Total	100
N	187

These data imply that if there was greater awareness of the Internet option that more people might sign up using the option. If respondents had acted on what they told us, the percentage of Internet sign ups might have been about 19 percent higher. These sign ups would have been among users who use the Internet 30 or more minutes a day.

Table 37 Correlation between Minutes of Daily Internet Use and Whether People Would Have Signed Up Online

	Minutes of Daily Internet Use			
Would you have signed up online, if you knew that was an option?	< 30 min	30-59 min	1-2 hours	> 2 hours
No	61	31	43	33
Yes	39	69	57	67
Total	100	100	100	100
N	43	29	14	18

Those who signed up using the telephone were asked their reason for using the telephone (Table 38). The two most important reasons were that the telephone was more convenient and that people were more comfortable talking to a real person. About 10 percent replied that the telephone was the option they found and that the Internet option was confusing.

Table 38 Reason for Using the Telephone

Reason of for choosing telephone	Participant Survey
The telephone was more convenient	31
You were more comfortable talking to a real person	30
The telephone was the option you found	10
The Internet option was confusing	10
The Internet option takes too long	6
Did not have Internet at the time	6
The Internet option was not working	3
Concern over Internet security/giving out email	2
The telephone option seemed more reliable	0
Don't know	3
Total	100
N	129

Our conclusion from this exercise is that the telephone was perceived by many to be a more convenient and human option than the Internet, although with greater awareness heavier daily users of the Internet might sign up online in greater numbers.

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7. Scheduling

This chapter examines the scheduling process.

7.1 Handling Calls

The call center for JACO receives calls from customers of multiple utilities and programs at the same time. The JACO system identifies the utility by the toll free number that the customer calls. The caller is asked to choose a language and utility by an enhanced call processing touch-tone menu that routes the call to the appropriate attendant. JACO has bilingual (Spanish and English) operators. If someone asks for a Spanish-speaking operator or it is clear the call could better be handled in Spanish, the call is routed to one of the bilingual operators. An LED display on the operator's telephone alerts the operator to the identity of the utility and allows the operator to answer the telephone with the proper greeting. Likewise the appropriate data screens are triggered. JACO has the capacity to receive many more calls than they are currently receiving.

7.2 Initial Eligibility

JACO's preferred mode of operation is to receive a revised customer list obtained from a utility or client once a week. This keeps the data current and helps to minimize removal of units from ineligible customers. In the case of ETO, JACO receives lists of customer addresses without names monthly that are loaded into an SQL server database on its system. This list defines the population of eligible households. At the time of the interviews, ETO was passing the addresses through from the utilities. The addresses were not normalized to United States Post Office standards. This has led to a number of problems that are described a bit later.

In a typical call, there is a simple exchange. The operator requests the caller's zip code and enters that. The caller is then asked for their street address. The operator enters the numeric portion of the address. This results in an almost instantaneous display of addresses in that zip code with that numeric address. Sometimes there may be fewer than 10 addresses. In other instances the list might be quite lengthy, especially when the address is an apartment building. The operator selects the address with the appropriate street name. The customer is then asked to provide his or her name. Because the data from the utilities do not include the name, the operator must type it. Because of the difficulties of clarity, unusual names, and the many spellings of names, there are frequent errors. The caller often supplies his or her own name, which may not be the name on the account. It is not possible to verify the name against the name of the account holder because none is available.

There are at least four problems with the way the ETO program operates that are not present for some other JACO customers. The address is not normalized although it doesn't need to be if you working from a common list. The name may not be the name of the account holder. The name may be spelled incorrectly. And, the process with the customer takes longer because of the need to clarify names and have the names spelled by the customer.

Once the JACO operator completes and verifies the customer's name and address, there is usually a slight delay while scheduling information appears on the screen. The operator usually fills this time by asking eligibility questions such as whether the motor is

running and if the refrigerator is greater than 10 cubic feet. The size question can cause some delay because customers may not know or be able to estimate the size. The operator may ask the customer to measure the dimensions of the refrigerator after which the operator will then use the measurements to determine the size of the unit. In some instances the customer may have to call back with this information.

7.3 Location of unit

JACO customers are asked the physical location of the refrigerator at the pick-up site. The primary reason for this is to determine if there may be any obstructions that may make it difficult to remove a unit. Attempts have been made to use this data to evaluate energy consumption in conditioned and unconditioned spaces but there is typically confusion about whether this was the actual location of the unit when it was running or a temporary location while awaiting removal. As a result, these data usually lack sufficient accuracy for use in analysis.

7.4 Date Selection

Once the location and eligibility is established, operators are presented with a schedule of times when a truck will service the customer's neighborhood. The customer is offered a pick-up date. If that is not acceptable, the next available pick-up date for that area is offered. Those signing up over the Internet are presented with a list of possible collection dates.

JACO establishes schedules based on geographic areas. Availability of pick-up dates is driven by anticipated demand for pick-ups in a given area, which is based on prior experience. There will always be pick-up dates available within two weeks of a customer's call. The number of scheduled days can change with demand. Dates can be scheduled from one to two months in advance although an attempt is made to schedule an appointment as soon as possible. The opportunity for delayed scheduling allows customers, who may for instance call right before they go on vacation, to schedule a pick-up without calling a second time.

Areas with low demand, for instance in areas with low population densities, are allocated fewer pick-up days to allow for sufficient volume of refrigerators to be accumulated.

The operator can see the quota for the day, the number of slots already filled, and the anticipated number of refrigerators. The number of refrigerators to actually be picked up fluctuates. Customers may cancel their appointments in which case a slot may become available on a day that might previously have been closed. The limitations on pick-ups are the capacity of the trucks and the length of the runs.

7.5 After Pick-up Date Has Been Scheduled

Once the pick-up date is established, JACO operators inform the customer that they will be contacted 24 hours in advance to confirm the pick-up and that the refrigerator needs to be plugged in with the motor running when the driver arrives. The system provides operators with an advance call list.

In instances where there are areas where no currently scheduled dates are available customers are placed on a priority-calling list. When call volume is light, the operators pull up this list and determine if a pick-up day has been scheduled for the area where

these priority customers live. If a date has been scheduled, they call customers to confirm the date.

Operators take calls from customers who already have appointments. Such calls are driven by the need for information, to change a pick-up date, or to cancel a planned pick-up.

7.6 Internet Sign ups

The website collects essentially the same information from customers who schedule through the telephone and is written directly to the fields in the database. JACO sends an e-mail notification 48 hours before the scheduled pick-up.

7.7 Efficiency/Call Statistics

JACO can receive a large volume of calls each day. In response to these calls, they track a variety of information. JACO tracks statistics for each of the active lines. It is possible to monitor wait times, length of calls, etc. The average wait time is generally a few seconds. The wait time may include some call routing time as well.

Calls are very efficient with many lasting around three minutes or a little longer depending on how much interaction is required to establish the name and confirm the address. There is little extraneous discussion. Calls are most efficient when the operators are able to manage the call. Calls tend to take longer when customers present information that is unnecessary, too detailed, or out of order.

7.8 The Tracking Systems

The JACO database is comprised of an SQL Server Data Base with an ACCESS front end. A former Microsoft employee and his employees are under subcontract to develop and maintain it. The JACO database has about 50 tables. Examples of the tables include the utility customer table, participant customer table, questionnaire table, and tables for supplying labels or information dynamically. It is possible to extract customer records for any time period and for any geography that might be desired as long as it can be tied to a zip code. The database also has reporting capability. For example, the input screens dynamically report information about the number of customers, refrigerators, etc. Also, there are reports that allow JACO to produce billings and summary tables of customers.

7.9 How the Information Is Transferred

The participation data is transferred back to PECI and Energy Trust through a secure FTP site. Originally JACO posted an XML file representing the program data on a weekly basis, which was imported into FastTrack and the basis for generating incentive checks. At some point during the program's operation, another step was added.

A key problem is that the addresses in the JACO file are not normalized. The addresses in FastTrack are. ETO wants the addresses normalized so that it can track specific instances of customer participation over time.

Under the new process, JACO posts an editable file that PECI takes and normalizes the addresses. Sometimes it is not possible to generate matches. PECI then does QA/QC on the files to deal with unmatched addresses and problems with the spelling of names. These corrections are then sent to JACO for alignment with their database and reposted

in XML format for inclusion in the FastTrack system. The file may require further normalization. The whole process is cumbersome and labor intensive. The process would work more smoothly and involve fewer steps if the name on the accounts were available and if the addresses were normalized at the beginning of the process.

Normalizing the full set of addresses each time addresses are received from the utilities would be duplicative and labor intensive. Addresses should be normalized once and then only addresses that are added, dropped, or changed should be normalized on subsequent uploads. Normalized addresses should be retained for those that are dropped because the account may return to service at a later date. The database should contain a normalized address field and a field indicating whether the address currently has service.

ETO produces the checks. A PECI staff member hand stuffs each check and they are mailed out approximately one month after the data is received.

7.10 Real Time Tracking

JACO has a dashboard that displays “real time” summary information in a form that is of use to a program manager. One version of the dashboard has gauges, a bar graph, and a table of information in cellular format at the bottom of the display. The gauges estimate progress toward goals. For instance, the anticipated monthly goals, number of units, kWh, and kW are computed through the software. The program then interpolates for the month and day. The gauges have a green, yellow, and red area. The gauge is designed so that it shows the percentage of goal. One use of this is to allow program managers to determine if more marketing is needed, if pick-ups may be lagging, or if calls are running ahead of schedule. Personnel at PECI do sometimes use this information, especially to forecast requirements in the near term.

8. Removal of Units Through Sears and Other Retailers

Over the years, managers of refrigerator recycling programs have discussed the possibility of working with retailers to retrieve old refrigerators, thereby reducing the cost of refrigerator recycling programs and increasing convenience for customers by having a pick-up combined with a drop-off. However, a major concern about this option is that the net-to-gross for the program could be negatively influenced in a number of ways:

- Customers that would have the unit removed by the retailer anyway would now receive the incentive that would increase free-ridership.
- It is unclear if the number of units being retrieved through retailers would increase beyond the number already being removed.
- There are concerns about logistics services having the discipline to identify working units.
- Once private contractors become involved, there is the potential for tracking problems and the substitution of more valuable units with less valuable or nonworking units during the transfer process.

Energy Trust's Refrigerator Recycling Program has a pilot program working with Sears to remove old units. Through June 2009, the overall program had 4,851 orders that were completed, nine percent (or 425 orders) of which were removed by Sears and transferred to JACO for disposal (Table 39).

When the customer indicates that they wanted the refrigerator removed by the program, the Sears sales person gives the participant an orange sticker to be attached to the refrigerator so that the refrigerator will be identified for transfer to JACO and the ETO program. The sales person also includes information in the delivery order for the driver that the program unit was to be removed. At the sales desk or at a later time either the sales person or the participant places a call to the recycling call center. Instead of generating a pick-up order, the operator gives the participant a tracking number to be written on the orange sticker. The participant then affixes the orange tag to the refrigerator that was to be removed.

The driver of the Sears delivery truck receives a delivery order that indicates that a refrigerator is to be transferred for recycling. The Sears driver removes the tagged refrigerator when delivering the new refrigerator. The driver then delivers the tagged appliance as well as any other used appliances to the Sears distribution warehouse. The program refrigerators are separated from any other non-program refrigerators or appliances at the Sears distribution warehouse. JACO picks them up and takes them to their recycling center where they are logged into the tracking system using the order number and then disassembled.

Table 39 Removal Method for all Participants from January to July 2009

	2009	Percent
JACO	4,425	91
Sears	425	9
Unknown	1	0
Total	4,851	100

The participant survey contained various questions regarding retailers and how participants may have had appliances removed. Each customer who replaced an appliance was asked where the replacement unit was purchased. Of the 200 respondents who purchased a new replacement unit, 66 percent bought a unit at Sears, nine percent bought units at Home Depot, and four percent bought at Lowe's. No other retail outlet received more than two percent. A complete list can be seen in Table 40.

Table 40 Retailer where New Replacement Unit Was Purchased

Appliance Dealer	Participant Survey	Percent
Sears	133	66
Home Depot	18	9
Lowe's	8	4
Reigelman's	5	2
BuyMart	3	1
Hamilton's appliances	3	1
Dewitt's Appliance	3	1
Standard TV & Appliance	3	1
Best Buy	1	0
Other	14	7
Don't remember	10	5
Total	200	100

Survey participants who purchased a replacement unit from Sears were also asked a set of questions regarding their interactions with the retail representative. Customers who purchased a unit at Sears were asked if Sears removed the old unit when they purchased the new one or if JACO came to their home to pick up the old unit. Seventy-one percent of the Sears purchasers had the Sears delivery truck take their old unit. These respondents were asked the remaining questions seen in Table 41.

For the participants who purchased a new unit from Sears, 25 percent asked the dealer about the recycling program while nearly seventy-five percent said that the dealer raised the subject of Sears removing the unit. Eighty-six percent of the respondents made arrangements to have the old unit removed when purchasing the new unit while the remainder arranged for the transfer at a later time. Ninety-one percent said that they received the orange tag, which was required by the Energy Trust. No one reported any trouble getting the order number for the orange tag.

Nearly 19 percent of respondents said that the fact that Sears promoted the recycling program influenced their decision to purchase a new appliance. About the same percentage of respondents stated that the recycling program influenced them to make their purchase at Sears.

Table 41 Participant Questions about Sears

Interactions with Sears	Yes	No	DK	Total	N
Did you have Sears remove the old unit when they dropped off the new one? (no=ETO rep came at another time)	71	23	6	100	133
Asked of respondents who had Sears remove the unit through the program:					
When purchasing the new appliance, did you ask about Energy Trust's recycling program? (no=sales rep brought it up)	25	72	4	100	94
At the time of purchase, did you make arrangements to have the old unit removed? (no=arrangements at a later date)	86	14	0	100	94
Did you receive an orange tag with the stick-on label?	91	7	1	100	94
Did you have any problems getting the order number that you had to write on the orange tag?	0	99	1	100	94
Did the fact that Sears promoted Energy Trust's recycling program influence you to purchase a new appliance?	19	81	0	100	94
Did the fact that Sears promoted Energy Trust's recycling program influence you to purchase a new appliance from that specific dealer?	18	79	3	100	94

The preponderance of participants (82 percent of those that responded) said that they called the call center within two days to obtain the tracking number for the orange tag (Table 42).

Table 42 Number of Days to Get an Order Number

Within how many days of purchasing your appliance did you call to get an order number for the orange tag?	Participant survey
Same day	22
One day	20
2 days	18
More than 2 days	14
Don't know	26
Total	100
N	93

We also discussed the program with survey participants that purchased a new unit from Sears or another retailer but had ETO remove the unit separately. Of the 39 (23 percent from above table) participants who bought a replacement unit from Sears but did not have Sears remove the old one and later participated in the program, a little more than half (54 percent) talked to the salesperson about how to remove their old unit (Table 43). Of those participants, half (7 participants) were told about the Energy Trust's program and half were not. Four of the participants who were not told about the program were told that Sears would remove the unit for free, while three were told there would be a charge.

Table 43 Responses of Sears Buyers That Did Not Use Sears for Removal

Interactions with Sears appliance dealers where Sears did not pick up unit	Yes	No	DK	Total	N
Did you talk to the salesperson or dealer about how to remove your old appliance or did they offer to remove the appliance?	36	54	10	100	39
Responses to questions for those who had a discussion with the sales person:					
Did they tell you about Energy Trust's Recycling Program?	50	50	0	100	14
Did the sales person or dealer offer to remove the old appliance for free?	71	29	0	100	14
Did they tell you they would remove the appliance for a charge?	21	79	0	100	14

Respondents who purchased from other retailers were asked a series of questions about their experiences. Sixty-three percent said that they did not talk with the sales person about removing the old appliance (Table 44). This is somewhat higher than the percent that bought from Sears but did not use Sears pick-up and did not speak with a sales person about removal (54 percent). Not quite 60 percent who talked about removal were told about the recycling program. Almost 80 percent of these respondents received an offer for removal and only about five percent were told that there would be a charge for removal.

Our take away from this is that the salesperson needs to talk about removal with customers. When this was done, about 50 percent of the customers remembered the discussion about the recycling program. Of course, we don't know about the experience of customers who purchased new units and were not program participants. Those customers may not have discussed removal and the subject of the recycling program may not have been presented to them.

Table 44 Participant Questions For Other Retailers

Interactions with non-Sears appliance dealers	Yes	No	DK	Total	N
Did you talk to the salesperson or dealer about how to remove your old appliance or did they offer to remove the appliance?	30	63	8	100	67
Did they tell you about Energy Trust's Recycling Program?	58	42	0	100	19
Did the sales person or dealer offer to remove the old appliance for free?	79	21	0	100	19
Did they tell you they would remove the appliance for a charge?	5	95	0	100	19

9. Program Satisfaction

The Energy Trust of Oregon participant survey included satisfaction questions about the specific processes as well as the overall program. In this section the results of the analysis of the satisfaction questions are discussed.

9.1 Program Experiences and Customer Satisfaction

9.1.1 Customer Experiences

In order to gain a better understanding of customer experiences with various aspects of the Refrigerator Recycling Program process, customers were asked specific yes or no questions about the process. There were five categories of questions: customer knowledge, scheduling by telephone, scheduling online, the appliance pick-up, and the incentive.

In most recycling programs, gaps exist in the information customers receive. Respondents were asked whether they were aware of the cost of running an older refrigerator, the environmental effects of refrigerant, whether they knew if the refrigerator would be recycled and destroyed, and if they learned what they needed to know before signing up for the program.

Fifty-nine percent of participants were aware that old refrigerators could cost up to $200 more a year to operate (Table 45). Eighty-five percent were aware of the potentially harmful effects of refrigerant on the environment. Making sure that all potential clients understand these two pieces of information might assist the program in marketing and potentially increase the program adoption rate.

Table 45 Percent of Responses to Specific Program Satisfaction Questions

Process Satisfaction Yes/No Questions	Yes	No	DK	N
Information				
When you first decided to dispose of your appliance, were you aware that keeping and using it could cost up to $200 a year in electricity to run it?	59	36	5	307
Prior to choosing a disposal method, were you aware that the refrigerant in older refrigerators is harmful to the environment if not properly disposed of?	85	14	1	307
Did you learn that the refrigerator or freezer that is picked up by the program would be recycled, which means that the coolant in the unit would be safely removed and the materials that the unit is made of would be reused?	79	19	2	307
Did you learn everything you wanted to know about the program before participating?	91	6	3	307
Would you participate again in Energy Trust's program if you needed to dispose of another refrigerator or freezer?	100	0	0	307

Nearly 20 percent of customers were unaware that appliances would be de-manufactured. While having the machine de-manufactured may be a negative for some potential program users, a more positive spin is that the materials are being recycled and reused thus minimizing the environmental consequences and reducing the cost of producing new materials (in some instances).

Ninety-one percent of participants said that they received all of the information that they needed. This suggests that the amount of information being provided is about right. One hundred percent of customers would participate again in the program.

Customers were quite positive about the scheduling process. Separate questions were asked of participants who signed up online and those that signed up over the telephone. Ninety-five percent of the customers who signed up by telephone said that during the scheduling process the representative was polite and courteous, the representative was able to answer all their questions, and a convenient time for pick-up could be scheduled (Table 46). We also asked whether a second call was required. Five percent indicated that a second call was necessary. However, it is unclear why there were second calls. It is likely that callbacks were due to the inability of the customer to provide information used to determine the eligibility of the refrigerator or indecision on the customer's part.

Table 46 Satisfaction with Scheduling by Telephone

Satisfaction attribute	Yes	No	DKNA	N
Was the representative you spoke to on the telephone polite and courteous?	95	0	5	242
Did the representative answer all your questions?	95	1	3	242
Were you able to schedule a pick-up appointment for a convenient date and time?	95	3	3	242
Did you have to call more than once?	5	95	0	242

Customers that signed up online were also very positive. At least 97 percent of customers stated that they were able to schedule a pick-up appointment for a convenient date and time and that the website answered all the questions that they had (Table 47). Ninety-four percent of the Web participants stated that the website was easy to find and that they received a confirmation email.

Table 47 Satisfaction with Online Scheduling

Satisfaction attribute	Yes	No	DKNA	N
Was it easy to find the sign up screen on the website?	94	3	3	42
Did the website answer all your questions about the appliance recycling program?	98	0	2	42
Were you able to schedule a pick-up appointment for a convenient date and time?	97	0	2	42
Did you receive confirmation that your sign up had been successful?	94	0	6	42

With respect to pick-up, 87 to 94 percent of the customers said the representative arrived on time, was polite and courteous, and appeared neat and professional (Table 48). Eighty-three percent of the customers reported that they received a call in advance of the pick-up and 48 percent received a call 30 minutes before the pick-up. However, 12 percent and 33 percent of the respective respondents did not answer yes to these two questions indicating that they did not know, did not remember, or it was not important. The program requires both of these calls. Greater efforts may be needed to contact customers just prior to the scheduled pick-up. On a positive note the number of respondents who thought the time between scheduling and pick-up was too long was only 8 percent.

Table 48 Satisfaction with the Pick-up

Satisfaction attribute	Yes	No	DKNA	N
Do you think the time between schedule and pick-up was too long?	8	92	0	307
Did someone call 1 to 2 days in advance to confirm the appointment?	83	5	12	307
Did someone call 30 minutes in advance to let you know they were coming?	48	19	33	307
Did they arrive on time?	88	6	6	307
Was the representative polite and courteous?	94	0	6	307
Did the representative appear neat and professional?	87	1	12	307

By the time the participant survey was completed, all customers should have received an incentive check. According to the survey, four percent of customers reported that they had not received their incentive check (Table 49). We did not seek to verify whether or not a check was cashed by those who reported not receiving a check, so we do not know if this was actually the case. In other studies we have found that households have sometimes received the check when they thought they had not. A $30 check may not be memorable, may be handled by someone else in the household, may have been mistaken for another transaction, or may have been misplaced. Also customers were asked if they would have participated in the program without the incentive check. An overwhelmingly high number (81 percent) stated that they would have participated without the incentive.

Table 49 Satisfaction with the Incentive Payment

Satisfaction attribute	Yes	No	DKNA	N
Did you receive an incentive check?	96	4	0	96
Do you think the time between pick-up and receiving check was too long?	5	92	3	5
Would you have participated in the program without the incentive check?	81	15	4	81

From earlier chapters we know that convenience is one of the most important aspects of the Refrigerator Recycling Program. For the program to be successful the process has to run smoothly and efficiently. These data show that for the most part customers are satisfied with the program although there is room for improvement in some areas, most notably with respect to educating customers and improving response time.

9.1.2 Overall Customer Satisfaction

As we have already noted, customers seemed to be quite satisfied with the program. On a one to five scale where one is completely satisfied and five is not at all satisfied, we asked customers how satisfied they were with the program sign up and pick-up experience and the program overall. More than 90 percent of customers were completely satisfied with the two aspects of the program and the program overall (Table 50). The number of satisfied customers increases to 95 percent with the inclusion of the "somewhat satisfied" category. Customers were equally satisfied with the pick-up process and the sign up process. Normally, we would regress subpart satisfaction scores on overall satisfaction to assess what contributes to overall satisfaction but the satisfaction levels were so high that this procedure would not produce meaningful results.

Table 50 Percent of Responses to Overall Program Satisfaction Questions

Satisfaction Questions	Not at all satisfied	Somewhat dissatisfied	Indifferent	Somewhat satisfied	Completely satisfied	Don't know	N Total
How satisfied were you with this sign up experience?	1	1	1	5	91	1	307
How satisfied were you with the actual pick-up and removal experience?	1	0	3	4	91	1	307
How satisfied were you with the service OVERALL?	0	1	2	7	90	0	307

The evaluators decided to look more closely at satisfaction levels for customers who signed up online versus over the phone (Table 51). As in other refrigerator studies, a higher percentage of those who signed up by telephone were more satisfied than those who signed up online. Most of the difference is attributable to people saying that they are somewhat rather than completely satisfied. This difference may be a function of the differences in human and computer interactions, a higher level of uncertainty among those who sign up on the Web about whether they want to recycle their appliance, or perhaps some underlying uncertainty about whether the schedule will be met. We do not know.

From other studies, the percentage of those using the Internet rises to about 20 percent and does not usually exceed 30 percent. We know that those who use the call center are less facile with the Internet. We do not know what the difference in cost of signing up online and by the telephone may be. Given the volume of calls that the call center processes and the higher drop-out rates for those signing up online, the difference in

overall cost is probably not large. At least in the near term, going substantially or entirely to Internet sign up may have more of a downside than an upside. It is not recommended at this time.

Table 51 Satisfaction of Customers who Signed up Online Versus Over the Phone

	Not at all satisfied	Somewhat dissatisfied	Indifferent	Somewhat satisfied	Completely satisfied	Don't know	Total	N
Telephone	0	2	2	4	91	1	100	265
Online	2	0	0	12	86	0	100	42
Total	0	1	2	5	91	1	100	307

10. Data Quality Issues

10.1 Data Errors

We have already discussed some of the issues relating to data quality with respect to names and addresses. In order to resolve these issues we recommend the following:

- The utilities should provide the account holder's name and the name should be included in the data sent to JACO.
- Operators should be trained to verify the spelling of names when they are entering them.
- When ETO receives the customer data, addresses should be normalized immediately and QA/QC should be done before the data is conveyed to JACO.
- If not already in the JACO software system, JACO should have fields for the account holder's name and separately the name of the person making the contact.
- The normalized address field should be locked and a field for an alternative address should be provided.
- If not already in the JACO software system, there should be a field for directions and directions should never be placed in an address field.
- JACO should train operators to use these fields and periodically check that data are being entered correctly.
- Where appropriate, these fields should appear on the PDAs.

We also recommend that there be more communication among the parties involved with the data. During the interviews it became clear that many of the staff did not fully understand the whys and how of the JACO operations. We also suspect that the operators and people working with data on the JACO side do not understand the needs of ETO. We suggest that ETO personnel dealing with data and those with customer service responsibilities take a field trip and view the JACO call center operation. Likewise it would be useful for the operators to have ETO's operations explained to them. This might help both parties produce better quality data.

10.2 Refrigerator Data

A key problem is the electrical data. JACO records brand, size, type, and model number of the units it removes. Model numbers are compared to a look-up table to determine electrical characteristics of the equipment, but model numbers only match for approximately 60 percent of refrigerators. The lack of matches is due to incomplete data in the look-up tables and to problems with reading and transcribing model numbers. It is strongly recommended that JACO update its look-up tables to include data since 2000. It is recommended that JACO place greater emphasis on quality data collection. It is also recommended that JACO investigate the potential for reading the barcodes on the appliances for refrigerators that have bar codes with the PDAs. An alternative may be to scan the nameplate and use recognition software to extract the relevant information. Neither of these options is without drawbacks and neither may work well.

In the absence of better information about model numbers, we recommend that the model number as well as additional specific data about the machine be captured. The following information should be routinely collected:

1. Estimated age
2. Estimated size
3. Name plate amperage
4. Name plate voltage
5. Refrigerant type
6. Refrigerator brand
7. Model number
8. Style (single door, top freezer, etc.)

We recognize that collecting some of these data are subject to some of the same problems as the data that is already collected.

10.3 Conducting Mini Surveys When in Contact with the Customer

JACO does survey some customers at sign up for their own purposes. The mini-survey at sign up is a fundamentally sound idea. It represents a potentially important tool for continuous evaluation and particularly for tasks such as monitoring the effects of promotions. We recommend that:

1. A survey be implemented for ETO as part of their standard protocol. A recommended set of questions is suggested below. This should only be done if it is done rigorously.
2. A protocol for implementing the questions be developed.
3. Once the questions are implemented, we recommend that the implementation be reviewed by someone familiar with computer-aided questionnaire design to ensure that the desired results are produced.
4. Operators be trained to ask the questions and to enter the data correctly.
5. Calls be monitored periodically for quality control purposes to determine if the operators are handling the questions according to protocol.
6. The protocol should require that the survey be completed unless the respondent refuses.

We recommend that the questions be redesigned along the following lines.

1. How did you first hear about the Appliance Recycling Program? (Probe by saying “did you hear about it through a bill insert, appliance dealer, family, newspaper or some other way”)

❒ a, Bill insert/bill message
❒ b, Mailer
❒ c, E-mail blast
❒ d, Utility website
❒ e, Other website
❒ f, Appliance dealer
❒ g, Family or friends
❒ h, Community waste management service
❒ I. Newspaper ad
❒ j, Television ad
❒ k, Media story
❒ l, Movie theater ad
❒ m. Truck ad
❒ n, Other (specify) _____
❒ o, Don't know

2. People participate in the program for different reasons. Which aspect most influenced your decision to participate?

- ❒ a, $30 incentive
- ❒ b, Free pick-up
- ❒ c, Simple one call procedure
- ❒ d, Electricity savings from an inefficient machine
- ❒ e, Helping the environment by recycling
- ❒ f, Recommendation from friend or family
- ❒ g, Recommendation from appliance retailer/dealer
- ❒ h, Unaware of other options
- ❒ i, Other (specify) _____
- ❒ j, Don't know

3, Was there something else that influenced your decision?

- ❒ a, No other reasons
- ❒ b, $30 incentive
- ❒ c, Free pick-up
- ❒ d, Simple one call procedure
- ❒ e, Electricity savings from inefficient machine
- ❒ f. Helping the environment by recycling
- ❒ g, Recommendation from friend or family
- ❒ h, Recommendation from appliance retailer/dealer
- ❒ i, Unaware of other options
- ❒ j, Other (specify) _____
- ❒ k, Don't know

4, Is the unit you are discarding being used or has it been used within the last three months as the main refrigerator or a second or spare unit?

- ❒ a, Main
- ❒ b, Spare

5, Are you replacing this refrigerator:

- ❒ a, With a new model
- ❒ b, With a used model
- ❒ c, Not replacing (skip to question 8)
- ❒ d, Don't know

6, Is the replacement unit likely to be:

- ❒ a, Larger
- ❒ b, Smaller
- ❒ c, Same size
- ❒ d, Don't know

7, Is the replacement unit an Energy Star unit?

- ❒ a, Yes
- ❒ b, No
- ❒ c, Don't know

8, When the appliance is or was being used, where was it located?

- ❒ a, Kitchen
- ❒ c, Carport/outside

❒ b, Garage
❒ d, Other interior room

9, In the last year, was the recycled refrigerator or freezer running:

❒ a, All the time
❒ b, Part of the time
❒ c, For special occasions
❒ d, Not at all

10, Before you dispose of the unit you are calling about, how many refrigerators and stand alone freezers do you have running in your house?

Refrigerator #:_____ Freezer #_____

11, After you dispose of this unit, how many refrigerators and stand alone freezers will you have running in your house?

Refrigerator #:_____ Freezer #_____

12, Have you discarded any other refrigerators and/or freezers in the past year? How many?

❒ a, Yes, #:_____
❒ b, No

13, If yes, how were they discarded? (check more than one if needed)

❒ a, Appliance Recycling Program
❒ b, Appliance dealer removed unit
❒ c, Gave to charity
❒ d, Gave to friend or family
❒ e, Sold to friend or family
❒ f, Sold through ad or garage/estate sale
❒ g, Sold/given to used appliance dealer
❒ h, Taken to landfill/community waste center
❒ i, Taken to/by a recycler
❒ j, Other (specify) _____

14, If you hadn't called us, what do you think you would do with the unit you are discarding?

❒ a, Keep it and use it
❒ b, Keep it but not use it
❒ c, Have an appliance dealer remove the unit
❒ d, Give it to charity
❒ e, Give it to friend or family
❒ f, Sell it to friend or family
❒ g, Sell it through ad or garage/estate sale
❒ h, Sell or give it to a used appliance dealer
❒ i, Take or have it taken to landfill/community waste center
❒ j, Take or have it taken to a recycler
❒ k, Other (specify) _____

10.4 Cancellation data

As previously noted this program has a high percentage of cancellations. We recommend that cancellation data be a standard part of routine data collection activities. Cancellations typically occur through a call to the call centers, when customers are

notified of an impending pick-up prior to the actual appointment, or when the driver attempts a pick-up and there is no appliance or no one at home.

A screen should be added that allows the operator to query for a reason for the cancellation. The reasons should be standardized and the operators should be trained to determine the reason for the cancellation. Staff placing calls to households in advance of a pick-up should have access to the same standardized screen and should initiate the question when told that the appointment should be cancelled.

Finally, there should be a screen on the PDA where the crew can check a reason for not recovering a unit. These reasons should be the same as the reasons for the call center and the crews should be trained on how to record the data. If the crew is unable to determine a reason, they should check a box that will result in a follow-up call from the call center during low call volumes.

We recommend the following standard response categories.

- Appliance does not qualify for the program
- Decided to keep the appliance
- Appliance was sold to a third party
- Appliance was given to a friend or neighbor
- Appliance was given to a charity
- The new appliance delivery crew volunteered to remove it
- Appliance was sold to a dealer who came and removed it
- Arrangements were made with the new appliance dealer to remove it
- Had a hauler or community waste program remove it
- Took it to a waste management center
- Customer was unable to meet schedule
- Recycling company (JACO) unable to meet schedule
- Cancel for other reason (specify)

11. Findings, Summary, and Recommendations

This chapter highlights some of the key findings from this evaluation. The findings are then summarized and some recommendations provided.

11.1 Key Findings

Program Impacts

- From June 2008 to the end of June 2009, the program removed 7,089 units, 5,563 of which were refrigerators (78 percent).
- The mean consumption of refrigerators at manufacture was 1,087 kWh and 1,070 kWh for freezers. Based on data from the 2004-05 California study the estimated gross savings for a refrigerator including degradation is 1,631 kWh and 1,605 kWh for freezers.
- The estimated gross annual savings for the first year of operation of the program using kWh consumption at manufacture is 7.2 GWh and the savings assuming degradation is 11.5 GWh.
- We estimate that without the program 47 percent of units would have been taken off the electrical grid either in the current year or in the future, 46 percent would still be in the system, and 7 percent are unknown.

Characteristics of Recycled Units

- Approximately 60 percent of the refrigerators were older than 20 years and 90 percent were older than 10 years. Approximately 86 percent of freezers were greater than 20 years of age and 98 percent were greater than 10 years.
- Fifteen percent of refrigerators and 19 percent of freezers that were removed in 2008 were not in use, while only 4 percent and 6 percent respectively that were removed in 2009 were not in use.
- Fifty percent of 2009 refrigerators were secondary units, which is up from 37 percent in 2008, while 45 percent were primary units, which is down from 48 percent in the previous year. The participant survey showed that 56 percent were primary units and 44 percent were secondary units in 2009.
- Sixty-four percent of refrigerators and 42 percent of freezers were replaced. The participant survey showed that 77 percent of refrigerators and 52 percent of freezers were replaced in 2009.
- Seventy-two percent of the refrigerator replacements and 79 percent of freezer replacements were new units. The participant survey showed 82 percent and 89 percent respectively.
- Nineteen percent of orders were cancelled in 2008 and about 15 percent were cancelled in 2009.

Customer Characteristics

- Participants:
  - Live in single-family dwellings.
  - Tend to live in one or two person households implying that they are empty nesters.
  - Are spread across the income spectrum.
  - Live in a home with a median area of 2,000 square feet.

Customer Awareness

- Approximately 38 percent of customers heard about the program through their utility or The Energy Trust (26 percent from bill inserts), 25 percent heard through an appliance dealer, 18 percent heard through a media source, and 9 percent were referred by a friend or neighbor
- Customers disposing of only a freezer were much more likely to become aware of the program through their utility or The Energy Trust (54 percent compared to 33 percent of refrigerator disposers) while customers disposing of only a refrigerator were much more likely to hear of the program through the appliance store (29 percent compared to 10 percent of those disposing of freezers).
- Customers disposing of a primary refrigerator were much more likely to hear of the program from an appliance retailer (38 percent compared to 13 percent of secondary disposers) while customers disposing a secondary refrigerator were much more likely to hear of the program through their utility or The Energy Trust (43 percent compared to 29 percent of primary disposers).
- Seventy-six percent of the respondents had previously considered disposing of the unit before hearing about the program.

Response to Marketing

- The convenience of the program and the free pick-up was the most important motivating factors for 37 percent of respondents.
- The $30 cash incentive was the most important motivating factor for 34 percent of respondents.
- The environment was the most important motivating factor for 16 percent of respondents.
- Those who had a main refrigerator removed were slightly more likely to cite the incentive (48 percent compared to 43 percent) or the environment (27 percent compared to 23 percent) as a motivating factor. Those who had a secondary or spare were much more likely to cite convenience as the motivator for their participation (59 percent compared to 45 percent).
- Those who had a freezer as opposed to a refrigerator removed were more likely to say that convenience (52 percent compared to 46 percent) and the incentive were more important (55 percent compared to 50 percent).
- Those who replaced a unit were much more likely to say they were motivated by the incentive or the environment while those who did not replace the unit said that they were motivated by convenience (70 percent compared to 45 percent).
- In the absence of the program, 30 percent would have taken or had someone else take the unit to the dump or another recycler, 26 percent would have given the unit away, 18 percent would have had the appliance dealer remove it, 11 percent would have sold it, 7 percent would have kept it, and 7 percent didn't know what they would do.

Sign Up Method

- In 2008, 24 percent of customers signed up using the Web while in 2009 only 14 percent of customers signed up on the Web.

- Seventy-seven percent of customers who signed up over the phone had access to the Internet.
- Forty-eight percent of customers who signed up over the phone and had access to the Internet were not aware that they could sign up online.
- Fifty-one percent of these unaware customers would have used the Internet if they knew that it was an option.
- If respondents had acted on what they told us, the percentage of Internet sign ups might have been about 19 percent higher.
- When asked the reason for using the telephone for signing-up, 31 percent said the phone was more convenient, 30 percent said they were more comfortable talking to a real person, and 10 percent said the phone was the option they found or that the Internet option was confusing.

Removal of Units Through Sears and Other Retailers

- Among those who replaced a unit that was removed by the program, sixty-six percent purchased at Sears, 9 percent at Home Depot, and 4 percent at Lowe's.
- Seventy-one percent of the Sears purchasers had an old unit removed.
- Eighty-five percent of the respondents made arrangements to have the old unit removed when purchasing the new unit.
- Approximately 9 percent of all orders in 2009 were removed by Sears and transferred to the program
- Twenty-five percent of respondents who had Sears remove their unit asked about the program. Seventy-five percent said that the sales person suggested it.
- Ninety-one percent of those who participated in the program through Sears said that they received the orange tag, which was required by the Energy Trust.
- No one reported any trouble getting the order number for the orange tag.
- Of the respondents who purchased a replacement unit from Sears but did not have them remove their old unit, 36 percent talked to the salesperson about how to remove their old unit. Fifty percent of those participants were told about the Energy Trust's program.
- Of the respondents who purchased a replacement unit from other retailers, 30 percent talked to the salesperson about how to remove their old unit of which 58 percent were told about The Energy Trust's Program.

Customer Information Gaps

- Thirty-six percent of respondents didn't know that keeping and using an old unit could cost as much as $200 a year, 14 percent were unaware of environmental effects of refrigerant, and 19 percent were unaware of the recycling process in the program.

Program Satisfaction

- Overall, 90 percent respondents were completely satisfied with the program and 97 percent were somewhat or completely satisfied. Ninety-five percent were somewhat satisfied or completely satisfied with the scheduling process and the pick-up process.
- Ninety-one percent said they learned everything they wanted to know about the program before participating.

- One hundred percent of respondents would participate in the program in the future.
- Ninety-five percent of the customers who signed up by telephone said that during the scheduling process the representative was polite and courteous, the representative was able to answer all their questions, and a convenient time for pick-up could be scheduled.
- At least 94 percent of customers who signed up online stated that they were able to schedule a pick-up appointment for a convenient date and time, that the website answered all their questions, the website was easy to find, and that they received a confirmation email.
- With respect to pick-up, 87 to 94 percent of the customers said the representative arrived on time, was polite and courteous, and appeared neat and professional.
- Eight-three percent of customers remember receiving a call 1-2 days in advance of pick-up.
- Forty-eight percent of customers remember receiving a call 30 minutes prior to pick-up.
- Eight percent thought that the time between schedule and pick-up was too long.
- Four percent of respondents said they did not receive an incentive check.
- Five percent said that the time between pick-up and receiving the check was too long.
- Eighty-one percent would have participated in the program without the incentive check.
- Customers who signed up over the phone were completely satisfied 91 percent of the time while customers who signed up over the Internet were completely satisfied 86 percent of the time.

Data Quality Issues

- Extensive resources are being spent on rectifying data quality issues.
- The lack of customer names in the data provided by the utilities is a serious impediment to good customer service.
- The data provided to JACO needs to be normalized before it is sent to JACO.
- JACO may need to make some adjustments to the structure of its database.
- JACO's software has survey capabilities built in and ETO should make use of this capability to gain real time feedback.

11.2 Summary and Recommendations

After a slow start in 2008, the program significantly increased the number of units that it was removing in the first half of 2009. This represents significant progress. The program is achieving its goal of removing older refrigerators. According to the survey only a small percentage of the units (15 percent) that were removed were not in service.

An important reminder of how much is left to do is the fact that participant households still had an average of 1.37 refrigerators after they participated. **It is recommended that more attention and resources including some research resources be focused on increasing the number of second units being removed.**

A key marketing event was a bill insert in the Pacific Power service territory. The data show that participants are most likely to become aware of the program through bill inserts and contacts at appliance stores. Media marketing produces many fewer sign ups although it may be important for building awareness and longer-term participation. The bill inserts are particularly important in targeting households for second unit removal. **It is recommended that marketing resources be concentrated on bill inserts, direct mail, and contacts through appliance dealers and to a lesser extent on other forms of marketing.**

Convenience was the most important motivation for participating in the program followed closely by the incentive. Slightly more than 80 percent of participants say they would have participated without an incentive. The environment is also a factor in people's decision-making. **It is recommended that marketing efforts stress ease of use and the convenience of the program.**

There are information gaps. Slightly more than a third of respondents did not know about the cost of operating a second refrigerator. **It is recommended that cost savings from not operating a second refrigerator be included with the incentive when presenting the benefits of the program.** The annual operating savings may be as much as six times the value of the incentive.

Customers used both the telephone and the Internet to sign up for the program. The telephone was used more frequently. Customers cited convenience as a key reason for using the telephone. There is also a clear correlation between the amount of Internet use and using the Internet to sign up.

Many people were not aware that they could sign up online and indicated that if they had known that might have used the Internet. There are also some hints that people may prefer the human interaction. We believe that the telephone option will continue to be the preferred method for the foreseeable future. **It is recommended that ETO maintain the telephone option and enhance it if possible. It is recommended that the ETO make the Internet option more visible to potential participants.**

Without a nonparticipant disposer survey, it is difficult to judge the value of the collaboration with Sears to remove appliances and recycle them when new appliances are delivered. There is good evidence that information provided by the retailer is an effective way to reach one segment of customers. There is also evidence that there are benefits for both ETO and Sears. It appears that the JACO and Sears worked together effectively. The process evaluation shows that some of the concerns about reducing net-to-gross when working with retailer appliance dealers can be effectively addressed. **It is recommended that ETO continue to work with Sears to recycle appliances. It is recommended that ETO consider including one or two additional new appliance dealers. It is recommended that ETO conduct a nonparticipant disposer survey that will provide data to help assess the degree of free-ridership associated with working through appliance retailers.**

Customer's satisfaction with the program is quite high. Ninety percent or more of the respondents said that they were completely satisfied. On the flip side, only one percent expressed complete dissatisfaction with the program. Compared to other types of programs, these satisfaction scores are quite good. One hundred percent of respondents said that they would participate again. Scheduling and removal received

good ratings. There are a few areas where improvements may be possible. One of these is increasing the percentage of people who are contacted shortly prior to the scheduled removal. **It is recommended that ETO examine the ratings and see if there are other areas where improvements could be made.** We warn against spending significant resources to make improvements that may result in few gains in satisfaction. It is important to address the concerns of people who complain but they are literally the one in one hundred.

The tracking system and the data flows were examined. Currently the resources expended on quality control are necessary, but some basic changes would reduce the need for these requirements. **It is recommended that some method of obtaining customer names and addresses be worked out with the utilities as soon as possible.** Not having the names of account holders is a serious detriment to good customer service.

It is recommended that if it has not already happened that addresses be normalized before they are sent to JACO.

There are capabilities in the JACO software to conduct brief surveys with customers. In fact, we believe that JACO may already do some of this for its own purposes. **It is recommended that ETO take advantage of these capabilities to gain real time feedback. We have provided some recommended survey questions to be asked of customers when they call. It is recommended that a rigorous protocol be established to do this.**

We have provided some recommendations concerning the structure of JACO's databases. **It is recommended that these or something similar be implemented if the capabilities are not already incorporated into the software.**

It is strongly recommended that ETO and PECI staff visit the JACO call center to see how the operation works. It is also recommended that ETO provide briefings to the JACO call center staff on their needs and reasons for needing quality data. These steps will lead to an increased understanding and better operations.

12. Work Cited

ADM, Athens Research, Innovologie, and Hiner and Partners. *Evaluation of the 2004-05 Statewide Residential Appliance Recycling Programs.* San Francisco: CALMAC, 2008.

Dohrmann, Donald R., John Peterson, John H. Reed, Shahana Samiullah, Steven Westberg "Net Savings Estimation in Appliance Recycling Programs: A Review and Empirical Analysis with Recent California Data," in the *Proceedings of the 2007 International Energy Program Evaluation Conference: Reliable Program Results? You Betcha!.* Madison WI: IEPEC, 2007.

Peterson, John, Don Dohrmann, Taghi Alereza, Shahana Samiullah, Steven Westberg, John H. Reed. "Gross Savings Estimation for Appliance Recycling Programs: The Lab Versus In Situ Measurement Imbroglio and Related Issues," in the *Proceedings of the 2007 International Energy Program Evaluation Conference: Reliable Program Results? You Betcha!.* Madison WI: IEPEC, 2007.

Reed, John H., Charles Bailey, and Moria Morrissey. "Load Reduction or Load Growth It Matters How You Design Your Program." Presentation for the Energy Star Partners' Conference. Chicago, IL. September 22, 2009.

Reed, John H., Charles Bailey, and Moria Morrissey, "That Old Fridge: Where Does It Go?" Presentation at the AESP Spring 2009 Implementation Conference, Charlotte, NC: AESP, April 2009.

Reed, John H. ,Charles Bailey and Jeff Riggert. *A Process Update of the 2006-08 SCE Appliance Recycling Program*. Rockville, MD: Innovologie, February 2010.

Westberg, Steven, John H. Reed, Charles Bailey, Moria Morrissey, Don Dohrmann, John Peterson, Shahana Samiullah. "How Electric Customers Dispose of Used Refrigerators and Why They Choose a Utility Program." in the *Proceedings of the 2007 International Energy Program Evaluation Conference: Reliable Program Results? You Betcha!.* Madison WI: IEPEC, 2007.

13. Interview Guides

Interview Guide
Program Managers
ETO Refrigerator Recycling Program

Purpose

This guide is intended for use with the program managers. The goal of these interviews is to understand the operation of the Refrigerator Recycling Program at ETO and PECI.

Target

The targets for these interviews are the program managers.

Interview Questions

Background

Record the names and responsibilities for the participants

Name	Title/Responsibilities
_____	- _____
_____	- _____
_____	- _____
_____	- _____
_____	- _____

Program Goals

1. What are the goals of the 2008-09 Refrigerator Recycling Programs?
    A. How are the goals set?
    B. What metrics are used to define performance? Should there be other metrics or should the metrics be changed?
2. Have you been able to meet your goals?
    A. What have you had to do to meet those goals?
    B. How difficult do you think it will be to meet them?
    C. What program changes do you anticipate in order to meet the 2010-11 goals?
3. Have program eligibility requirements changed since the beginning of the program?
    A. If so, what is your perspective on these changes?
4. Do you foresee the possibility that the eligibility requirements might be changed in other ways in the near future? If so, how?
    A. What impact might changing eligibility requirements have on the program?
5. Do you or others within your organization have recommendations for changes in eligibility requirements? If yes, what?
    A. Why would you make these recommended changes?

Program Structure and Operation

6. Do you have an operations manual or operation guide that describes how the program operates? How about a program plan? Has it been updated since it was originally written? If yes, could we obtain a copy?
7. Beside yourself, who else at ETO/PECI is involved in the Refrigerator recycling Program? Can you tell me the names of the people and what they do?
    A. Program Staff
    B. Marketing
    C. Information technologies
    D. Contracting
    E. Call center staff
    F. Others

Marketing and Awareness

8. Has the marketing changed in the last year? If yes, how so? What impacts, positive or negative have these changes had on the program?
9. Could you describe the various ways in which the program was marketed in 2008-9?
    A. Advertisements
    B. Bill stuffers
    C. Information at appliance dealers
    D. Word of mouth
    E. Radio advertisements
    F. E-mail blasts
    G. TV advertisements
    H. Direct mailings
    I. Etc.
10. Which methods were the most effective?
11. Are there other marketing methods that you think would be worth trying?
12. What changes to these methods do you anticipate for 2010-11?
13. Can we obtain a list of all the market events in the 2008-9 time frame?

Information and screening

14. What are the most common ways in which a customer enters the program?
    A. Telephone call to the utility call center
    B. Call to the contractor hotline
    C. Sign-up through ETO/contractor web-site web-site
    D. Sign-up through contractor web-site
    E. Other methods
15. What role do the ETO/PGE/Pacific Power/JACO call centers play in marketing the program and getting households signed-up for the program?
16. Has the way the call center staff is trained changed?

17. What is your impression of the contractor website? Have you received any feedback from customers about the contractor website? If so, what was the feedback that you received?

Sign-up

18. Can you describe how customers sign up for the program?
    A. Through the contractor website
    B. By calling the contractor hotline
    C. Through retailers
    D. How has the rate of use of the methods changed over the last year?
19. How are the eligibility criteria handled during the sign-up process?
20. Do the eligibility requirements cause confusion with the customers?
    A. If so, how?
    B. In what percentage of cases?
21. How are ineligible customers handled?
    A. Are they referred to someone who can take their unit off their hands?
    B. If so, to whom are they referred?
22. Can you describe how data is collected at sign up or during the pick-up process?
    A. What future changes would you make for data collection?

The scheduling process

23. Can you describe the scheduling process?
24. What feedback have you gotten from customers about the scheduling process?
    A. Do you have recommendations for improving the scheduling process?
25. Are you aware of any geographical areas or segments of the population that are more likely to schedule a pick-up? If so, which areas or segments? How do you account for the differences?
26. Are you aware of any geographical areas or segments of the population that are less likely to schedule a pick-up? If so, which areas or segments? How do you account for the differences?

Pick-up process

27. Can you describe the pick-up process?
28. What do customers have to do to establish that an appliance is a working appliance?
    A. What feedback do you get from customers about their having to do this?
29. How often does the pick-up agent find that an appliance is ineligible? Has this changed?
30. How does the pick-up agent determine if the appliance is a working appliance? Has this changed?
31. What feedback have you gotten from customers about the pick-up process?
32. Do you have recommendations for improving the pick-up process?

Rebates and the Rebate process

33. Can you describe the rebate process and how customers receive their check?
34. Have there been any changes to the rebate process since the beginning of the program?
35. What feedback have you gotten from customers about the rebates and the rebate process?
    A. What is your perception of the rebate amount? Is it about right? Too high? Too low?
    B. Are customers satisfied with the amount of time it takes to get the rebate?
    C. What percentage of rebate checks goes unclaimed?
    D. How essential is the rebate to the success of the program?
    E. What do you think motivates customers to use the program?
        i. The rebate
        ii. The free removal
        iii. Getting rid of an unwanted appliance from their household
        iv. Appliance dealers who encourage customers to use the program

Non-Primary Refrigerators

36. What percentage of your refrigerator pick-ups do you estimate are for non-primary refrigerators? What percentage are replaced? What percentage do you estimate are not replaced?
37. Are you aware of any characteristics that define customers with non-primary refrigerators?
    A. Geographic location
    B. Ethnicity
    C. Income level
    D. Other
38. Why do you think customers have non-primary refrigerators?
39. To what extent do you think non-primary refrigerators can be captured?
40. Are there marketing activities that ETO is doing or should be doing, that are better suited for customers with non-primary refrigerators?
41. What incentives or messages do customers need to get or hear in order to dispose of non-primary refrigerators?

Cancellations

42. Do you have procedures for following up on cancellations?
43. What are the procedures?
44. Has the rate of cancellations changed over the past two years? If so, why has it changed?
45. What could be done to reduce the number of cancellations?

Contractor relations

46. How often do you interact with your contractor?
47. How would describe your relationships with your contractor? Has this changed since the beginning of the program?
48. What kinds of issues have arisen in relation to your contractor?
49. Has the contractor been responsive when issues have arisen?
50. Have you experienced any throughput problems in the system?
    A. If so, where have these throughput problems occurred? Obtaining sign-ups, scheduling, pick-up, de-manufacturing?
51. What is the capacity of the system? Do you foresee any potential capacity problems?

Interactions with New Appliance Dealers

52. Are you currently working with new appliance dealers in regards to the recycling program? If yes, how so?
53. Is this relationship working? What are the benefits?
54. What is your best estimate for the number or percent of the units that new appliance dealers remove that enter the used market?
55. Are there potential problems with dealing with new appliance dealers?
56. Are there ways that interactions/relationships with new appliance dealers could be made more effective in terms of reaching program goals? If yes, how?

Future

57. What information do you think would be useful to have that would help to improve the operation of the program?
58. Are you concerned about the net to gross ratio? Do you think it needs to be addressed? What would you do to address it?
59. What changes to the program would you recommend?
60. What issues do you see arising in the near future? How do you think those issues should be addressed?
61. Is there anything else you would like to tell us?

Interview Guide
Marketing Staff

ETO Refrigerator Recycling Program

This is a draft. It may not be quoted, cited, or copied.

Purpose

This guide is intended for use with the marketing staff. The goal of these interviews is to understand the marketing operation of the Refrigerator Recycling Program at ETO.

Interview Questions

Background

Record the names and responsibilities for the participants

Name	Title/Responsibilities
_____	- _____
_____	- _____
_____	- _____

1. Could you describe the ways in which the program was marketed in 2008-09?
   A. Advertisements
   B. Bill stuffers
   C. Information at appliance dealers
   D. Word of mouth
   E. Radio advertisements
   F. E-mail blasts
   G. TV advertisements
   H. Direct mailings
   I. Etc.
2. Can you describe some of the strategies that were used for the marketing events and activities we just discussed?
3. Can you describe some of the geographic or segment strategies that were used for the marketing events and activities?
4. Which methods and strategies were the most effective?
5. Are there other marketing methods that you think would be worth trying?
6. Can you provide a list of all of the marketing events that were completed in 2008-9? We are particularly interested in media buys, targeted mailings, etc.
7. Do you have information on the target and size of each marketing event or activity?
8. What data does marketing have that would help us understand the characteristics of households with second refrigerators?
9. What marketing segmentation schemes does ETO use? MOSAIC, PRIZM, others? Can Personas be linked to customer account IDs?

10. Are these available for use?
11. We are considering identifying households with second refrigerators and backing into MOSAIC, PRIZM, or some other scheme through 9 digit zip. Does ETO have the data to do that?

Interview Guide
JACO Managers
Appliance Recycling Program

Purpose

This guide is intended for use with the recycling company managers. The goal of these interviews is to understand the operation of the Refrigerator Recycling Program. We also hope to gain some insight into characteristics of customers with non-primary refrigerators and possible geographical characteristics of participants.

Target

The targets for these interviews are recycling company managers.

Interview Questions

Background

Record the names and responsibilities for the participants

Name	Title/Responsibilities
_____	- _____
_____	- _____
_____	- _____
_____	- _____
_____	- _____

Program Goals

1. What are the goals of the Refrigerator Recycling Programs for your company?
   A. How are the goals set?
   B. What metrics are used to define performance? Should there be other metrics or should the metrics be changed?
2. Have you been able to meet your goals?
   A. What have you had to do to meet those goals?
   B. What are the goals for 2010-2011?
   C. How difficult do you think it will be to meet them?
   D. If difficult, what can you do to meet them? If too low, what can be done to raise them?
3. Have program eligibility requirements changed since the beginning of the program?
   A. If so, how have they changed?
   B. What is your perspective on these changes?
4. Do you foresee the possibility or do you think that the eligibility requirements might (should) be changed? If so, how?

   A. What impact might changing eligibility requirements have on the program?
5. Do you or others within your organization have recommendations for changes in eligibility requirements? If yes, what?
   A. Why would you make these recommended changes?

Program Structure and Operation

6. Can you describe the program structure
7. Can you describe the operations?

Information and screening

8. What are the most common ways in which a customer enters the program?
   A. Telephone call to the utility call center
   B. Call to your hotline
   C. Sign-up through utility web-site
   D. Sign-up through your web-site
   E. Other methods
9. How is your call center staff trained?
10. What role does the utility call center play in getting households signed-up for the program?

Sign-up

11. Can you describe the sign-up process?
12. How are the eligibility requirements enforced during the sign-up process?
13. Do the eligibility requirements cause confusion with the customers? If so, how?
   A. In what percentage of cases?
14. How are ineligible customers handled?
   A. Are they referred to someone who can take their unit off their hands?
   B. If so, to whom are they referred?
15. Can you describe how data is collected at sign up or during the pick-up?
   A. What future changes would you make for data collection?

The Scheduling Process

16. Can you describe the scheduling process for the Refrigerator Recycling Program?
17. What feedback have you gotten from customers about the scheduling process?
   A. Do you have recommendations for improving the scheduling process?
18. Are you aware of any geographical areas or segments of the population that are more likely to schedule a pick-up? If so, who are they? Where are they?
19. Are you aware of any geographical areas or segments of the population that are less likely to schedule a pick-up? If so, who or where are these segments? Why you think this is the case?

Pick-up Process

20. Can you describe the pick-up process for this program?
    A. What improvements could be made in the system?
21. What do customers have to do to establish that an appliance is a working appliance?
    A. What feedback do you get from customers about their having to do this?
22. How often does the pick-up agent find that an appliance is ineligible? Has this changed?
23. How does the pick-up agent determine if the appliance is a working appliance? Has this changed?
24. What feedback have you gotten from customers about the pick-up process?
25. Do you have recommendations for improving the pick-up process?

Cancellations

26. Have you instituted any procedures for following up on cancellations?
27. If so, what are the procedures
28. Has the rate of cancellations changed over the past two years? If so, to what do you attribute this?
29. Why do you think households cancel?
30. What could be done to reduce the number of cancellations?

Rebates and the Rebate process

31. What feedback have you gotten from customers about the rebates and the rebate process?
    A. What is your perception of the rebate amount? Is it about right? Too high? Too low?
    B. Are customers satisfied with the amount of time it takes to get the rebate?
    C. What percentage of rebate checks go unclaimed?
    D. How essential is the rebate to the success of the program?
    E. What do you think motivates customers to use the program?
        1. The rebate
        2. The free removal
        3. Getting rid of an unwanted appliance from their household
        4. Appliance dealers who encourage customers to use the program
        5. Convenience
        6. Other _____

Non-Primary Refrigerators

32. What percentage of your refrigerator pick-ups do you estimate are for non-primary refrigerators. What percentage do you estimate are replaced? What percentage is not replaced?
33. Are you aware of any characteristics that define customers with non-primary refrigerators?
    A. Geographic location
    B. Ethnicity
    C. Income level
    D. Other
34. Why do you think customers have (keep) non-primary refrigerators?
35. To what extent do you think non-primary refrigerators can be captured?
36. Are there marketing activities that ETO may or may not be doing that are better suited for customers with non-primary refrigerators?
37. What incentives or messages do customers need to get or hear in order to dispose of non-primary refrigerators?

Contractor operations

38. Can you describe the de-manufacturing process?
39. Do you see any substantial changes in the future to the de-manufacturing process?
40. Have you experienced any throughput problems in the system?
    A. If so, where have these throughput problems occurred? Obtaining sign-ups, scheduling, pick-up, de-manufacturing?
41. Have you experienced any flow problems or do appliances come into the program on a continuous basis?
    A. If so, how do you deal with flow problems?
    B. Do you have a sense of why appliances come in clusters?

Utility relations

42. How often do you interact with ETO and the PECI?
43. How would you describe your relationships with ETO? Has this changed since the beginning of the program?
44. What could improve your interaction and relationship with ETO?
45. How responsive is ETO?

Interactions with New Appliance Dealers

46. Are you currently working with new appliance dealers in regards to the Refrigerator Recycling Program or any other programs in other areas? If yes, how so?
47. Is this relationship working? What are the benefits?

48. What is your best estimate for the number or percent of the units that new appliance dealers remove that actually enters the used market?
49. Do you think it is possible to use new appliance dealers to capture refrigerators?
50. Are there potential problems with dealing with new appliance dealers? Is so, what are they?
51. Are there ways that interactions/relationships with new appliance dealers could be made more effective in terms of reaching program goals? If yes, how?

Future

52. What information do you think would help to improve the operation of the program?
53. What changes to the program would you recommend?
54. What do you forecast for the future of the program? What could extinguish or encourage this forecast?
55. Is there anything else you would like to tell us?

14. Participant Survey

Energy Trust's Appliance Recycling Program Participant Survey

Prefill
Name:
Phone #:
Address:

Utility:
Item removed:

Interview

May I please speak with _____(*name*)? Good morning/afternoon. I'm _____ calling on behalf of Energy Trust of Oregon. We are talking to customers who had refrigerators or freezers removed through Energy Trust's recycling program.

Our records show that in _____(*prefill month and year*) a (*appliance type*) was removed by Energy Trust's recycling program or a new appliance dealer on behalf of the program. Are you the person who would have been involved and most familiar with having a refrigerator or freezer picked up?

- ❑ (1) Yes, I remember *(go to 1)*
- ❑ (2) Someone better to talk to (*go to I-3*)
- ❑ (3) Don't know about the removal (*go to I-2)*

I-2. You or someone in your house may have called Energy Trust of Oregon, signed up on the Internet, or had an appliance dealer remove the unit when delivering a new one. You may have been disposing of a refrigerator or freezer because you had an extra one or because you bought a new one. Now, do you recall?

❑ (1) Yes *(go to 1)* ❑ (0) No (g*o to I-2A)*

I-2a Is there someone else in your household who might know?
❑ (1) Yes *(go to I-3)*
❑ (0) No, (*Thank and terminate)*

I-3. May I speak to that person or have his/her name _____?

Name _____
(If not available establish a good time for a call back.)

Call back time _____

Verification

1. Let me just verify, when you signed up in _____(*prefill month and year*) you had _____(*prefill the appliance or appliances removed*)
   - ❑ (1) A refrigerator recycled (appliancevar1 = refrigerator)

❑ (2) A freezer recycled *(appliancevar1 = freezer) (go to Q5)*
❑ (3) Two refrigerators recycled *(appliancevar1 = first refrigerator appliancevar2 = second refrigerator)*
❑ (4) A refrigerator and a separate free-standing freezer recycled *(appliancevar1 = refrigerator appliancevar2 = freezer)*
❑ (5) Two freezers recycled *(appliancevar1 = first freezer appliancevar2 = the second freezer)* (go to Q5)

1a. Is that correct?
❑ (1) Yes, that is correct (*go to Q3)*
❑ (2) No, not correct *(go to Q2)*
❑ (9) Don't know *(go to Q3)*

2. So what did you have recycled? (*Allow the respondent to answer in his/her own words and then select appropriate box below. If the respondent is unsure, prompt by asking, Was one a refrigerator? What about the other one?)*
   ❑ (1) A refrigerator recycled *(appliancevar1 = refrigerator*)
   ❑ (2) A freezer recycled *(appliancevar1 = freezer) (go to Q5)*
   ❑ (3) Two refrigerators *(appliancevar1 = first refrigerator appliancevar2 = second refrigerator)*
   ❑ (4) A refrigerator and a *freezer (appliancevar1 = refrigerator appliancevar2 = freezer)*
   ❑ (5) Two freezers recycled *(appliancevar1 = first freezer appliancevar2 the second freezer) (go to Q5)*

Refrigerator/Freezer

{Set continueflag = 0
Set newappliance = 0
Set usedappliance = 0
Set searsflag = 1 if unit was picked up through sears, else set searsflag =0}

Appliance block

Now I am going to ask you some questions about the *appliancevar1* that was recycled. *{If appliancevar1 or appliancevar2 = refrigerator, go to Q3. If appliancevar1 or appliancevar2 = freezer go to Q5}*

3. During the time just before you decided to get rid of it, was the *appliancevar* you got rid of being used as your main unit, or had it been a secondary or spare? (*Interviewer: a main refrigerator is typically in the kitchen, a secondary or spare is usually kept someplace else and might or might not be running. If the person recently bought a new main refrigerator and was just waiting for the old one to be picked up, it should be classified as "main.")*
   ❑ (1) Main *(go to Q6)* ❑ (2) Secondary/Spare *(go to Q4)*

4. How long had it been a secondary or spare? (*Get months/years*) (*If respondent is confused, reinforce that "how long had it been a spare when you decided to get rid of it."*)
   - ❑ (1) Months_____
   - ❑ (2) Years _____
   - ❑ (9) Don't know

5. In the last year, how much was the *appliancevar* used?
   - ❑ (1) Kept it running all the time. *(go to Q6)*
   - ❑ (2) For special occasions only *(go to Q5a)*
   - ❑ (3) During certain months of the year only *(go to Q5a)*
   - ❑ (4) Never plugged in or running *(go to Q6)*
   - ❑ (5) Don't know/Don't remember *(go to Q6)*
   - ❑ (6) Other (S*pecify*_____)

5a. During the last 12 months, how many total months do you think it was it plugged in an running?
   - ❑ (1) Months ____(*1-12 half = .5*)
   - ❑ (9) Don't know/Don't remember
   - ❑ (8) Refused

6. What was the condition of this appliance? Would you say
   - ❑ (1) It worked and was in good physical condition
   - ❑ (2) It worked but needed minor repairs like a door seal or handle.
   - ❑ (3) It worked but had some problems like it wouldn't defrost or didn't stay cold enough?
   - ❑ (4) Or, it didn't work
   - ❑ (5) Don't know
   - ❑ (6) Refused
   - ❑ (7) Other (*Specify*_____)

7. Did you recycle the appliance because you:
   - ❑ (1) Bought a brand new *appliancevar (newappliance =1)*
   - ❑ (2) Bought a used *appliancevar (usedappliance = 1)*
   - ❑ (3) Received an *appliancevar* from someone such as a friend or neighbor
   - ❑ (4) Just to get rid of a *appliancevar* you didn't want
   - ❑ (5) Don't know/Don't remember
   - ❑ (6) Other (S*pecify*_____) *(go to Q19)*

{If (Q1 = 1 or Q1 = 2 or Q2 = 1 or Q2 = 2 or continueflag = 1) then go to Q9 if newappliance = 1; go to Q8 if newappliance =0 and used appliance =1; go to Q19 if newappliance =0 and usedappliance = 0

Else let (appliancevar1 = appliancevar2)

Then say:
Let's talk about the other appliance you recycled, the *appliancevar1*.

and if (Q1 = 5 or Q2 = 5) then go to Q5 else go to Q3 and set continueflag = 1}

End of appliance block repeat if a second appliance

---

8. Did you buy from a store or appliance dealer or a private party? *(if more then one used appliance was purchased, ask about the most recently purchased unit)*

❑ (1) Store or appliance dealer *(go to Q17)* ❑ (2) Private party *(go to Q19)*

9. Where did you purchase the new appliance? *(if more then one new appliance was purchased, ask about the most recently purchased unit)*
   - ❑ (1) Sears (*set searsflag = 1 then go to Q10*)
   - ❑ (2) Best Buy (*go to Q17)*
   - ❑ (3) Costco (*go to Q17)*
   - ❑ (4) Home Depot (*go to Q17)*
   - ❑ (5) Lowe's (*go to Q17)*
   - ❑ (6) Ikea (*go to Q17)*
   - ❑ (7) Standard TV & Appliance (*go to Q17)*
   - ❑ (8) Fry's electronics (*go to Q17)*
   - ❑ (9) Other (*name*_____) (*go to Q17)*
   - ❑ (10) Don't remember (*go to Q17)*

If searsflag = 1 then go to Q10, else go to Q17

Sears Block

10. Did you have Sears remove the old unit when they dropped off the new one, or did a representative from Energy Trust come at another time to pick up the unit?
    - ❑ (1) Appliance dealer *(go to Q11)*
    - ❑ (2) ETO representative (*go to Q17)*
    - ❑ (9) Don't know *(go to Q17)*

11. When purchasing the new appliance, did you ask about Energy Trust's recycling program or did the sales representative bring up the option?
    - ❑ (1) You brought it up
    - ❑ (2) Appliance dealer rep brought it up
    - ❑ (3) Other (*Specify*_____)
    - ❑ (9) Don't know

12. Did you receive an orange tag with the stick-on label?
    - ❑ (1) Yes
    - ❑ (0) No

❑ (9) Don't know

13. At the time of purchase, did you make arrangements to have the old unit removed or were the arrangements made at a later date?
    ❑ (1) At the time of purchase
    ❑ (2) At a later date
    ❑ (9) Don't know

14. Did you have any problems getting the order number that you had to write on the orange tag?
    ❑ (1) Yes *(Could you describe the problem_____)*
    ❑ (0) No
    ❑ (9) Don't know

15. Within how many days of purchasing your appliance did you call to get an order number for the orange tag?
    ❑ (1) Same day
    ❑ (2) _____(days)
    ❑ (9) Don't know

16. Did the fact that Sears promoted Energy Trust's recycling program influence you to purchase a new appliance?
    ❑ (1) Yes *(Could you explain how: _____)*
    ❑ (0) No
    ❑ (9) Don't know

16a. Did the fact that Sears promoted Energy Trust's recycling program influence you to purchase a new appliance from that specific dealer?
    ❑ (1) Yes *(go to Q19) (Could you explain how: _____)*
    ❑ (0) No *(go to Q19)*
    ❑ (9) Don't know *(go to Q19)*

End of Sears Block

Other appliance store block

17. Did you talk to the salesperson or dealer about how to remove your old *appliancevar* or did they offer to remove the appliance?
    ❑ (0) No *(go to Q19)* ❑ (1)Yes *(go to Q18)* ❑ (9)Don't know *(go to Q19)*

18. *If yes:*
    ❑ (1) Did they tell you about Energy Trust's Recycling Program?
    ❑ (2) Did the sales person or dealer offer to remove the old appliance for free
    ❑ (3) Did they tell you they would remove the appliance for a charge? How much?_____

End of other appliance store block

19. Have you discarded any other refrigerators or freezers in the past year?
❑ (1) Yes (*go to Q20)* ❑ (0) No *(go to Q23)*

20. How many?_____

21. Did you use Energy Trust's recycling program?
❑ (1) Yes (*go to Q23)* ❑ (0) No *(go to Q22)*

22. How did you discard the appliance or appliances? (*don't read, probe if unsure)*
❑ (1) Sold to a third party
❑ (2) Given to a friend or neighbor
❑ (3) Given to a charity
❑ (4) Delivery crew volunteered to remove it
❑ (5) Sold to a dealer who came and removed it
❑ (6) Arrangements were made with the new appliance dealer to remove it
❑ (7) Hauler or community waste program removed it
❑ (8) Took it to a waste management center
❑ (9) Other (S*pecify*)_____

Recycling Program
Now I would like to ask you a few questions specifically about Energy Trust's Recycling Program.

23. As best as you can recall, how did you first learn about the program? (*Do not read. Check most appropriate response. If they just say utility or if they say a mailing from ETO, probe to clarify using more detailed responses. For example, if they heard it from the utility, ask whether they heard about it through information in a bill or as a letter separate from a billing.)*

❒ **(1) Appliance store**
❒ **ETO or a Utility**
❒ (2) Information that came with a utility bill
❒ (3) Information that came in a letter or brochure from Energy Trust
❒ (4) Email from Energy Trust
❒ (5) Home energy review
❒ (6) 1-800 call center
❒ (7) ETO/Utility representative
❒ (8) Other ETO/Utility (*Specify*) _____

❒ **(9) Referral from friend/neighbor**

❒ **Advertisement**
❒ (10) Magazine Ad (Portland Spaces, Portland Monthly, Oregon Home, The Oregonian, Green Living of Southern Oregon, etc)
❒ (11) Newspaper Ad

- ❒ (12) Radio Ad
- ❒ (13) TV Ad
- ❒ (14) Home/Remodeling shows
- ❒ (15) Transit Ad
- ❒ (16) TV News story
- ❒ (17) Newspaper/Magazine News story

Website

- ❒ (18) Pacificorp, PGE or Other utility website
- ❒ (19) ETO
- ❒ (20) Other
- ❒ **(21) Other (S*pecify*) _____**
- ❒ **(22) Don't know**

24. Had you already considered discarding this refrigerator before hearing about Energy Trust's Recycling Program? By discard we mean getting rid of it either by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center.
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don't know

25. What is the MAIN reason you chose this service over other methods of disposing of your appliance? *If multiple are mentioned*: Of those, which is the main reason? *Read the responses and accept one answer only) (If respondent says something like: "I didn't need or want the refrigerator" ask for a reason why they chose the program)*
    - ❑ (1) $30 cash / Incentive payment
    - ❑ (2) Free pick-up service
    - ❑ (3) Environmentally safe disposal/Recycled/Good for Environment
    - ❑ (4) Savings on electric bill
    - ❑ (5) Recommendation of a friend/relative
    - ❑ (6) Recommendation of retailer/dealer
    - ❑ (7) Utility sponsorship of the program
    - ❑ (8) Easy way/convenient/ Others don't pick up/Don't have to take it myself
    - ❑ (9) Never heard of any others/only one I know of…
    - ❑ (10) Other (*Specify*)_____
    - ❑ (11) Don't know
    - ❑ (12) Refused

26. Were there any other reasons? IF YES: What were they? *(Multiple response, do not read*)
    - ❑ (1) $30 cash / Incentive payment
    - ❑ (2) Free pick-up service
    - ❑ (3) Environmentally safe disposal/Recycled/Good for Environment
    - ❑ (4) Savings on electric bill
    - ❑ (5) Recommendation of a friend/relative

- ❑ (6) Recommendation of retailer/dealer
- ❑ (7) Utility sponsorship of the program
- ❑ (8) Easy way/convenient /Others don't pick up/Don't have to take it myself
- ❑ (9) Never heard of any others/only one I know of..
- ❑ (10) Other (*Specify*)_____
- ❑ (11) Don't know
- ❑ (12) Refused

Other Disposal Options

27. Suppose that Energy Trust's Recycling Program had not been available, what alternative would you have been most likely to use? (*Read and check one*)
    - ❑ (1) Sell it to a private party, either by running an ad or to someone you know
    - ❑ (2) Sell it to a used appliance dealer
    - ❑ (3) Gave it away to a private party, such as a friend or neighbor
    - ❑ (4) Gave it away to a charity, such as Goodwill Industries or a church
    - ❑ (5) Have it removed by the dealer you got your new or replacement appliance from
    - ❑ (6) Trade it in for a new or replacement appliance
    - ❑ (7) Haul it to the dump yourself
    - ❑ (8) Haul it to a recycling center yourself
    - ❑ (9) Hire someone else to haul to recycling center
    - ❑ (10) Hire someone else to haul it away for junking or dumping
    - ❑ (11) Have city/community waste program haul it away
    - ❑ (12) Keep it
    - ❑ (13) Some Other Way (*Specify*)_____
    - ❑ (14) (*Do not read*) Don't know
    - ❑ (15) (*Do not read*) Refused

28. What alternative would have been your second choice? *(Do not read)*
    - ❑ (1) Sell it to a private party, either by running an ad or to someone you know
    - ❑ (2) Sell it to a used appliance dealer
    - ❑ (3) Gave it away to a private party, such as a friend or neighbor
    - ❑ (4) Gave it away to a charity, such as Goodwill Industries or a church
    - ❑ (5) Have it removed by the dealer you got your new or replacement appliance from
    - ❑ (6) Trade it in for a new or replacement appliance
    - ❑ (7) Haul it to the dump yourself
    - ❑ (8) Haul it to a recycling center yourself
    - ❑ (9) Hire someone else to haul to recycling center
    - ❑ (10) Hire someone else to haul it away for junking or dumping
    - ❑ (11) Have city/community waste program haul it away
    - ❑ (12) Keep it
    - ❑ (13) Some Other Way (*Specify*)_____
    - ❑ (14) Don't know
    - ❑ (15) Refused

29. If you had sold this appliance to someone, how much money do you think you would have received for it?
    - ❑ (1) Dollars _____ ($1 - $2000)
    - ❑ (2) Don't know

30. Once you decided to participate, the first step was signing up and pre-qualifying. Are you the one who took care of this, or did someone else in your household?
    - ❑ (1) Yes, I did it
    - ❑ (0) No, someone else
    - ❑ (9) Don't know
    - ❑ (8) Refused

31. According to our records you signed up by (*Howmadeappt*). Is that correct?
    - ❑ (1) Yes *(go to Q33)*
    - ❑ (0) No *(go to Q32)*
    - ❑ (9) Don't know *(go to Q32)*
    - ❑ (8) Refused *(go to Q32)*

32. How did you sign-up?
    - ❑ (1) Telephone
    - ❑ (2) Online
    - ❑ (3) Other (*Specify*)_____
    - ❑ (9) Don't know
    - ❑ (8) Refused

33. How satisfied were you with this sign up experience? Use a 5-point scale where "5" means "completely satisfied" and "1" means "not at all satisfied."
    - ❑ (1) 1 Not at all satisfied
    - ❑ (2) 2
    - ❑ (3) 3
    - ❑ (4) 4
    - ❑ (5) 5 Completely satisfied
    - ❑ (8) Don't know
    - ❑ (9) Refused

If (Q31 = 1 and Howmadeappt = "online" or Q32 = 2) then go to 34
Else go to 39

On-line sign-up block

34. How did you get to the Internet sign-up page? *(read options)*
    - ❑ (1) Had a specific address for the Refrigerator recycling page
    - ❑ (2) Had a web address for Energy Trust
    - ❑ (3) Had a web address for JACO
    - ❑ (4) Through your utility website
    - ❑ (5) Searched the Internet
    - ❑ (6) Other (please specify):_____

- ❑ (8) Don't know
- ❑ (7) Refused (go to Q35)

35. Was it easy to find the sign up page on the website?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Not Applicable
- ❑ (8) Don't know
- ❑ (7) Refused

36. Did the website answer all your questions about the appliance recycling program?
- ❑ (1) Yes *(go to Q37)*
- ❑ (0) No *(go to Q36a)*
- ❑ (9) Not Applicable *(go to Q37)*
- ❑ (8) Don't know *(go to Q37)*
- ❑ (7) Refused *(go to Q37)*

36a. What questions did you have that the website did not answer?

37. Were you able to schedule a pickup appointment for a convenient date and time?
- ❑ (1) Yes *(go to Q38)*
- ❑ (0) No *(go to Q37a)*
- ❑ (9) Not Applicable *(go to Q38)*
- ❑ (8) Don't know *(go to Q38)*
- ❑ (7) Refused *(go to Q38)*

37a. What would have made the appointment more convenient?

38. Did you receive confirmation that your sign up had been successful?
- ❑ (1) Yes *(go to Q48)*
- ❑ (0) No *(go to Q48)*
- ❑ (9) Not Applicable *(go to Q48)*
- ❑ (8) Don't know *(go to Q48)*
- ❑ (7) Refused *(go to Q48)*

End of on-line sign up block

Begining of telephone sign-up block

39. Was the representative you spoke to on the telephone polite and courteous?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Not Applicable
- ❑ (8) Don't know
- ❑ (7) Refused

40. Did the representative answer all your questions?
- ❑ (1) Yes *(go to Q41)*
- ❑ (0) No *(go to Q40a)*

- ❑ (9) Not Applicable *(go to Q41)*
- ❑ (8) Don't know *(go to Q41)*
- ❑ (7) Refused *(go to Q41)*

40a. What questions was the representative not able to answer?

41. Were you able to schedule a pickup appointment for a convenient date and time?
- ❑ (1) Yes *(go to Q42)*
- ❑ (0) No *(go to Q41a)*
- ❑ (9) Not Applicable *(go to Q42)*
- ❑ (8) Don't know *(go to Q42)*
- ❑ (7) Refused *(go to Q42*

41a. What would have made the appointment convenient?

42. Did you have to call more than once?
- ❑ (1) Yes *(go to Q42a)*
- ❑ (0) No *(go to Q43)*
- ❑ (9) Not Applicable *(go to Q43)*
- ❑ (8) Don't know *(go to Q43)*
- ❑ (7) Refused *(go to Q43)*

42a. How many calls?_____

43. Do you have access to the internet?
- ❑ (1) Yes (*go to Q44)*
- ❑ (0) No (*go to Q48)*

44. How often are you online per day?
- ❑ (1) Less then 30 minutes
- ❑ (2) 30 to 59 minutes
- ❑ (3) 1 to 2 hours
- ❑ (4) More then 2 hours
- ❑ (8) Don't know

45. Were you aware that you could have signed up for the program online?
- ❑ (1) Yes (*go to Q47)*
- ❑ (0) No (*go to Q46)*
- ❑ (8) Don't know (*go to Q46)*

46. Would you have signed up online, if you knew that was an option?
- ❑ (1) Yes *(go to Q48)*
- ❑ (0) No *(go to Q47)*
- ❑ (8) Don't know *(go to Q47)*

47. What was/were the reason(s) you chose to sign up over the telephone rather than the web? *(check all that apply)*
    - ❑ (1) The telephone was the option you found
    - ❑ (2) The telephone was more convenient
    - ❑ (3) You were more comfortable talking to a real person
    - ❑ (4) The telephone option seemed more reliable
    - ❑ (5) The internet option takes too long
    - ❑ (6) The internet option was confusing
    - ❑ (7) Other reason (Specify_____)
    - ❑ (8) Don't know

End of telephone sign-up block

48. The next step is the pickup appointment . How satisfied were you with the actual pick up and removal experience. Use a 5-point scale where "5" means "completely satisfied" and "1" means "not satisfied at all."
    - ❑ (1) 1 Not at all satisfied
    - ❑ (2) 2
    - ❑ (3) 3
    - ❑ (4) 4
    - ❑ (5) 5 Completely satisfied
    - ❑ (8) Don't know
    - ❑ (9) Refused

49. How much time did it take from when you scheduled the appointment until your appliance was picked up? (Record in days if less than 1 week or between weeks, ie, 10) - *(Do not read)*
    - ❑ (1) _____(*Record days*)
    - ❑ (2) 1 week
    - ❑ (3) 2 weeks
    - ❑ (4) 3 weeks
    - ❑ (5) 4 weeks
    - ❑ (6) 5 weeks
    - ❑ (7) 6 weeks
    - ❑ (8) 7 weeks
    - ❑ (9) 8 weeks or more
    - ❑ (10) Not Applicable
    - ❑ (11) Don't know
    - ❑ (12) Refused

50. Do you think this was too long?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don't know
    - ❑ (8) Refused

51. Did someone call 1 to 2 days in advance to confirm the appointment?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

52. Did someone call 30 minutes in advance to let you know they were coming?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

53. Did they arrive on time?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

54. Was the representative polite and courteous?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

55. Did the representative appear neat and professional?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

56. Did you receive an incentive or rebate check in the mail?
- ❑ (1) Yes
- ❑ (0) No
- ❑ (9) Don't know
- ❑ (8) Refused

57. For how much?
- ❑ (1) $30
- ❑ (2) ____(*Other $ amount*)
- ❑ (3) Don't know
- ❑ (4) Refused

58. How long did it take to get the rebate check after they picked up your appliance?
- ❑ (1) _____(*Record days*)
- ❑ (2) 1 week
- ❑ (3) 2 weeks

- ❑ (4) 3 weeks
- ❑ (5) 4 weeks
- ❑ (6) 5 weeks
- ❑ (7) 6 weeks
- ❑ (8) 7 weeks
- ❑ (9) 8 weeks or more
- ❑ (10) Not Applicable
- ❑ (11) Don't know
- ❑ (12) Refused

59. Do you think this was too long?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don't know
    - ❑ (8) Refused

60. Would you have participated in the program if the pickup was free, but there had been no incentive check?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don't know
    - ❑ (8) Refused

61. Thinking about your experiences throughout the whole process, How satisfied were you with the service OVERALL? Use a 5 point scale where "5" means you were "completely satisfied" and "1" means you were "not at all satisfied."
    - ❑ (1) 1 Not at all satisfied
    - ❑ (2) 2
    - ❑ (3) 3
    - ❑ (4) 4
    - ❑ (5) 5 Completely satisfied
    - ❑ (8) Don't know
    - ❑ (9) Refused

62. When you first decided to dispose of your appliance, were you aware that keeping and using it could cost up to $200 a year in electricity to run it?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don’t know

63. Prior to choosing a disposal method, were you aware that the refrigerant in older refrigerators is harmful to the environment if not properly disposed of?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don’t know

64. Did you learn that the refrigerator or freezer that is picked up by the program would be recycled, which means that the coolant in the unit would be safely removed and the materials that the unit is made of would be reused?
    - ❑ (1) Yes
    - ❑ (0) No
    - ❑ (9) Don't know

65. Did you learn everything you wanted to know about the program before participating, or did you still have unanswered questions but signed up anyway?
    - ❑ (1) Yes, learned all needed to know (g*o to 66*)
    - ❑ (0) No, but signed up anyway (g*o to 65a*)
    - ❑ (9) Don't know (g*o to 66*)
    - ❑ (8) Refused (g*o to 66*)

65a. What other information would you have liked? _____

66. Did you encounter any other problems with the program that you have not mentioned yet? (*Interviewer: If respondent mentioned other problems earlier, record them here. Probe for clarity only.)*

67. Would you participate again in Energy Trust's program if you needed to dispose of another refrigerator or freezer?
    - ❑ (1) Yes (go to Q68)
    - ❑ (0) No (go to Q67a)
    - ❑ (9) Don't know (go to Q67a)

67a. Why would you not participate in the program?

68. Is there anything you can think of that would improve the Appliance Recycling Program?

Customer Characteristic

69. And today, how many refrigerators do you have in your home that are running at least some of the time? _____

70. And, how many stand-alone freezers are running at least some of the time _____

71. And finally how many working refrigerators and freezers do you have in your home that are not being used and are turned off or are not plugged in? _____

72. How many people reside in your home? _____

73. How many people under the age of 18 reside in your home? _____

74. How long have you lived in your home? _____

75. Do you own or rent the home that you live in? _____
❑ (1) Own ❑ (2) Rent

76. Have you remodeled your home in the past 5 years? _____
❑ (1) Yes ❑ (0) No

77. What is the approximate square footage of your home? _____
- ❒ (1) Less then 500
- ❒ (2) 500 to just under 1,000
- ❒ (3) 1000 to just under 2,000
- ❒ (4) 2000 to just under 4,000
- ❒ (5) 4,000 and up

78. Please stop me when I reach the category that best represents your total annual household income?
- ❒ (1) Less then 25,000
- ❒ (2) 25,000 to just under 50,000
- ❒ (3) 50,000 to just under 75,000
- ❒ (4) 75,000 to just under 100,000
- ❒ (5) 100,000 to just under 150,000
- ❒ (6) More then 150,000

The interview was done in
- ❒ 1. English
- ❒ 2. Spanish

Thank you for participating in our survey. This will help Energy Trust of Oregon to better serve their customers.

If you have any questions about this survey please call Sarah Castor at Energy Trust of Oregon