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Appliance Recycling Program Retailer Trial Final Report

A Report Prepared for
Southern California Edison

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John H. Reed
Moria Morrissey
Charles Bailey

305 Summer Garden Way
Rockville, MD 20850
301 340-8701
301 340-8703
jreed@innovologie.com

ES-1 Executive Summary

This report describes an evaluation of SCE's Retail Appliance Recycling Program (Retail ARP) trial that was initiated in late October 2010 and completed in September of 2011. Retail ARP was a variant of Standard ARP that allowed a customer to sign up for SCE's Appliance Recycling Program when purchasing a new refrigerator at selected stores. When delivering the new unit, the participating retailers' logistics operators qualified the old unit, removed it from the household, and took it to a distribution center where SCE's recycling contractor collected the unit, took it to a recycling center, and recycled it in a safe and environmentally friendly manner. As with Standard ARP, the Retail ARP customers received a \$50 rebate.

The goals of the trial were to assess whether:

- Retail ARP would increase the quantity of program qualified appliance pickups as a result of the incentive and the one-to-one contact with sales representatives promoting the program.
- Retail ARP would change the gross and net program energy savings assumptions associated with Standard ARP.
- The rebate level was adequate.
- The manner in which the program was implemented and the quality control processes were well designed
- Retail ARP generated customer satisfaction that was consistent with or exceeded that for Standard ARP.
- The results were affected by the retail store culture.
- The trial program would require a change in the current program theory.

An additional goal of the evaluation was to examine the linkages between new refrigerator sales, the pre-existing recycling activities of large appliance retailers, the utility recycling program, and the disposal of old and underutilized refrigerators by all other means.

The basic design of the evaluation was to model expected numbers of recycled units removed by the retailer in treatment and comparison stores based on pre-treatment data, to compare those expected values with the actual units recycled during the trial period, and to use the information from the comparison stores to adjust the number of units recycled by the treatment stores to account for external factors such as changes in the economy. The trial was implemented in nine treatment stores. Non-program results were also monitored in seven comparison stores. In addition, the evaluation examined Retail ARP processes, how Retail ARP operated in stores, and how participants responded to the program through reviewing quality control data collected by SCE inspectors, using data from mystery shopping events, and conducting a survey of program participants.

ES - 1.1 Market Findings

In California, there is an underlying seven percent annual purchase rate of refrigerators for occupied dwellings that can increase to eight or nine percent depending on the economy. These purchases replace old and underutilized working and non-working refrigerators. Some of these units stay in the home while others are given away, sold, or removed by a retailer recycling program, a recycler, or a local recycling program. In the SCE service territory, roughly a quarter of those units are removed by existing retailer recycling programs and roughly an equal or slightly larger number, depending on funding and the year, by the SCE utility recycling program. The remainder stay in place or are given or sold to another household where the units remain in use. A small percent of units recycled by retailers may re-enter the market. In other words, the supply of old and underutilized units is constantly replenished.

A few large retailers sell about 84 percent of new refrigerators and freezers. Smaller retailers, whose share is declining, sell the remainder. Dealing with the old and underutilized refrigerators represents a cost to the retailers. Retailers have dealt with this in a variety of ways. In the recent past, some retailers have turned a blind eye and allowed the logistics companies to deal with the old units. More recently retailers have been selling these units to recyclers for \$10 - \$15 apiece. The recyclers dismantle some units (about 80 percent) and sell the materials, returning a net of about \$5 depending on the materials markets. The remaining units are sold into the used appliance market at \$40 - \$50 per unit. This allows the recycler to turn a profit. The units that are sold into the market return to the grid, and they are much less efficient than new units.

The value of Retail ARP is three fold. It addresses consumers at the most salient decision point when they are deciding what to do with an old unit. Second, its marketing strategy is very effective and very low cost. Third, Retail ARP has the additional value of likely capturing the 20 percent of units that retailers remove that might have returned to the grid. It does not address the issue of second units in households or households that want to dispose of a unit. That is the complementary role of Standard ARP.

ES - 1.2 The Market Effects of Retail ARP

During the Retail ARP trial period (November 2010 through September 2011), customers asked participating retailers to remove 8,661 (retailer and Retail ARP) units. After requesting a removal, some customers changed their minds about having a unit removed so it is estimated that the retailer actually removed 6,799 units.

Without the program and the incentive, it is projected that the retailer would have removed 4,416 units after adjusting for customers who dropped out. This number was adjusted upwards to 4,857 to account for changes outside the control of the program or the retailer. Thus the program increased the number of units that the retailer would have removed by 1,942 (6,799-4,857) units or about 40 percent (1,942/4,857*100). In other words, the program increased the number of units removed through the treatment stores by about 40 percent.

The utility paid an incentive for 3,340 of these units. After various adjustments it is estimated that 1,201 of those units would have been removed anyway. Thus, the program achieved a net removal rate of about 64 percent. Approximately 448 units leaked from Standard ARP to Retail ARP and there were 62 transactions initiated through retail ARP that resulted in a Standard ARP pickup. The result is that a net of 386 units leaked from ARP. If these units are included in the calculations of the net removal rate, the net removal rate is 52 percent.

An additional important point is that the removal rate varied substantially across the treatment stores largely due to the store demographics and store culture.

ES - 1.3 Estimated Energy Savings

The data show that Retail ARP units were larger and slightly younger than units being removed by Standard ARP. Retail ARP participants tended to be homeowners, have larger homes, have more household members, have lived in their homes fewer years, and have higher incomes compared to Standard ARP participants.

It is estimated that units removed through the Retail ARP had a unit energy consumption (UEC) of 1323 kWh compared to 1214 kWh for units removed through Standard ARP during the same period. The 1214 kWh for Standard ARP was slightly higher than the estimate of 1181 kWh for the 2006-08 Standard ARP. The higher UEC for Retail ARP is attributable to the larger size of the units as well as the higher incidence of side-by-side units compared to the Standard ARP units that were removed. The larger size and the difference in style more than offset the fact that the units removed by Retail ARP were newer than the Standard ARP units.

Based on inspection reports, 80 percent of attempted unit removals by Retail ARP resulted in actual pickups, two percent resulted in removal through the standard program, six percent of the units were not removed because the unit was not working or the customer cancelled the removal, one percent of customers had already given away or sold their unit, six percent of delivery and/or removals were rescheduled, two percent of the units were refused by the driver for various reasons, and the remaining four percent of units were not removed because of some type of administrative issue.

ES - 1.4 Observation of Sales Activities

Reports from the mystery shopping events indicated that most of the retailer staff were friendly, helpful, and willing to assist customers in finding refrigerators that suited their needs. Because of the variation in selling styles, product knowledge was unclear in many cases.

The most effective salespeople were proactive and initiated the conversation about the program with the customer. Only the most effective salespeople promoted recycling both in terms of energy savings and the old refrigerator being destroyed and materials recycled.

The \$50 rebate and the free haulaway were used as key selling points by almost all of the Retail ARP store salespeople and by half of the comparison store salespeople. All of the salespeople told the customers that the program was sponsored by SCE.

When the question of appliance removal came up with the shoppers, most of the Retail ARP store salespeople mentioned the recycling rebate and told the shoppers about the program freely and without prompting. Some Retail ARP store salespeople promoted the convenient in-store signup. They also promoted the fact that the retailer would remove the refrigerator for SCE. Some mentioned the rebate for energy efficient refrigerator purchases. Energy savings and rebates were not typically mentioned by salespeople during initial interaction with customers but played a role further into the sales pitch.

Some misinformation was communicated. One salesperson told customers that refrigerators are given to charity, and a different salesperson told the customers they had to arrange their pickups online.

Salespeople in comparison stores often did not give information about Standard ARP, and when they did so it was usually in response to prompting. They tended to promote the recycling rebate and some handed out information cards. They also promoted the retailer's removal options. There was some misinformation communicated at comparison stores as well.

ES - 1.5 Participant View Points

According to the customer survey, nearly all customers (84 percent) had decided to purchase a new refrigerator before going shopping so that the program had little influence on the basic decision to purchase a new appliance. However, the program influenced about 37 percent of the customers to purchase from these specific retailers. The program encouraged a small percentage (nine percent) of people who had not decided to buy a new unit to do so.

Sixty-six percent of participants reported seeing the signage. The sales associates were important conduits for information. Ninety percent of the customers remembered receiving information about the program from the sales associate. Seventy-three percent said that the sales associate raised the issue and 17 percent said they had to ask about the program.

The most frequently remembered benefits were the free and convenient removal and the incentive (95 percent and 94 percent respectively). However, when customers described what motivated them to participate, 68 percent listed convenience as one of their top three reasons. About 16 percent of customers gave the incentive as one of their top three reasons. The lesser importance of the incentive was further reinforced by the fact that 83 percent said that they would have participated without an incentive.

When asked what they would have done with their old unit in the absence of the program, approximately 34 percent gave an answer that implied that their units would have remained in service. Depending on what those who did not express a preference decided and whether or not their decisions were similar to those who expressed an opinion, the units that could remain in service would likely range between 34 and 40 percent.

The participants who signed up in the store reported the signup process to be fairly expeditious. Customers reported being very satisfied with the program. Almost 95 percent reported that they were somewhat or completely satisfied with various elements of the program and the program overall. Among those who reported receiving an incentive check, 45 percent reported receiving it within three weeks. Eighty-five percent said that they were satisfied with how long it took to receive the incentive.

Most participants knew about the environmental benefits of recycling their old refrigerators generally, but were somewhat less knowledgeable about the specifics of recycling such as the refrigerator components being recycled or the cost of operating a second refrigerator unit.

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1 Introduction

The SCE Appliance Recycling Program (ARP) has been in existence since 1994 and is a well established resource for refrigerator disposal in Southern California. In 2008, the program had its most successful year, recycling approximately 90,000 refrigerators and freezers. ARP offers an incentive to customers to have old inefficient and under-utilized refrigerators and freezers removed from service. Customers contact the program to request a pickup of qualified appliances that are then recycled in an environmentally responsible manner. Henceforth this program is referred to as Standard ARP.

In October 2010 in conjunction with a brand name retailer, SCE implemented a retail recycling option (henceforth Retail ARP). This option allowed a customer to sign up for SCE's Appliance Recycling Program when purchasing a new refrigerator at selected stores. When delivering the new unit to a household that had signed up, the retailer's logistics operators qualified the old unit, removed it from the household, and took it to a distribution center where SCE's recycling contractor collected the unit, took it to a recycling center, and recycled it in a safe and environmentally friendly manner. The rebate amount for this program (\$50) was the same as that for Standard ARP.

This report describes an evaluation of a Retail ARP trial that was initiated in late October 2010 and completed in September of 2011. It was designed as an experiment with nine treatment stores and three comparison group stores (later expanded to seven). The goal of Retail ARP evaluation was to determine if the retailer program increases participation in the recycling program, the extent to which the participants in Retail ARP may be free riders, and the extent to which, if any, Retail ARP departs from the basic assumptions of Standard ARP. The evaluation involved extensive data collection including sales and recycling data from the retailers, tracking data from the SCE Recycling Program (Enerpath), data from mystery shopping, a survey of participants who received the rebate, and other data.

1.1 Hypotheses for the Trial

The trial was designed around seven hypotheses. Associated with each of the hypotheses is a series of questions.

Hypothesis 1 The Retail ARP trial will increase the quantity of program qualified appliance pickups as a result of the program incentive and the one-to-one contact with sales representatives promoting the program. Questions associated with this hypothesis are as follows:

- What was the naturally occurring baseline of program qualified appliances picked up before program intervention? (12-month history prior to program intervention)
- Can the program demonstrate an increase over the baseline in the number of units removed through retailers?
- What was the difference in the estimated before and after removals?
- What was the number of units removed by retailers during the program intervention?

- Hypothesis 2 The Retail ARP trial will not change the gross and net program energy savings assumptions based on Standard ARP.
- Did the age, type, style and defrost characteristics of units removed in the trial program remain similar to the characteristics assumed in the work papers for the existing program?
 - Did the level of free-ridership remain similar (i.e., the current program free-ridership is set at 39% for refrigerators and 29% for freezers)?
 - If the trial program results suggested that retail participants are motivated differently than direct pickup participants and this affects net-to-gross and/or cost effectiveness, should the retailer component be treated as a distinct, auxiliary component to the existing ARP? (Note: This is a policy question.)
- Hypothesis 3 The current rebate level is adequate.
- What effect did direct contact with the salesperson promoting the program have on participation?
- Hypothesis 4 The process implementation and the quality control processes are well designed.
- Is the Retail ARP trial evaluable?
 - Is the Retail ARP Q/C process at least as effective as the Standard ARP process?
 - Can the implementation process be streamlined beyond the current proposal?
 - Are there unanticipated lessons that need to be incorporated into the program design and implementation?
- Hypothesis 5 The trial program will generate customer satisfaction that is consistent with or exceeds Standard ARP.
- Were the satisfaction levels of Retail ARP participants the same or higher than the satisfaction level of direct program participants?
- Hypothesis-6 The results will not be affected by the retail store culture.
- Were the changes in removal rates similar across stores?
 - Did customers give similar satisfaction ratings to the same program in different stores?
- Hypothesis 7 The trial program will not change current program theory.

In addition to these hypotheses and questions, the evaluation team was asked to provide a description of the new and used refrigerator markets with particular emphasis on what happens to refrigerators that householders decide to discard that flow through appliance retailer's hands. This is particularly important for providing context for understanding the effects of both Standard and Retail ARP.

1.2 Organization of This report

This report consists of eight chapters. Chapter 2 discusses the study design and methodology addressing the following questions.

- What were the basic research challenges?
- What was the basic design of the evaluation?
- How were the treatment and comparison stores chosen?
- What were the key data collection activities?

Chapter 3 describes the new and used refrigerator market in California. It provides the context for understanding replenishment of used refrigerators in the market, in particular how the used refrigerator market operates with particular focus on retailers. It also describes the flow of refrigerators in the market once they leave a household. This chapter addresses the following questions.

- How many new refrigerators enter the California market annually?
- How many of those refrigerators are a first use and how many are replacements for existing refrigerators?
- Who are the major retailers in the new appliance market?
- What paths do refrigerators and freezers that households are disposing follow?
- What do appliance retailers do with appliances that they remove?
- What are the economics of retailer appliance recycling?
- What happens to the materials recovered from refrigerators that are recycled?
- What percentage of the total market for refrigerators and freezers removed from households goes to appliance retailers and what percentage follows other paths?
- What do these findings say about the need for utility recycling programs?

Chapter 4 describes the operation of the Retail ARP in detail and briefly compares it with the operation of Standard ARP, addressing the following questions.

- How did the retailers and SCE organize Retail ARP?
- How was Retail ARP marketed to customers?
- What did retail customers do to sign up for Retail ARP?
- How was the transfer of refrigerators and freezers handled between the retailer and the recycler?
- How do the operational characteristics of Retail and Standard ARP compare?

- What are the benefits of Retail ARP to customers, the utility, the retailer, and society?
- To what extent do Retail and Standard ARP overlap and to what extent do they complement one another?

Chapter 5 discusses the market effects and the impacts of the program on refrigerator and freezer removals? This chapter answers the following key questions.

- How many refrigerators and freezers were removed through Retail ARP?
- How many customers dropped out of Retail ARP?
- What was the increase in the number of refrigerators and freezers removed per store by Retail ARP?
- What percentage of units would have been removed anyway either through the retailers' existing recycling programs or through some other channel?
- Did Retail ARP reduce the number of refrigerators being removed by the Standard ARP? If so, by how much?

Chapter 6 describes the characteristics of the units that were removed through Retail ARP and compares them to the characteristics of Standard ARP. In addition, the characteristics of the customers are described. The last part of this chapter uses this information and a model that was developed in an earlier study to estimate the savings for units removed through Retail ARP and for Standard ARP during two different periods. Key questions that are answered in this chapter are:

- What are the physical characteristics, style, size, and age of units that were removed?
- How do they differ from Standard ARP units?
- What is the unit energy consumption (UEC) for Retail and Standard ARP?
- What are the comparative characteristics of the participant households that had units removed?

Chapter 7 discusses what happened in the retail stores when potential customers went to buy a refrigerator or freezer. The data in this chapter is based on information collected by mystery shoppers throughout the trial. The following questions are answered in this chapter.

- Were marketing materials prominently displayed in the appliance department?
- When purchasing a refrigerator, did the sales associate or the shopper raise the issue of disposing of a customer's old refrigerator?
- What did the sales associate tell the shopper about the program?
- Did sales associates seem to be at ease with the details of the program?

- Over the period of the trials did the sales associates continue to promote the program?
- How did the effort of the sales associate to sell the program compare with the effort to sell the appliance?
- Was there evidence that the associates might be limiting discussion of the program because they were working on commission?

Chapter 8 discusses the findings based on the survey of program participants. Important questions that are answered are:

- Had the participants decided to buy a new refrigerator or freezer before going shopping?
- Had the participants decided to have an old refrigerator removed before going shopping?
- Did the participant observe the marketing material in the store?
- Did the sales associate tell the customer/participant about Retail ARP or did the customer have to ask?
- Did the marketing materials or the information from the sales associate influence the customer/participant?
- Did the customer remember the benefits promoted by the sales associate?
- What motivated the customer to participate?
- What would the customer have done in the absence of the program?
- What did the participant report the condition of the unit that was removed to be?
- How satisfied were the participants with the program and various elements of the program?

Chapter 9 presents the summary and conclusions.

2 Study Design and Methodology

The design of this study and the resulting methodology is quite complex. Early on it was decided that the study should be based on a pre- and post- comparison group design. The early discussions about the design were based on the idea that the evaluation team would be able to obtain the names of participants and nonparticipants in treatment and control stores from the retailers. However, because of privacy laws in California there was concern about retailers sharing customer data with the utility and the evaluation team. The work around was that customers signing up for the program would sign up for the program using a computer in the store that was linked to SCE. The participant data would be SCE's data and not the retailers. The evaluation team, after signing a confidentiality agreement, used retailer sales information at the store level that did not contain any customer specific characteristics to establish a baseline and the effects of the program on treatment stores. In addition, the evaluation team used customer information from the Enerpath System, data from quality control visits to pickup sites, mystery shopping visits to treatment and comparison stores, and a participant survey.

2.1 Basic Design of the Study

Figure 1 shows a simplified version of the design of the study. The basic idea was to collect aggregated sales and removal data for appliances by the retailer for selected treatment and comparison stores prior to the program from February 2008 to late October 2010. As shown in the diagram, a monthly panel prediction model was developed to predict the expected retailer removal of refrigerators at the store level. The monthly expected removals were then subtracted from actual removals to estimate the monthly gross changes in removals. A similar process was followed for the comparison stores and then a ratio of the actual removals to the expected removals was formed. This ratio was then applied to gross changes for the treatment store to account for the external factors. As will be noted later, additional adjustments were made to account for other factors.

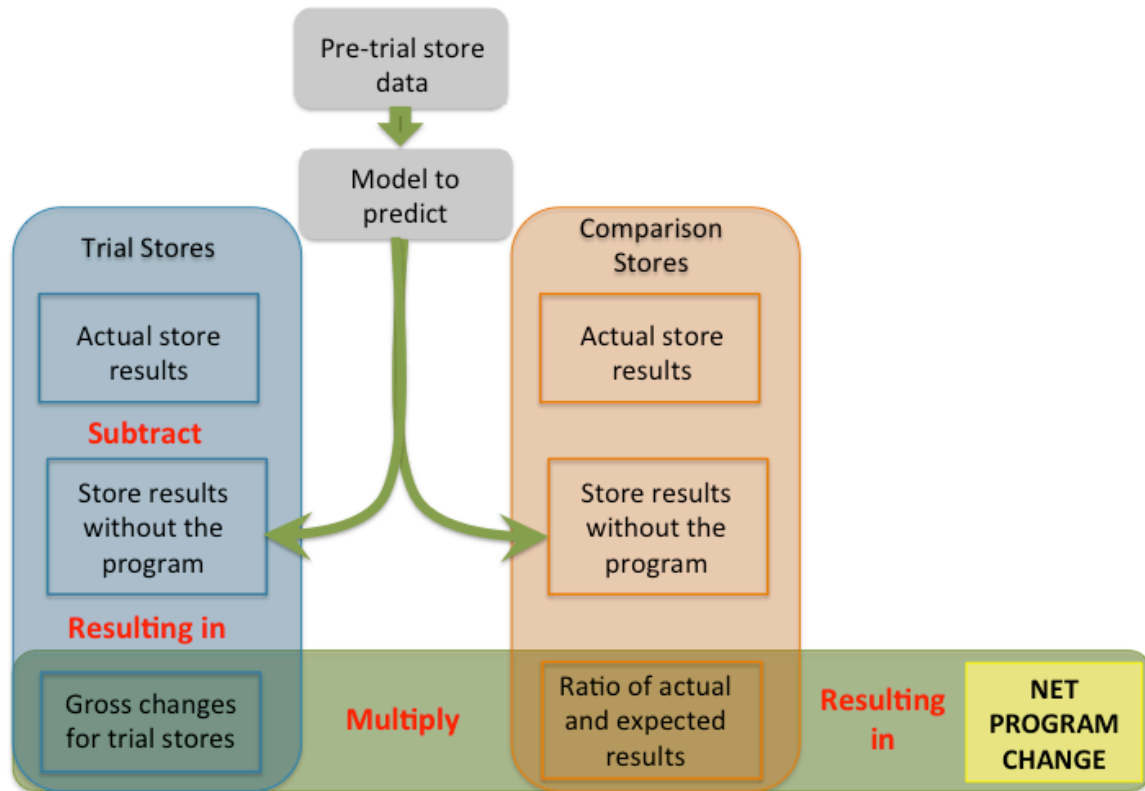


Figure 1 Simplified Treatment and Comparison Store Design

Additional factors that contributed to the complexity of the study included the need to:

- Remove the effects of American Recovery and Reinvestment Act of 2009 (ARRA) stimulus programs for appliances from the historical data.
- Consider the effects of the retailers' own haulaway programs.
- Demonstrate that Retail ARP attracts customers who would not have used Standard ARP.
- Demonstrate that Retail ARP results in incremental removals.
- Show that incentives paid for units that the retailer would have removed anyway do not increase the benefit cost ratio above that of Standard ARP.
- Demonstrate that units removed through retailers produce savings that are equivalent or nearly equivalent to the savings from units removed by Standard ARP.
- Demonstrate that Retail ARP is not retrieving non-working units.

2.2 Steps of Retail ARP Evaluation

As displayed in Figure 2, the steps for this evaluation began with the selection of trial and comparison stores. Because no store sales or market data were available to inform the selection of stores, a calculation of the average of five demographic characteristics for a

store's zip code and adjacent zip codes were used in a cluster analysis to discriminate among the retail stores.

After the stores were selected, historic and contemporaneous retailer haulaway and sales data for each store was obtained. From that data, the expected removals from the trial and comparison stores were modeled. The expected haulaway models were then adjusted to reflect changes in the comparison stores.

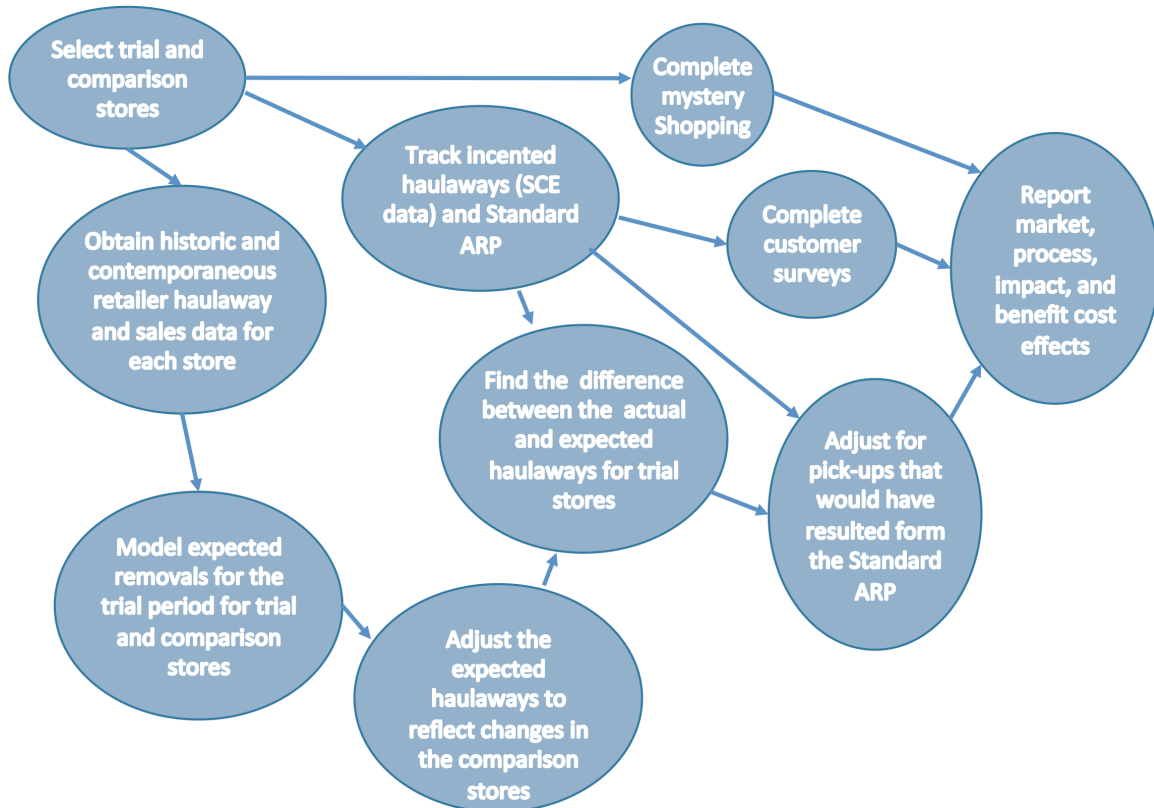


Figure 2 Steps to the Retail ARP Trial Evaluation

Simultaneously the incented haulaways from SCE's Standard ARP were tracked. The difference between the actual and expected haulaways for trial stores could then be calculated, as could the adjustment for pickups that would have resulted from Standard ARP.

During these tracking activities, mystery shopping was also taking place in order to determine if there were variations in sales approaches at participating stores. A mystery shopping event involved a trained observer posing as a customer and observing sales behaviors. In this case, the mystery shopper is attempting to purchase a new refrigerator and has an existing refrigerator that could be disposed of through Retail ARP. The mystery shopper follows a protocol that describes the mystery shopper's actions for completing a mystery shopping event and a data collection form for the shopper to complete at the conclusion of the shopping event.

During the trial, Retail ARP participants were surveyed on a running basis. The reason for the running survey was to minimize the loss of participant recall. The participant survey was designed to answer a series of questions about how the program may have influenced

customer decision-making, how the program process worked, and the characteristics of participants.

The analysis from the participant survey’s and mystery shopping and the adjusted calculations for expected haulaway numbers were used to complete this report, including a market, process, impact, and benefit cost analysis.

2.3 Treatment and Comparison Store Selection

Stores were assigned to treatment and comparison groups. The term “comparison” is used to make clear that the initial assignments were random but that some changes were made to accommodate practical considerations. The effects of the non-random assignment likely are mostly mitigated by the design.

The selection of treatment and control stores was based on a number of assumptions about the stores. Due to a variety of factors such as geographic location, target market, local demographics, store appearance, quality of sales staff assistance, and other factors, it was assumed that each retail location sells appliances at different rates and subsequently hauls away old appliances at different rates. Likewise it was assumed that because of factors such as special promotions, marketing, spiffs, government rebates, and product availability, new and old appliance removal rates vary by time. Capturing these cross sectional and longitudinal differences was imperative for store selection.

Because no store sales or market data were available to inform the selection of stores, the team defaulted to using demographic data from zip codes adjacent to the store for purposes of selection. The average of five demographic characteristics for a store’s zip code and adjacent zip codes were used to describe three clusters to discriminate among the retail stores. The five demographics used were income, higher education, owner percentage, single-family percentage, and median home value. The analysis resulted in three groups of stores as displayed in **Table 1**.

Table 1 Relative Store Demographics

	Store Group 1	Store Group 2	Store Group 3
	Blue Collar	Middle- Upper Middle Class	High Income Suburban Single Family or Young Urban Professional in Multi-family
Income	Lowest	Highest	Middle
Higher Education	Lowest	Mid - High	Highest
Owner Percent	Medium	Highest	Low
Single Family Percent	Low	Highest	Lowest

After Retail ARP began, actual sales data became available. This data confirmed that the selection criterion discriminated among stores although there was some overlap in the ranges **Table 2**.

Table 2 Later Analysis of Actual Sales Data Indicated that the Approach Was Reasonable If Not Perfect

		Store Group 1	Store Group 2	Store Group 3
Average sales per month per store	Median	215	227	339
	Range	130 - 249	138 - 311	334-344
Average haulaways per month per store	Median	33	55	114
	Range	25 - 36	38 - 76	87 - 141
Average percent of removals to sales	Median	17	26	34
	Range	14 - 19	17 - 34	27-41

2.4 Collect Retailer Haulaway Data

The team obtained haulaway data from the retailer for the retailers own haulaway program and for the ARRA program for the period from February 2008 to September 2011. These data were sales of refrigerators and freezers, retailer refrigerator and freezer haulaways, ARRA haulaways, all aggregated by store, zip code, and month. The haulaway data did not identify the number of requests for haulaways that were canceled. A discussion of how this was addressed is found in Chapter 5.

2.5 Collect Standard and Retail ARP Haulaway Data

Data for Standard and Retail ARP were obtained from the Enerpath System. The data included the name, address, and zip code of the participant, an indicator of whether an appliance was removed through Standard or Retail ARP; the disposition of the order/appliance; the characteristics, style, age, and size of the appliance; the removal date, and other information. These data were collected for the period from February 2008 to September 2011.

2.6 Market Effects Analysis

The details of the analysis of market effects are provided in Chapter 5. The details are better understood in the context of being able to see how the actual analysis was conducted and how the results were obtained in a step-by-step process.

2.7 Mystery Shopping

Trained shoppers visited nine Retail ARP stores and three Standard ARP (control) stores on three occasions during the trial completing a total of 36 mystery shops. The first round of shopping events occurred between March 19 and March 27, 2011. The second round of events occurred between June 4 and June 11, 2011. The final round occurred between July 4 and September 5, 2011.

The visits lasted an average of 26 minutes and occurred between 9:00 AM and 6:00 PM. There were three teams of mystery shoppers. Two teams completed 25 of the 36 mystery shops posing as couples. The other eleven mystery shopping events were completed by individual shoppers.

The mystery shoppers posed as customers attempting to purchase new refrigerators who had existing refrigerators that qualified for disposal through Retail ARP. They were to appear as:

- A couple/individual buying a new refrigerator. Their current refrigerator is a white GE side-by-side, still working, probably 15 years old.
- The couple is pretty sure that their existing refrigerator is under 3 feet wide and 6 feet tall but the couple doesn't have exact measurements. If asked, they were to tell the salesperson it was full size.
- The couple wanted a new refrigerator with more freezer space.
- They were considering a bottom freezer and wanted to know the benefits over a side-by-side.
- They were shopping for stainless steel with a built-in icemaker. Brand did not matter, but reliability was important.
- They wanted an energy efficient model.
- They wanted to spend less than \$2,000.
- If asked, they were to say that they were PG&E customers.

The mystery shoppers followed a protocol that describes the mystery shopper's actions for completing an event. The protocol provided the shoppers with information about the purpose and benefits of Standard and Retail ARP and with the details of how each one operated as well as how the retailers' appliance delivery and removal services operated. It described program qualifications so that the shopper could evaluate what they were being told. It highlighted the behaviors they would be asked to report. It also provided them with information on what to do in certain situations that could occur in the store, such as what to do if a salesperson did not approach them, how to explain the refrigerator they were interested in purchasing, and most importantly, how to get as far into the process of purchasing as possible without actually placing an order.

At the conclusion of the event, the shopper(s) completed a data collection form off-site. The data collection form was a questionnaire with a combination of both closed and open questions. The information was transcribed and compiled into a dataset.

2.8 Participant Survey

A participant survey was conducted with a random sample of Retail ARP participants. A total of 340 surveys were completed. The surveys were administered on a rolling basis so

that most customers were surveyed about four to six weeks after they purchased their new appliances. The surveys were conducted by telephone and the median length of the survey was just under 13 minutes. When the survey was administered, these customers had had refrigerators or freezers removed from their homes and some, but not all, had received their incentive checks for the appliance removal..

2.9 Retail ARP Removal Inspection Reports

As part of its quality control initiative, SCE had a quality inspector review the removal of units at 566 sites. The inspectors went to the distribution centers where the delivery trucks were dispatched, checked the routing schedule, and then met the drivers at the delivery removal sites. The inspectors verified the status of the refrigerator being removed and observed other aspects of the transaction. The data were recorded on sheets that the inspector returned to SCE. The evaluation team obtained copies of these sheets, transcribed the information, and then made counts of the outcomes.

2.10 Retail ARP Cost Data

Program cost data including the costs of marketing, removal, and other aspects of the program were obtained from SCE staff.

3 New and Used Refrigerator Markets in California

The new and used refrigerator markets in California are intertwined and their relationship is important to understanding the continuing demand for the Standard Appliance Recycling Program (Standard ARP) and the complimentary Retail Appliance Recycling Program (Retail ARP).

This section addresses the number of new refrigerators entering the California market annually each year, who buys them, who sells them, and what happens to the old refrigerators that are removed.

3.1 New Refrigerators Entering the California Market: Who Buys Them?

According to the Association of Home Appliance Manufacturers (AHAM), the number of new refrigerators shipped to appliance distributors in California in the past 15 years averaged 1.09 million per year. The shipments peaked at about 1.34 million units between 2004 and 2006 and then declined rapidly to about 886,000 units in 2009.¹ This decline was heavily influenced by the housing downturn between 2006 and 2008. Summary of the Participant Survey Results

Nearly all customers (84 percent) had decided to purchase a new refrigerator before going shopping so that the program had little influence on the basic decision to purchase a new appliance. However, the program influenced about 37 percent of the customers to purchase from a specific retailer. The program encouraged a small percentage (nine percent) of people who had not decided to buy a new unit to do so.

Sixty-six percent of participants reported seeing the signage. The sales associates were important conduits for information. Ninety percent of the customers remembered receiving information about the program from the sales associate. Seventy-three percent said that the sales associate raised the issue and 17 percent asked about the program.

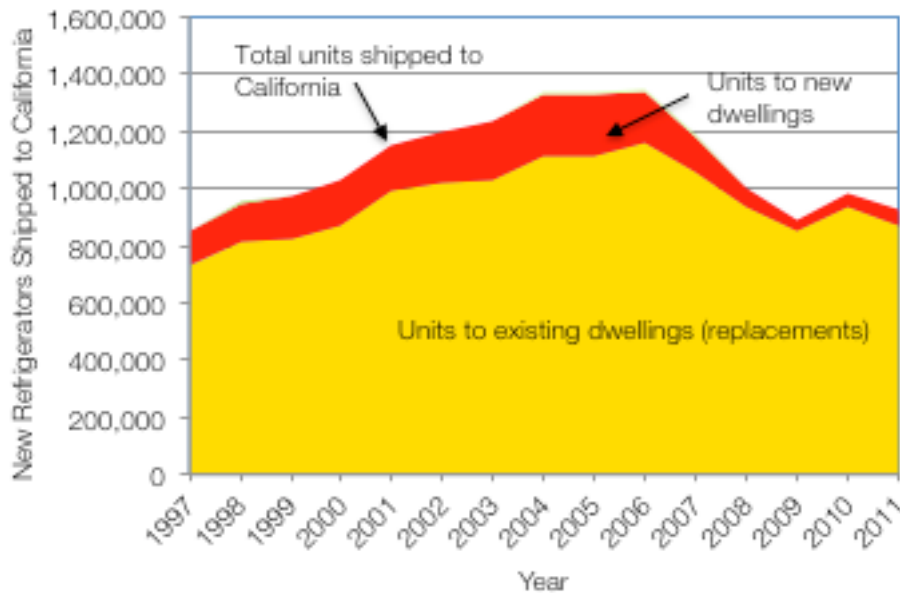
Of the benefits of appliance recycling described by the sales associates, the most frequently remembered were the free and convenient removal and the incentive (95 percent and 94 percent respectively). However, when customers described what motivated them to participate it was the convenience of the program (68 percent listed convenience as one of their top three reasons). About 16 percent of customers gave the incentive as one of their top three reasons. The lesser importance of the incentive is further reinforced by the fact that 83 percent said that they would have participated without an incentive.

As shown in Figure 3 (the orange area), for the period from 1997 to 2011, between 39,000 and 224,000 units were placed in new dwellings annually.² On average over the past 15

¹ A small percentage of units were actually replacements or new refrigerators placed in use in businesses and other settings. There is also some leakage of units back and forth across California's borders. For our purposes these units can be ignored.

² Almost all new homes have one new refrigerator. The number of these refrigerators being delivered to new homes annually can be estimated by combining new construction permit data with the relevant proportions of new homes with one or two new refrigerators. This number then can be deducted from the overall shipments to estimate the number appliance being placed in existing homes. An analysis of the 2003 and

years, approximately 955,000 refrigerators were purchased annually for use in occupied households (yellow area).



Sources: Association of Home Appliance Manufacturers and State of California

Figure 3 Estimated Total Shipments to California, Units Placed in New Dwellings, and Units Placed in Occupied Dwellings (Replacements).

Figure 4 shows the annual percentage of shipments of new units to new dwellings and to occupied dwellings from 1997 to 2011. The percent of total shipments placed in new dwellings increased until 2006 and then diminished sharply thereafter ranging from a high

2010 California Residential Appliance Saturation Surveys (See table below.) revealed that the percent of new homes with more than one refrigerator increased from 24 to 29 percent between 2003 and 2010 and the percent of existing homes with a second refrigerator increased from 17 to 24 percent respectively.

Proportion of New and Existing Homes with a Second Refrigerator

Second Refrigerators	New Homes		Old Homes		New Homes with Two New Units
	Proportion	Annual Consumption (kWh)	Proportion	Annual Consumption kWh	
2003	0.24	999	0.17	1193	1.08
2010	0.29	1079	0.24	1227	1.05

This is the case despite the economic downturn. In both years, new homes had more second refrigerators than older homes. This may be because of the trend to larger new homes. Based on the RASS Surveys, it is estimated that about five and eight percent of new homes in 2003 and 2010 respectively had two new refrigerators, while the remainder of new homes with second refrigerators had a new and old unit.

of nearly 17 percent to a low of just over four percent. The highs occurred between 2004 and 2006 followed by a precipitous decline that reached its denouement in 2009. This decline coincided with the housing downturn in California.

Of more interest is that the annual purchase rate of refrigerators (replacement units) for occupied California dwellings increased from slightly more than six to slightly more than nine percent between 1997 and 2006, and then declined to about six percent again. These data show that there is an underlying seven percent annual purchase rate of refrigerators for occupied dwellings that can increase to eight or nine percent in better economic times, for example, between 2003 and 2006 when the refrigerator replacement purchase rate was above nine percent. Put differently, annually an average of seven percent of households dispose of a working or nonworking unit.

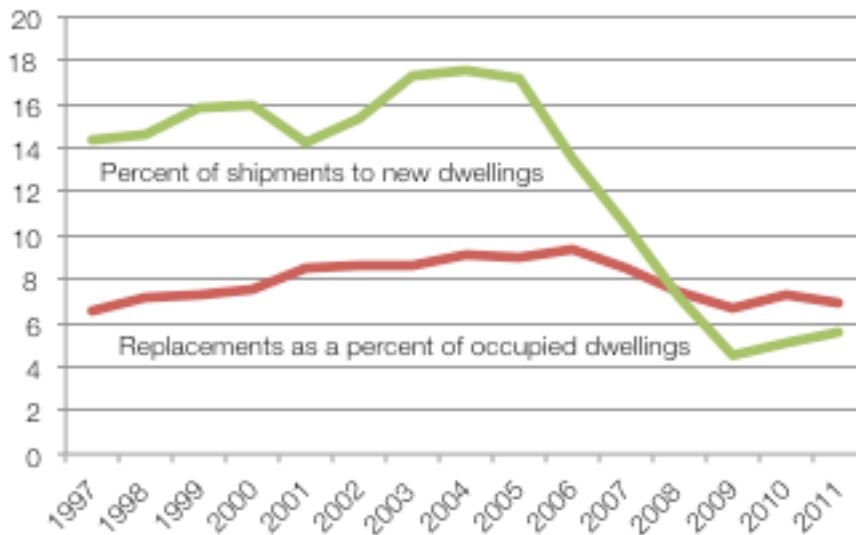


Figure 4 Percent of Refrigerators Shipped to New Dwellings and Estimated Percentage of California Dwellings that Purchased a New Refrigerator

3.2 The New Appliance Retail Market: Who Sells Them?

A number of market analyses confirm that the sales of all appliances, including refrigerators, are highly concentrated among a few large retailers. For example:

A 2009 study conducted for the U.S. Department of Energy concluded that,

Refrigerators are sold primarily through Sears, home improvement centers such as The Home Depot and Lowe's, mass merchants such as Costco and Sam's Club, and independent appliance retailers. The share of sales flowing through each of these channels has shifted over the last five years, with Sears and independent appliance dealers losing market share to home improvement retailers and mass merchants. In 2007, Sears and the home improvement sector each accounted for 33 percent of sales, independent retailers for 22 percent, and

mass merchants for 11 percent. Four percent of sales went through other channels.³

The home improvement sector's gain in market share is echoed in a more recent article in This Week in Consumer Electronics (TWICE) that referenced their Top 100 major appliance dealers list:

Clearly, the home-improvement sector made the most of last year's weak majap (major appliance) market. The nearly four percent gain by No. 2 retailer Lowe's helped offset single-digit declines at third-ranked The Home Depot and 16th place Menards, leaving sales within this strata flat at \$8 billion, just behind the mass class. But with flat becoming the new measure of success in appliances, the results translated into a 3.8 percent gain in market share for the home-improvement gang, to 35.6 percent of Top 100 sales.⁴

According to TWICE, the ten largest major appliance dealers by sales account for 84 percent of the market. The list includes all types of appliances not just refrigerators and also includes retailers that do not have stores in California such as hhgregg.

Table 3 Top Ten Appliance Sellers in the United States

1. Sears	6. BrandsMart USA
2. hhgregg	7. Best Buy
3. Lowe's	8. Conn's
4. P.C. Richard & Son	9. Walmart
5. The Home Depot	10. Costco

TWICE noted that the market share gains of the Top 10 appliance retailers came at the expense of midsized major appliance retailers, while the smaller dealers' shares remained flat. Examples of the midsized retailers on the list were stores like ABC Warehouse, Menards, and Fry's. Fry's has 17 stores in California.

3.3 Used Refrigerators and Freezers: Where They Go

If they do not remain in the household, used refrigerators and freezers typically follow one of four paths. (See Figure 5.) They are: sold or are given to another household; removed by a utility sponsored recycling program; removed by a retailer and then sold or recycled; or removed through a community waste program or another disposal mechanism such as firms that will pick up a unit for free or for a fee. The volume in this latter path is very low and will be ignored in this discussion.

³ U.S. Department of Energy, *New Opportunities Multiply Savings: Refrigerator Market Profile 2009, U.S. DOE* <http://apps1.eere.energy.gov/states/pdfs/ref_market_profile.pdf>, May 2, 2012.

⁴ Alan Wolf, "Top 10 Majap Dealers Increase Market Stranglehold," TWICE, June 21, 2010, <http://www.twice.com/article/454066-Top_10_Majap_Dealers_Increase_Market_Stranglehold.php> May 2, 2012.

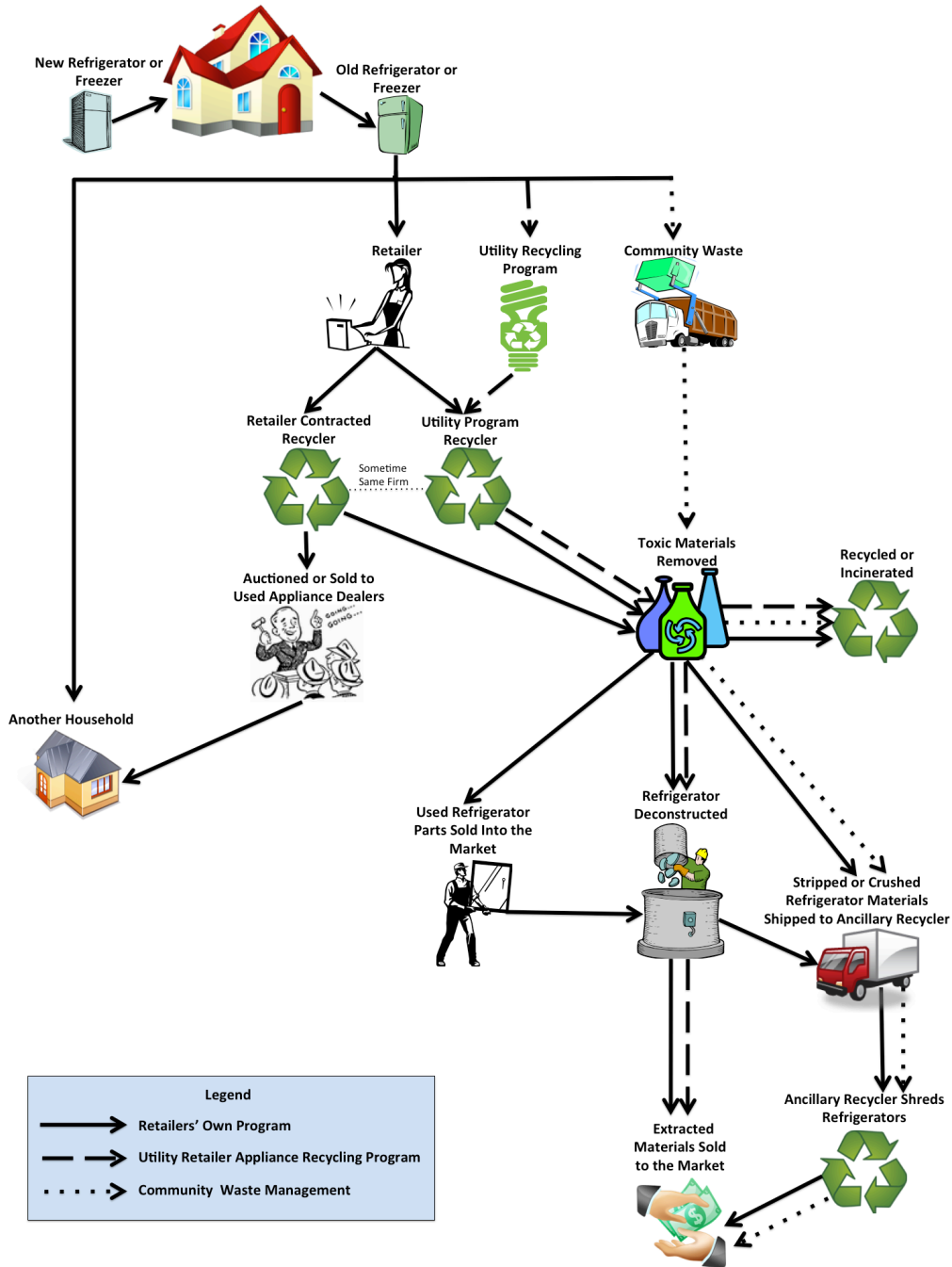


Figure 5 Tree Showing the Possible Movements of an Old Refrigerator Leaving a Household

3.3.1 Path One: Sold or Given to Another Household

When a householder transfers a refrigerator or freezer to another holder, the unit is usually given away or sold. When the unit is given away, it is typically to someone that is known to the householder. Units that are sold are sometimes sold to someone known to the householder or to a party located through an advertisement on Craigslist, PennySaver, or some similar community bulletin board.

3.3.2 Path Two: Removed by a Utility Sponsored Recycling Program

Refrigerators and freezers recycled through utility sponsored appliance recycling programs are picked up from the homes of standard program participants or from the retailer's distribution center by the utility's recycling contractor.

At the recycling contractor's facility, the recycler drains the refrigerant from the units. Mercury switches and capacitors containing toxic materials are also safely removed.

The contracted recycler deconstructs the entire unit at its facility extracting any usable materials like glass, foam, aluminum, and plastic, and sells those materials into the market. The box, the compressors, and the coils may be handled separately because of their steel and copper content to maximize their value.

3.3.3 Path Three: Removed by a Retailer and Then Sold or Recycled

When a customer buys a new refrigerator, most retailers will remove the old appliance for the customer for free or for a small fee. Disposal of appliances involves a cost to retailers and they are therefore interested in disposal methods that will minimize that cost or turn removal into a revenue stream. This need is further complicated by California requirements that firms that maintain and dispose of refrigerators and freezers be licensed in order to minimize the greenhouse gas effects of refrigerants, a molecule of which is roughly 1700 times more potent than a molecule of CO₂. Although not presently a front burner issue, retailers and manufacturers are wary of the potential for disposal of old units to become a liability.

For refrigerators disposed of through a new appliance dealer, the prototypical approach is that the retailer's logistics firm⁵ removes the old refrigerator/freezer from the home of a new unit purchaser and takes it to the retailer's distribution center, where it is removed by a contracted recycling firm. These contractors call themselves "recyclers" but the term is used somewhat loosely and includes firms that sell used units back to the market as well as firms that deconstruct units and recycle the materials.

The contract recycler that sells units back into the market usually selects units that are white, working, less than ten years old, and in good condition to be auctioned off or sold to used appliance dealers for resale. In some instances, firms may salvage parts for the resale market. Some recyclers actually deconstruct all of the units they receive, but this is difficult to do from an economic perspective. (See below.)

⁵ Almost all retailers now outsource delivery logistics.

The remaining units are disposed of in one of two ways. Some of these recyclers deconstruct the units and dispose of the materials in a process similar to the one described for the utility recycling programs.

The other pathway is that the units are sold to ancillary recyclers. The contracted recycler selects parts and strips the units and/or crushes the units for shipping and then transfers them to an ancillary recycling firm. These ancillary recycling firms are major scrap dealers that shred large objects such as automobiles and refrigerators and then sell the resulting materials, which in the case of California are often shipped overseas.⁶ In some cases, the ancillary recyclers will accept intact refrigerators and then remove the refrigerant before shredding. In an interview, one ancillary recycler that shreds units reports that the temperatures are sufficiently high in the shredder so that the CFCs in the insulation are destroyed and emissions from the stack pass EPA inspection, but we are unable to verify this claim. Proximity to the ancillary recycling facility is a key determinant of whether the contracted recycler crushes the box or not.

3.3.4 Path Four: Removed through a Community Waste Program

The fourth path for disposing of refrigerators and freezers is through a community waste program. After removing the refrigerator or freezer from a home, community waste management programs remove the refrigerant and other toxic materials. The units are usually stripped or crushed and shipped to an ancillary recycler that shreds the unit and sells the useable extracted materials into the market.

3.4 Extracted Refrigerator and Freezer Materials – Where Do They Go?

Refrigerators and freezers contain both toxic and non-toxic elements. There are materials that can be directly sold into the materials market or shredded and then sold into the materials market. Toxic materials can be reclaimed or incinerated according to the Clean Air Act. Figure 6 is a general depiction of the flow of deconstructed refrigerator/freezer elements for Standard and Retail ARP.

The toxic elements found in refrigerators and freezers come from polychlorinated biphenyls found in capacitors and mercury from switches in older units. In addition, CFCs, which are very potent greenhouse gasses, are contained in the refrigerant, found in the compressor oil, and in the foam insulation where they were used as blowing agents.

The recycling contractors that serve Retail and Standard ARP comply with Section 608 of the Clean Air Act which requires that CFC containing refrigerants be removed from the appliance before disposal or recycling and in a manner that minimizes the release of CFCs and prohibits knowingly ventilating or releasing it into the environment.⁷ It also requires that recovery and recycling equipment be able to recover 90 percent of the refrigerant from a

⁶ Most of this material has been sent to China where there is a strong market for scrap steel. However, in recent months prices in this market have declined with the slowdown in the Chinese economy.

⁷ Cornell University Law School Legal Information Institute. "Title 42 Chapter 85 Subchapter V1: National recycling and emission reduction program." found at < <http://www.law.cornell.edu/uscode/text/42/7671g>> Last viewed: November 19, 2012.

unit that has an operating compressor.⁸ All units collected by Standard and Retail ARP are presumed to have an operating compressor.

The refrigerants are captured and are sent to a US EPA certified reclaimer⁹ that either reclaims the refrigerants and sells them into the market where they can be reused in older equipment or incinerates them to US EPA standards. The price of CFCs in the reclaimed market has declined as the use of CFCs has been phased out. The insulation containing the CFCs may be incinerated in an approved incinerator or decomposed to capture the CFCs and an inert powder. The CFCs are then sent to a reclaimer.

⁸ U.S. Environmental Protection Agency. "Ozone Layer Protection Programs – Regulatory Programs: Complying with Section 608 Refrigerant Recycling Rule." April 26, 2011. Found at: <<http://www.epa.gov/ozone/title6/608/608fact.html#equipcert>> Last Viewed: November 27, 2012.

⁹ U.S. Environmental Protection Agency. "Ozone Layer Protection Programs – Regulatory Programs: Technicians and Contractors Frequently Asked Questions." August 19, 2010. Found at: <http://www.epa.gov/ozone/title6/phaseout/technicians_contractors_faq.html>

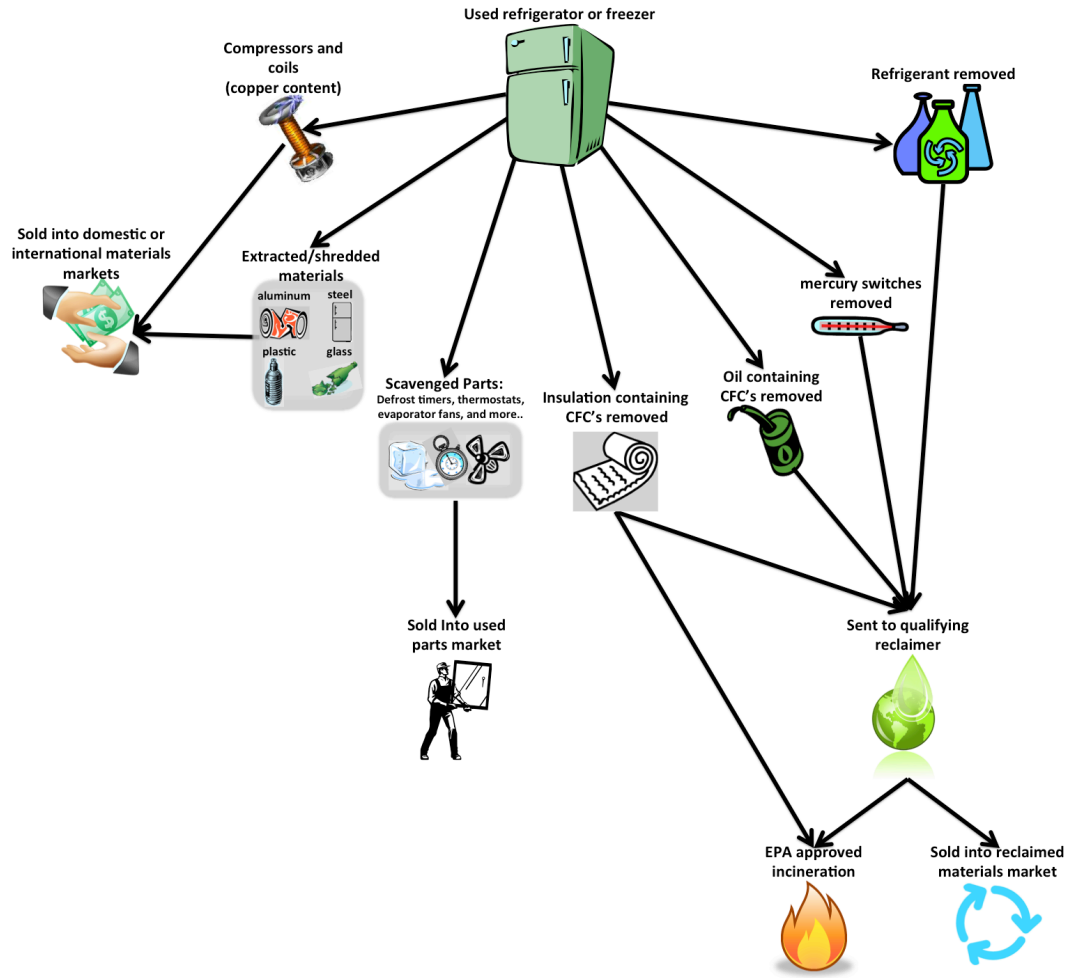


Figure 6 The Flow of Parts and Fluids from Deconstructed Refrigerators

The Clean Air Act also applies to CFC containing oils that are present in refrigerators and freezer compressors. The recyclers remove the oil before demanufacturing the appliance. The recycler sends the oil to be refined effectively removing the CFCs and then the oil and the separated CFCs are either sold for reuse or incinerated.¹⁰

Switches containing mercury are considered Universal Waste and US EPA also regulates their disposal. The California Department of Toxic Substance Control has outlined the specifics of how to dispose of mercury switches from appliances for recyclers.¹¹ Universal waste in small quantities must be sent to a facility authorized to collect it:

- It may not be stored for more than one year (date received and shipped must be documented).
- It must be labeled as Universal Waste.
- It must not be treated (any activity changing its characteristics) except in the case of cleaning up an accidental release.
- If released it must be cleaned-up and repackaged properly.
- Employees must be trained in proper handling.
- Shipping papers must be prepared accordingly.
- It must be transported in the recycler's own vehicle or in any common carrier allowed by US DOT and the State of California.
- It must be shipped to a qualifying destination facility.
- Records of shipments and receipts must be kept.¹²

ARP recyclers store and ship the mercury switches according to these requirements. The qualified reclamation entity either sells the mercury into the reclaimed materials market or incinerates it according to EPA standards.

3.4.1 Used Parts, Materials, and Shredded Materials

After the toxic materials are removed from the units some recyclers scavenge the units for parts that are in good condition and that are salable. For example, such parts include

¹⁰ American Recycler. "Dismantling Appliances Leads to Recovered Materials." <<http://www.americanrecycler.com/09dismantling02.htm>> Last Viewed: November 26, 2012.

¹¹ State of California Department of Toxic Substances Control. "Fact Sheet: How to Handle Mercury Switches in Major Appliances." Found at <http://www.dtsc.ca.gov/HazardousWaste/Mercury/upload/HWMP_FS_Merc-Appliances.pdf> March 2005. Last viewed: November 20, 2012.

¹² State of California Department of Toxic Substances Control. "Fact Sheet: Managing Universal Waste in California." July 2008. Found at <http://www.dtsc.ca.gov/hazardouswaste/ewaste/upload/hwm_fs_uwr.pdf> Last Viewed: November 28, 2012.

defrost timers, defrost thermostats that do not contain mercury, evaporator fans, brackets, and more.

Compressors and refrigerator coils are removed from the units and sold for their copper content. The compressors may be sold in the international market where they may be disassembled to recover the copper.

Aluminum, glass and plastic are sorted and sold primarily to domestic markets. The steel is sold for scrap and typically ends up in a shredder where it may be sent to China and is recycled into new products. As a result of these processes, the materials from appliances removed through utility programs do not end up in landfills.

Recycling outside of the utility programs may result in some materials going to landfills. As noted earlier, refrigerators and freezers recycled through ancillary recyclers may be shredded before the foam insulation is removed.

An additional point is that the value of the materials can vary greatly. The value of CFCs was relatively high while there was still equipment that needed CFCs to operate but as that older equipment has been replaced with equipment with new refrigerants the price in the market has declined. In the middle of the last decade the price for recycled steel was quite high because of the demand for it from China. As the Chinese economy slowed, the price decreased. The same is true of copper. The important take away is that what recyclers can obtain for materials in the market varies, which means that their cost of doing business varies.

3.4.2 Economics Drives Recycling

Concerns about the costs of recycling drive the choices that retailers make about appliance disposal. For example, a retailer receives whatever the retailer is able to charge for the removal of an appliance, plus an amount from the recycler, less the cost associated with the backhaul, and the costs of handling the unit at the distribution center. Retailers may charge a small amount to remove an old refrigerator, for example, \$10. This amount may vary with the market and the fee may be waived to close the sale on a new refrigerator. Retailers that sell to recyclers use revenue from recyclers to offset the haulaway costs of recycling other materials such as cardboard, pallets, carpet, mattresses, and other items where the value of the materials is not sufficient to pay for removal and disposal.

A recycler may pay the retailer \$10 to \$15 per unit for recycling, but the amount the recycler can pay is limited to the value of the materials that can be recovered (see above) and the value of the 10 to 25 percent of the refrigerator units that can be sold in the secondary market. That value has to cover logistics, dismantling, selling materials, and profit. A secondary recycler may impose a nominal charge for accepting a unit or may recycle units without cost if the value of materials is sufficient to cover operations. County and municipal waste haulers may require a homeowner to obtain a sticker or permit costing from \$15 to \$50 that is placed on a bulky item before it can be removed. That amount covers haulaway and recycling.

Recyclers can sell working and desirable units to used refrigerator dealers for \$40 to \$50 per unit. The amount a recycler can charge is limited by what used dealers are willing to pay to ensure that they cover their costs associated with preparing the unit for sale, selling

the unit, delivering the unit, offering some minimal service and warranty and making a profit. The used dealer may also need to bear the costs of removing and disposing an old unit.

Used refrigerator dealers generally sell units to end-use customers in a range from \$125 to \$300. The upper end of this range is limited by the cost of a new 18 to 20 cubic foot top freezer automatic that can be purchased from new appliance retailers in the range of \$300 to \$400 on a payment plan and units offered by individual sellers of their old refrigerators on Craigslist or PennySaver.

Historically, independent dealers sold new and used appliances and took “trade-ins” and serviced appliances. Some of these dealers had contracts to remove appliances from communities and some advertised and got paid or hauled old appliances for free. These dealers selected usable units for resale and disposed of the rest. Now, because of disposal costs, used dealers are reluctant to take anything other than a salable unit.

Currently, used dealers typically purchase in the used market and resell refrigerators. Their sources are first level recyclers who sell units from retailers and the Salvation Army, which is now the only community organization that accepts used refrigerators in California. The Salvation Army requires that the units be working with the best units being placed in their stores for resale and the remainder placed for wholesale to used appliance dealers. Other organizations have stopped taking donations of refrigerators and freezers because it is difficult to break even by selling some and disposing of the rest. A key issue is dealing with extracting and selling the refrigerant.

Elsewhere, Innovologie has documented the decline of used appliance dealers.¹³ Many of the used dealers who are still in business report that they have difficulty getting good used units. Many are nearing retirement and are getting out of the business as the dynamics of the market have changed. Some blame the utility recycling programs for the decline. While utility programs may account for some of the decline, there are numerous other reasons such as the nationalization of service providers like Sears, GE, and other newly forming national service organizations, large retailers who are able to sell new units at very competitive prices, appliance warranty contracts that reduce the repair business for independent dealers, large retailer disposal practices, new appliance dealer financing, sales of used units outside the US, the need to provide some warranty on used units, and a host of other reasons.

¹³ Reed, John H., Charles Bailey, Jeff Riggert, Moria Morrissey. *Final Report Process and Market Evaluation of Southern California Edison's Appliance Recycling Program 2006-2008*. Rockville MD: Innovologie. 2010. May be accessed at Calmac.org.

ADM Associates, Athens Research, Innovologie, LLC., Hiner and Partners. *Evaluation of the 2004-05 Statewide Residential Appliance Recycling Programs*. Sacramento CA: ADM. 2008. May be accessed at Calmac.org.

Finally, there is the question of the market for used appliances. Small apartment building owners purchase a very small number of used appliances for use in apartments, although this practice seems to be declining. Householders purchase them for secondary use. Some are purchased for primary use in dwellings. Many others are placed in second dwellings such as cabins and lodges.

While there is the indelible image of the used appliance dealer preying on low-income populations, the image fits less and less well with reality. Many low income families own their own refrigerators and move them when they move. In Los Angeles and vicinity, there are many apartments that rent without a refrigerator. Another dynamic at work is that used appliances now frequently change hands directly between parties with transactions arranged through Craigslist and PennySaver.

3.4.3 Large Retailer Disposal Practices

The prototype for large retailer disposal of appliances has been emerging over the last decade or more. With an extensive history of appliance sales, Sears has long recognized the costs of disposal and has worked diligently to turn waste disposal from a cost center into a profit center. The units Sears removes, except for the very small percentage of units that are recycled through utility collaborations, are sold to recycling companies who dispose of units in pretty much the prototypical fashion described above. The Sears' approach has evolved over the years and the pattern is pretty consistent nationwide although the recycling companies involved vary in different parts of the country.

Other major retailers are relatively new to the appliance business, for example, Best Buy, Lowe's, and Home Depot, and their practices with respect to appliance and refrigerator disposal have emerged over recent years. In California, Best Buy's approach to refrigerator disposal aligns well with the prototypical model. They seem to follow the same pattern nationwide.

Lowe's seems to be converging on the prototypical approach nationwide. In the recent past, the practices of Lowe's stores varied by locality with some stores letting or even encouraging the logistics contractor to dispose of old refrigerators as well as other waste. In other localities, old units were returned to stores and store managers oversaw their disposal. Very recently, Lowe's has begun to regularize disposal of old appliances across its stores with a national contractor responsible for all types of waste that subcontracts appliance disposal. Procedures are increasingly similar to those of the prototype pathway described above.

Home Depot is expanding an agreement with GE logistics nationwide that requires 100 percent dismantling of refrigerators and freezers. Under this agreement, units collected from customers do not return to the market. This is a result of GE's participation in the Environmental Protection Agency's (EPA) Responsible Appliance Disposal (RAD) program. The RAD program "is a voluntary partnership program that began in October 2006 to help protect the ozone layer and reduce emissions of greenhouse gases. As part of the RAD program, partners recover ozone-depleting chemicals from old refrigerators, freezers,

window air conditioners, and dehumidifiers.”¹⁴ According to GE, as of September 2011, they had partnered with Appliance Recycling Centers of America (ARCA) to recycle refrigerators from Connecticut, Pennsylvania, New Jersey, New York, Maryland, West Virginia, Vermont, Delaware, Virginia, North Carolina, and Rhode Island, at ARCA’s Pennsylvania based recycling center.¹⁵ That center receives used appliances of all kinds from Home Depot as well as other sources. The refrigerants are drained and toxic components removed from the oldest refrigerators and freezers and then a fully automated process is used to shred the units and separate the materials: steel, CFCs, non-toxic residue from insulation, aluminum, copper, and plastic that can be sold in “local” markets.

It is important to note that the appliances logistics teams that remove refrigerators for retailers are not usually the same as the logistics teams that handle distribution center-to-store or store-to-store product logistics. They are separate and mostly contracted teams. In turn, the contractors may subcontract to smaller local logistics contractors. For example, Sears, Home Depot, LG, Maytag, and Whirlpool each have a contract with Home Delivery America.¹⁶ Home Delivery America provides services such as in-home delivery, customizable routing systems, customer service, inventory management, and automated call systems. They hire independent contractors that meet their insurance and other qualifications and that already own a qualifying delivery truck. The independent contractors are required to have at least one other delivery person on their teams.¹⁷ The fact that the delivery personnel are not employees of the retailer may complicate matters with respect to instilling discipline with regard to the removal and recycling of refrigerator units.

3.5 The Volume of Appliances in Used Refrigerator Removal Channels

Because most of the large players in the new refrigerator market provide some type of fee based or promotional delivery and removal services to purchasers, it is widely assumed that new appliance dealers are a major source of refrigerator removals. However, data from the 2004-05 RARP disposer survey (three service territories) and the 2006-08 ARP disposer survey (SCE service territory) show that only about a quarter of households replacing refrigerators have the appliances removed by a retailer. Refrigerators that leave the home flow through various channels to new owners or are dismantled with some or all of the materials recycled. The purchase of a new refrigerator does not necessarily result in a refrigerator leaving the home.

As displayed in Figure 7, the 2004-05 and the 2006-08 ARP surveys show that for the SCE service territory, Standard ARP removed 15 and 28 percent of used refrigerators in the respective surveys. Appliance dealers removed between 21 and 26 percent of the

¹⁴ Environmental Protection Agency, “Responsible Appliance Disposal (RAD) Program,” January 10, 2012, <<http://www.epa.gov/Ozone/partnerships/rad/>> May 12, 2012.

¹⁵ Irene at GE (blog admin), “GE’s RAD partnership - Refrigerator Recycling and Disposal,” September 15, 2011, <<http://community.geappliances.com/t5/Energized-About-Energy-Blog/GE-s-RAD-partnership-Refrigerator-Recycling-and-Disposal/ba-p/3139>> May 11, 2012.

¹⁶ Home Delivery America, “Some of Our Valued Clients,” 2009-2012, Secaucus, NJ, <<http://www.homedelamerica.com/index.php/current-client-main>> May 25, 2012.

¹⁷ Home Delivery America, “Contractor Frequently Asked Questions,” 2009-2012, Secaucus, NJ, <<http://www.homedelamerica.com/index.php/questions-for-contractors>> May 25, 2012.

refrigerators; another 39 and 29 percent of refrigerators were given away or sold. Community trash or recycling programs removed 13 and 18 percent of used units. The remainder (three percent and six percent) were removed through unknown means. Thus, the assumption that dealers remove most of the refrigerators is not supported.

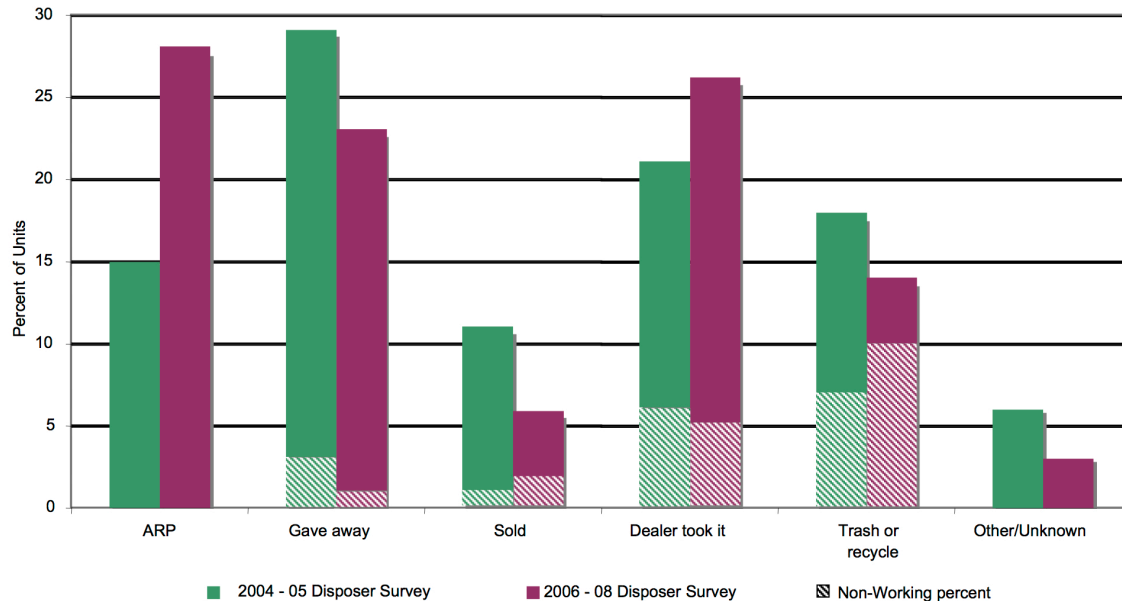


Figure 7 Refrigerator Disposal Channels from the 2004-5 and 2006-8 Disposer Survey

This same figure also shows the number of non-working units that were reportedly removed (areas with diagonal shading). Very few of the units that were given away or sold were reported to be non-working. For the units that went to trash or recycling, about a third of units in the 2004-05 survey and more than two thirds of the units in the 2006-08 survey were reported to be non-working. Sixty-six and 75 percent of the units removed by the retailer in the 2004-05 and 2006-08 surveys were working units. Between 10 and 25 percent of the working and nonworking units removed by dealers were reportedly returned to the market.

These data also show that even with the ARP program, 38 and 29 percent of refrigerators were either given away or sold. Further, one cannot assume that the refrigerators removed by ARP would have been removed by dealers or sent to the trash. The data from the 2004-05 and 2006-08 surveys show that if Standard ARP did not exist, 56 and 55 percent of all replaced units respectively would have remained in the market.

3.6 Summary of Findings

This chapter describes the linkages between the new and used refrigerator and freezer markets in California. A small number of large retailers dominate the new appliance market. Over the last 15 years, about 950,000 refrigerators have been sold for use in occupied households annually. This represents an underlying annual refrigerator replacement rate of approximately seven percent of households with a slightly greater rate of replacement when the housing market is strong. It is estimated that in the absence of Standard ARP, without Retail ARP and with large appliance retailer recycling, approximately 55 percent of working

refrigerators would remain in the market. In other words, the supply of old refrigerators is constantly replenished, and the rate of replenishment is such that the number of non-primary units can increase. In other words, there is potential for the number of households with second refrigerators to increase. Data presented in this chapter indicate that this has occurred in recent years.

Standard ARP removes refrigerators and freezers for households that are not replacing a unit and for households that are replacing a unit but do not have a unit removed at the time of purchase. Retailer programs remove refrigerators from about 25 percent of households. Ten to 25 percent of those units are likely to return to the market. Thus, there is room for an effective utility retailer recycling program that encourages customers to surrender units at the time of purchase instead of turning them into inefficient secondary units.

4 Retail and Standard ARP

This chapter provides a detailed description of Retail ARP as well as a brief overview of Standard ARP. It includes a comparison of the details of the two programs to aid in understanding how Retail ARP compliments Standard ARP.

Retail ARP was a trial in which SCE's Appliance Recycling Program teamed with a brand name retailer to encourage customers to sign up for appliance recycling when they purchased new refrigerators at participating stores. The collaboration streamlined the process for removing and recycling old refrigerators and freezers by allowing retailers' logistics operators to qualify and remove the older units when customers' new units were delivered. The logistics operators then took the old units to the retailers' distribution center where SCE's recycling contractor collected the units, moved them to recycling facilities, and recycled the refrigerators using the same environmentally safe techniques used for Standard ARP.

4.1 The Retail Appliance Recycling Program

Figure 8 is a flow diagram for customer participation. Participation began when a customer visited the retailer to purchase an appliance. While in the retail store, the customer was informed about Retail ARP through signage and one-to-one contact with the salesperson.

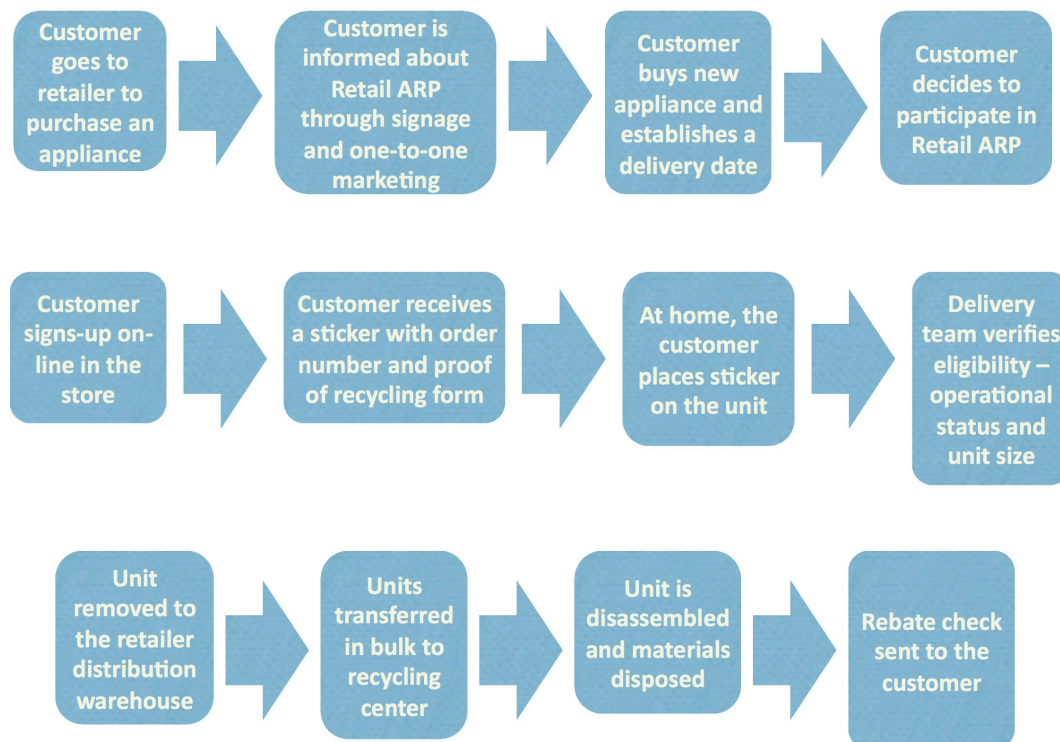


Figure 8 How Retail ARP Worked

4.1.1 Marketing Materials

SCE produced marketing materials for use in the participating stores. Key marketing pieces were two clings, one that informed customers about SCE's \$50¹⁸ Retail ARP incentive for recycling a refrigerator or freezer and another that informed shoppers about SCE's \$50¹⁹ Energy Star® appliance rebate.

The clings were to be placed on all refrigerators on the retailer's show floor. If the refrigerator or freezer was an Energy Star® qualified unit, the clings were positioned together in the upper left corner on the front door forming a square as shown in Figure 9. The clings had white backgrounds, yellow borders, and green and black print. If the display model was not an Energy Star® qualified unit, then only the recycling cling was placed in the upper right corner. The actual placement of the clings sometimes varied because of the placement of other promotional and informational materials posted on the refrigerators by the retailer.



Figure 9 ENERGY STAR® Rebate and Retail ARP Rebate Clings

SCE provided other literature describing the program that was sometimes placed on a table or at the sales counter. Figure 10 shows such a literature display. This literature was primarily intended for customers who did not sign up for the trial but who might consider participation later through Standard ARP.

The literature included brochures that had a picture of a person opening a refrigerator door on the front with white text on a blue background that said, "Refrigerator and Freezer Recycling Program." The subtitle was in white text over a grey background. Inside it provided information about the standard program and how to participate. The literature also included tear-off recycling stickers pictured in between the two stacks of brochures in Figure 10. These were green, white and yellow in appearance. The \$50 rebate and free haulaway are featured in large green text in a white box. The sheet also provided the web address for the program, a box for customers to write their



Figure 10 SCE Appliance Recycling Informational Materials

¹⁸ In 2012 Standard ARP Rebated was reduced to \$35.

¹⁹ In 2012 the rebate for the Energy Star Most Efficient Model was \$75 while the rebate for the Energy Star Qualified Model was \$35.

confirmation number, directions to have the refrigerator plugged in and cooling when the logistics team arrived to remove it, and information about receiving the rebate check.

4.1.2 One-to-one Customer and Salesperson Interaction

The primary marketing strategy was for retail salespeople to sell the recycling program to customers purchasing a new refrigerator or freezer. In order for this to be effective, the salespeople received training on program benefits and operations. A SCE contractor regularly visited stores of cooperating brand retailers to explain SCE appliance programs and provide marketing materials as well as train the sales associates. The training provided by the contractor included:

- A general description of the program
- Program qualification guidelines
- Reasons to recycle refrigerators and freezers
- Customer benefits from participation
- A description of how the logistics would work
- Instructions for signing up customers using the in-store online system
- Instructions for and photographs of the sticker to be given to the customer and then affixed to the refrigerator to be removed
- Photographs of Retail ARP marketing materials that would be displayed in the stores
- Information about Standard ARP to be given to customers who chose not to sign up to participate in the trial program
- Rescheduling instructions
- Instructions for referring non-qualifying customers to the retailer's own fee-based recycling offer
- Details about the time period that the trial program would be available

4.1.3 Customer Bought a New Appliance, Established a Delivery Date, and Decided to Participate in Retail ARP

During the interaction with the customer, the salesperson was free to inject the information about Retail ARP at any point. Sometimes the customer asked the salesperson for the information before the salesperson raised the subject. Once the customer decided to purchase an appliance, the sale was entered into the retailer's point-of-sales (POS) system. This was a key opportunity for the salesperson to remind the customer about the \$50 rebate and convenient pickup offered by Retail ARP. When the customer decided to have the retailer recycle a qualified refrigerator or freezer, the signup for recycling took place.

4.1.4 Customer Signed up Online in the Store and Received a Sticker with the Order Number and Proof of Recycling Form

The signups were completed with assistance from the salesperson. Each of the trial stores had a computer or computers separate from the POS terminal. The salesperson or customer used the browser on that computer to access an SCE supported website (Enerpath) where they entered the customer name, address, and other relevant information. Based on the address the system verified that the purchaser was an SCE customer. This is essentially the same information that customers would enter if they were signing up for Standard ARP using the Internet.

When the registration was completed, the salesperson wrote a recycling order number on a sticker that was given to the customer along with a computer generated proof of recycling form. The sticker, pictured in (Figure 11), included instructions to place the sticker in the upper right corner on the left hand side when facing the old refrigerator and to keep the unit plugged in and cooling so the logistics team could tell it was working when they arrived with the new unit. It also informed the customer that they would receive the \$50 rebate check in the mail within 4-6 weeks.



Figure 11 Sticker Given to Customer to Place on Refrigerator

A proof of recycling form was also given to the customer. It stated that the customer had transferred ownership of the refrigerator to the recycling program. The customer signed this form and tendered it to the logistics team when the unit was removed. Half of the form served as the receipt for the customer's records.

While all parties involved in the collaboration agreed that it would be more convenient to use data from the retailers POS software and transfer the customer information directly to the Enerpath system rather than re-entering it, there were two obstacles to doing that. The first was that this was a trial and altering a national system would have been time

consuming and costly. The second was that the retailer's interpretation of California law was that their proprietary customer information could not be shared. By re-entering the information on SCE's system, the customer volunteered their information to SCE thus overcoming a potential obstacle posed by privacy laws.

4.1.5 Customer Placed the Sticker on the Unit

After the customer's purchase, the customer placed the sticker on the unit prior to the delivery date. If the delivery of the refrigerator needed to be rescheduled no further action was required by the customer or the sales staff. The recycling appointment coincided with the new delivery date.

4.1.6 Delivery Team Verified Eligibility of the Unit

On the delivery day, the delivery team verified eligibility of the unit before removing it. The unit was deemed functional if the interior surfaces were cold to the touch. The unit had to be a residential unit, it had to be working, meaning it was still cooling, and it had to be between 10 and 32 cubic feet in size. The customer signed the proof of recycling form and the verified unit was taken to the delivery truck.

4.1.7 Unit Transferred to the Retailer's Distribution Warehouse

When the refrigerators on the delivery truck were unloaded at the warehouse, Retail ARP units were identified by the sticker (Figure 11) and separated from units that were not a part of the program. SCE's contractor removed the Retail ARP units and the retailer's recycling contractor removed the non-program units. The Retail ARP units were placed in a trailer parked at a loading bay door. When the trailer was full the retailer informed SCE's recycling contractor.

4.1.8 Units were Transferred in Bulk to the Recycling Center for Recycling

SCE's recycling contractor collected Retail ARP units at the distribution warehouse and transferred them in bulk to their recycling center. There, using the order number on the sticker, the units were checked in against the orders that had been received during the in-store signup. Once checked in, the units were disassembled and the materials disposed of in an environmentally safe way as described above.

4.1.9 Rebate Check Was Sent to the Customer

When the recycling team recorded the unit as having been disassembled in the Enerpath system, a rebate check was produced and sent to the customer. SCE was invoiced for the units. Within four to six weeks of the removal the customer should have received the check in the mail.

4.2 Standard ARP

Retail ARP was modeled after Standard ARP. Thus, there are a number of similarities but also some differences. The goal of Standard ARP is to reduce residential energy consumption by making it easy for SCE customers to have one or more older and/or under utilized refrigerators or freezers removed and recycled. The Standard SCE Appliance Recycling Program collects a maximum of two refrigerators and/or freezers annually from a

household within the service territory. SCE targets appliances in a range of 10 to 30 cubic feet. Units less than 10 cubic feet, also called “mini-fridges,” are excluded because they cannot be recycled cost effectively.

SCE customers are informed about the program through bill inserts, direct mailings, media advertising, and materials supplied to appliance dealers by circuit riders in the SCE territory. Standard ARP offers free pickup of the appliance and a cash incentive of US\$50.

To sign up, customers either place a call to a telephone center or sign up using a website. The call center maintains an updated list of all SCE customers. When customers contact the telephone center, they supply their zip codes, street numbers, and street names. This information is matched to the customer list and the results are displayed in real time on the operator’s console. The operator quickly selects the correct household verifying the name and address on the account and that the caller is an eligible SCE customer. The operator and the customer select a pickup date and the operator collects some detail about the unit(s) and in some cases the answers to a few survey questions. Such calls usually take two to three minutes.

The online signup is completed in much the same manner. Customers click on a link on the SCE website or on a more general website that transfers them to the recycling contractor web page. There they select their utility. The customer fills in name, address, and e-mail. The system verifies that the application is from a household that has an SCE account. The customer is presented with a screen for selecting a pickup date. The system confirms the pickup date and time. An email is generated and sent to the customer confirming the appointment.

A day or two before the scheduled pickup, the recycling company places a telephone call to customers informing them of the hourly window (four hours) in which they could expect their refrigerators to be removed. The information for the pickup is downloaded into a Portable Digital Assistant (PDA) along with a route for the logistics driver. On the day of the pickup, a logistics crew goes to the household and checks the refrigerator to determine if it qualifies in terms of its size and functionality. The logistics crew then enters/corrects the information about the unit in the PDA, indicates the unit is qualified, and that the unit has been removed. A picture of the unit is taken and the customer signs an electronic receipt for the unit. This data is uploaded to a database.

The logistics team then removes eligible unit(s) to a recycling center where they are checked-in on another PDA. Once that is done, the disassembly and recycling process begins.

The unit is confirmed to have been destroyed which triggers an incentive check being sent to the customer. The recycler invoices SCE for the incentive and the processing cost for the units.

4.3 A Comparison of Characteristics of Standard and Retail ARP

Table 4 lists the operational characteristics of both versions of the program side by side. Both programs ultimately reduce residential energy consumption either by removing underutilized refrigerators or preventing a unit from becoming a second or third unit in a home.

Standard ARP targets second units that are already in homes and/or units that have just been replaced but that were not removed as part of a purchase transaction. Retail ARP specifically targets customers who are purchasing a new unit and who may have made or are in the process of making a decision about disposal of a working unit.

Retail ARP approaches the customer through a one-to-one social interaction with a salesperson, perhaps the most effective way of communicating with a customer, when the customer's interest in what to do with a refrigerator is most salient. The marketing materials for Retail ARP are simple and direct. Standard ARP uses many more marketing materials and relies heavily on mass marketing channels (i.e., one-to-many communications such as bill inserts and direct mailing). The marketing costs for Standard ARP are substantially more than those for Retail ARP.

The eligibility rules for the program are the same for Retail and Standard ARP with one exception. Standard ARP will remove a maximum of two refrigerators annually. The rules for Retail ARP require a one-for-one exchange of units. Consideration was given to allowing customers to have a second unit removed at the same time as the delivery but there are potentially issues with managing the logistics. Given the constraints of physical space in delivery trucks, it might not be possible to remove more than one unit. Further, the goal of the Retail ARP trial was to keep the program simple in order to understand how best to implement it. In some future version of Retail ARP, it might be possible to introduce the removal of multiple units.

Table 4 Operational Characteristics of Standard and Retail ARP Compared

	Standard ARP	Retail ARP
Goals	Reduce residential energy consumption by removing underutilized refrigerators/freezers or preventing secondary units in households	
Target appliances	10 to 30 cubic feet units	
Primary target customers	All SCE customers with a qualifying unit to be removed	All SCE customers purchasing a new appliance at participating retail stores with a qualifying unit to be removed
Marketing materials	<ul style="list-style-type: none"> • Bill inserts and direct mailings • Media advertising • Removal truck ads • Thorough signage dispersed to appliance dealers in the SCE territory 	<ul style="list-style-type: none"> • Clings attached to units on the sales floor of participating retailers • Program literature display table • Direct salesperson to customer interaction
Incentives to participation	<ul style="list-style-type: none"> • \$50 • Free haulaway set by appointment 	<ul style="list-style-type: none"> • \$50 • Free haulaway at time of delivery of a new unit
Signup process	<ul style="list-style-type: none"> • Toll free number to a call center • Request for removal is processed and the customer given a removal date 	<ul style="list-style-type: none"> • Online/in-store salesperson assisted signup • Customer received a sticker, order number, and proof of recycling form • Customer placed the sticker on the unit and then waited for the removal/delivery date

Pickup process	<ul style="list-style-type: none"> •Customer received a reminder call •ARP contractor checked that the unit qualified •Unit info entered/corrected into PDA indicating it had been picked-up •Customer signed electronic receipt •Picture of unit taken •Unit removed 	<ul style="list-style-type: none"> •Customer received a reminder call •Retailers' logistic team checked that the unit qualified and that a sticker was on the unit •Proof of recycling form served as the customer's receipt •Unit removed
Transport of the units	<ul style="list-style-type: none"> •ARP contractor team delivered the units to the recycling center 	<ul style="list-style-type: none"> •Retailers logistics crew took the units to the retailers distribution warehouse •Units were separated from the non-Retail ARP units •SCE's third-party contractor collected the ARP units from the distribution warehouse and transferred them in bulk to the recycling center
Recycling	Units are disassembled and materials disposed of in an environmentally safe way. The refrigerant is also removed and the insulation destroyed	

The incentives for participating in either program are the same but for one exception. Retail ARP customers receive the incentive of convenience when the unit is removed at the same time as the unit is delivered. Customers with active lives outside the home do not have to be present on a second occasion for the removal of a unit. It is not entirely clear whether all customers always grasp this when presented with the removal option at a retailer store although the survey data presented later in this report suggest that it is very important.

The Retail ARP signup process requires slightly more from the customer than that for Standard ARP. Customers or a salesperson must enter information at the store. The customer must carry home a sticker to be attached to the refrigerator. The differences are minimal and the system may be changed with the next iteration of the program.

The Standard ARP pickup process is now largely digital. The Retail ARP process still involves some paper-based elements. Units are not checked in until they reach the recycling warehouse. Instead of direct removal to the recycling center there is an intermediate stop at the retailer's distribution warehouse. In Retail ARP the costs associated with pickup and delivery to the retail distributor's warehouse are born by the retailer and represent a back haul trip that would be made anyway while the recycler bears the costs of moving the units to the recycling center. A unit removed through Retail ARP eliminates a substantial portion of the logistics cost of a removal associated with Standard ARP.

Once the units have reached the recycling center there are few differences.

4.4 Customer Benefits of Retailer Trial

Retail ARP offered the customers of the major retailer and SCE a number of financial, convenience, environmental, and altruistic benefits. Some of these benefits accrue to Standard ARP as well. The most apparent financial benefits were the \$50 incentive for participation and the free removal of the unit. In absence of Retail ARP, the customers may

have had to pay to have their refrigerators removed by a haulaway firm or pay to have them recycled through the retailer's fee-based recycling program. Customers who have a unit removed by any method may save up to \$180/year²⁰ on their utility bills. The convenience of the sign-up and the combined delivery/removal appointment are major benefits to the Retail ARP customer eliminating the need for the customer to be at home for a drop-off and for a pickup.

Standard and Retail ARP also provide an opportunity for the customer to enact environmental and energy efficiency behaviors that may lead to positive feelings about participation in energy programs and SCE's sponsorship and encourage additional efficiency actions and participation in other SCE programs.

4.5 Utility Benefits of Retailer Trial

Like Standard ARP, Retail ARP contributes to SCE's energy savings and demand reduction goals and to avoiding or delaying capital infrastructure costs. SCE also benefits to the extent that the program recruits customers who would not have participated in Standard ARP.

The one-to-one interaction between the salesperson and the customer is likely the most effective way of promoting the program and a significant opportunity for customer education. Although it places a bit of a burden on the salesperson, registering the customer for the program in the store at the time of check out reduces the likelihood that the customer will leave the store and decide not to participate, lose the information for how to register before registering, or even leave with good intentions but simply fail to follow through.

Beyond these benefits, the retailer trial provides the additional advantage of reducing transportation costs by eliminating the need for ARP to send a truck to the customer's home to remove the old unit and transfer it to the recycling center.

Because it is so focused on salient customers, Retail ARP requires minimal marketing materials that are mostly borrowed from Standard ARP and other SCE programs. Marketing costs are quite reasonable.

Retail ARP represents an opportunity to continue the dialog with the retailers in SCE's service territory, potentially providing a platform for further collaboration on energy efficiency renewable energy efforts with the retailers.

4.6 Benefits of the Trial to Retailers

In the absence of Retail ARP, the retailer's logistics team costs include the transportation and labor to deliver new refrigerators, pickup and transfer of the old ones, and the costs associated with the disposal or recycling of the old refrigerators. Because the recyclers pay the Retailers for the ARP units, participation in Retail ARP eliminates the cost of

²⁰ Pacific Gas & Electric. One Touch Fact Sheet.

<http://www.pge.com/includes/docs/pdfs/shared/saveenergymoney/rebates/recycling/refrigerator/refrigeratorrecycle.pdf> Last visited on February 28, 2012.

recycling or disposing of a Retail ARP refrigerator for the retailer and allows them to recover some of the transportation costs associated with the removal.

It also allows the retailer to offer customers a fee-free way to have their old appliances removed and the monetary incentive for having them recycled. Furthermore, participation in Retail ARP allows the retailer to offer the intangible conveniences of the program like the ease of in-store signup and the concurrent delivery and removal to their customers.

Retail ARP also gives the retailer an opportunity to affirm its green credentials by assuring the customer that the appliance is disassembled and the materials were disposed of in an environmentally safe way. Appropriate referencing of some or all of these benefits may allow a retailer an advantage over a competitor.

4.7 Societal Benefits of Retailer Trial

A majority of the societal benefits offered by Retail ARP and its sibling Standard ARP are environmental. By diverting the use of old, inefficient, and secondary refrigerators, carbon dioxide emissions, particulates, NO_x, and SO_x are reduced. In addition, these programs avoid the emissions of a round trip of a logistics crew to remove a refrigerator at a separate time.

Retail ARP prevents at least some old refrigerators from going to landfills reducing community waste disposal costs. The environmentally safe dismantling process of the refrigerators used by the recycling contractor removes some hazardous materials from some refrigerators from the environment (mercury and PCBs) and captures the CFCs from refrigerant and insulation, substances with very high Tons of Carbon Equivalent (TCE) for destruction and reuse. The glass, plastic, aluminum trim, steel and copper removed from the refrigerators are recycled and reused, capturing already embedded energy and carbon production that are otherwise associated with the production of new raw materials.

4.8 Retail ARP and Standard ARP Complement Each other

The Retail ARP complements rather than replaces Standard ARP. Standard ARP captures refrigerators from households that have recently replaced a refrigerator and households that have extra refrigerators or freezers that they wish to dispose of. The 2004-05 and the 2006-08 reports indicate that about 70 percent of the refrigerators captured by Standard ARP are replacements and 30 percent are removals of secondary units. More importantly these same studies show that 25 to 30 percent of all refrigerators are disposed of through retailers. Further we know that a very high percentage of new refrigerators that are sold are replacements. Thus, while the retailers capture many old working refrigerators and Standard ARP captures many old working refrigerators, there are still many old refrigerators that are being replaced that are not being captured. What Retail ARP does is provide a focused opportunity to increase the capture rate of refrigerators being replaced. At the same time it does not capture unwanted secondary units in households. Thus, it should be seen as a complement to Standard ARP rather than a replacement for it. Even if all of the major retailers became Retail ARP partners there would still be a need to remove secondary units. Many secondary units exist because householders elected to keep old units when they replaced them as primary units.

5 Market Effects Analysis – Lift, Free Ridership, and Net New Units Removed through Retail ARP

This chapter presents the results of the impact analysis. It answers the following questions.

- How many customers signed up for Retail ARP and then participated or cancelled?
- How many total refrigerators and freezers did the retailer remove for each trial store whether or not the unit was part of the trial and whether or not an incentive was received?
- How many of the units removed by the retailer for each store received an incentive paid for by SCE Retail ARP (trial units)? How many of the units removed and disposed of by the retailer were not SCE Retail ARP units and did not receive an incentive?
- What was the increase in the number of overall units removed by the retailer (compared to the expected number) as a result of the trial (retailer lift)?
- How many of the units that received ARP retailer incentives would have been removed by the retailer anyway (net retailer removals)?
- After taking into account factors such as changes in the economy, how many incented units were removed from the trial stores?
- How many of the units that the retailer would have taken anyway would have returned to the market thereby increasing the net removals?
- How many of the units that received a retailer incentive would have been removed by Standard ARP?
- Taking everything into account what is the overall net removal rate?

5.1 Retail ARP Signups, Participants, and Cancellations

SCE Retail ARP tracks only the requests for program removals and the incentives paid. Table 5 displays the disposition of customer requests for the removal of refrigerators or freezers through Retail ARP. There were a total of 4,611 requests for removals. Forty of these requests were found to be duplicate records so the actual number of unique requests was 4,571. Of these, 3,396 (74 percent) received an incentive from the retailer program. In addition, 62 incentives were paid to customers who initially signed up through the retailer program but had their units removed at a later time and received an incentive paid through Standard ARP. These were likely customers who signed up for the program but who were not ready to have their units removed when the new unit was delivered. There were nine customers who received a standard incentive for a unit that was picked up prior to the customer signing up for the program. It is unclear whether these are errors or whether the customer used Standard ARP and then for some reason requested a unit removed through Retail ARP.

Table 5 Dispositions of Requests for Retail ARP Removals

	Category Frequency	Percent of Total Signups
Retail customers who received an incentive		
Customer received a retail incentive	3396	74
Customer signed up for the retail program but received a standard incentive for a later standard program pickup	62	1
Customer received a standard program incentive for a different unit picked up before the retail signup	9	<0.5
Cancellations		
Non-qualifying unit/inoperable per driver	195	4
Customer signed up but kept unit	138	3
Appliance was gone when logistics team arrived	80	2
Removed by non-program vendor	191	4
Cancelled Unknown Reason	452	10
Cancelled retail participation and a subsequent request for a standard pickup	29	1
Other undetermined	19	<0.5
Total Signups	4571	
Duplicate record for a successful retail pickup	40	—
Total Records	4611	100

Roughly 24 percent of those who signed up for Retail ARP cancelled. This is slightly higher than for Standard ARP and other refrigerator recycling programs. For the largest number of those who cancelled, about 40 percent (452 units), there was no information about the reason for the cancellation. About a sixth of the cancellations (195) occurred because the logistics driver determined that the unit was non-qualifying or inoperable. Depending on whether one chooses all requests or units removed plus the 195 non-qualifying units as the base, four or five percent of units were not qualified and not removed by the program. Non-program vendors removed roughly another sixth (191). About an eighth of the customers (138) who cancelled kept the unit and for about eight percent of cancellations (80) the unit was gone when the logistics team arrived. These latter units may already have been given away.

5.2 What Happened at the Pickup Sites

The previous section discussed the overall disposition of signups. In this section customer interactions with the logistics team are examined for the Retail ARP program. This is possible because the SCE quality inspector observed a sample of attempted removals. The inspector went to a distribution center from which drivers were dispatched, identified locations that were to have a delivery and a program related removal, planned a route, and then drove to the location to meet the logistics driver. The inspector observed the transaction and noted the results.

From mid-December through September, 566 attempted removals for Retail ARP were observed. For each removal, the inspector recorded whether a unit:

- Qualified in terms of size
- Was verified as working
- Was picked up
- Had its electrical cord cut

The inspector noted when there were exceptions to these criteria.

Table 6 shows that 80 percent of the removals occurred as expected with an eligible working refrigerator or freezer being removed and the cord cut.

Table 6 Results of Inspection Reports

Disposition	Frequency	Percent
Removed eligible unit	449	80
Unit removal cancelled		
Unit not qualified	24	4
Customer cancelled	13	2
Customer kept or gave away the unit	3	1
Unit delivery and/or removal rescheduled	35	6
Administrative issues	23	4
Unit picked up by Standard Program	9	2
Status of the unit unclear	10	2
Total	566	101

In seven percent of the inspections (40), the removal was cancelled. Twenty-four of the 40 cancellations (four percent of removals) were due to the driver finding that the unit did not qualify. These included 18 cases (three percent) where the unit did not work, two units that were not plugged in so their operational status could not be determined, and four cases where the units were bug infested and the driver refused them because they might contaminate the truck. In thirteen cases (two percent) the customer cancelled the removal when the team was on site and no disposition was reported and in 3 cases (one percent) the customer was keeping it or giving it away.

Approximately six percent of the scheduled removals did not occur because the new unit could not be installed. These involved cases where the new unit was damaged (about three percent), a unit would not fit, a customer requested a reschedule, or the delivery had to be rescheduled because the customer was not home. In some of these cases removals were still possible but were not tracked.

About four percent of removals did not occur for what might be loosely described as administrative reasons. These included not having an order number, a misunderstanding with the salesperson, the household not being in the SCE territory, a unit not being purchased in a Retail ARP store, or the order not including a refrigerator.

About two percent of units were removed by ARCA or JACO through the standard program. In the remaining cases, the inspector missed the driver because the driver was delayed or the driver moved on before the inspector arrived.

Based on the results in Table 5 and Table 6, it can probably be assumed that four of the 10 percent of cancellations for unknown reasons in Table 5 were due to administrative issues and the rest were probably cancellations that occurred after the purchase but before the delivery pickup.

5.3 Retailer Removals

Customers could request that a retailer remove a refrigerator or freezer either through the retailer's removal program or through SCE's Retail ARP. The retailer's program would include non-functioning units but non-functioning units were not supposed to enter Retail ARP. The retailer reported a total of 8,661 requests for refrigerator and freezer removals from the nine treatment stores during the trial period. Like the utility programs, retailer removal programs have dropouts. Data were not available for retailer dropouts but the dropout rates for Standard ARP could be calculated for the zip codes served by the treatment stores and this was used as a proxy and applied to the retailer requests for removal. The estimated dropout rate for these stores averaged 21.5 percent. Applying this factor resulted in estimated retailer removals totaling 6,799 refrigerators and freezers (Table 7).

Table 7 Estimated Retailer Refrigerator and Freezer Removals for Treatment Stores from November 2010 through September 2011

Stores	Total Requested Retailer Removals	Estimated Total Retailer Removals H_a
Treatment #1	596	397
Treatment #2	491	371
Treatment #3	675	527
Treatment #4	775	612
Treatment #5	972	772
Treatment #6	1191	939
Treatment #7	1446	1161
Treatment #8	1299	1058
Treatment #9	1216	964
Treatment Total	8661	6799

5.4 Retailer and Utility Incented Removals Associated with the Retailer Program

Figure 12 is a conceptual view of the volume of retailer haulaways in the pre-trial and trial periods. H_b represents the trend in the total retailer haulaways at a store during the pre-trial period. H_a is the continuation of the trend during the trial period when the retailer is

removing both trial and non-trial units from treatment stores. “Before” and “after” are represented by the subscripts “b” and “a.”

According to the program theory, the retailer should remove many more units during the trial than pre-trial period because:

- Retail ARP is being promoted through a highly effective one-to-one interaction between the salesperson and the customer.
- The retailer is offering a convenient haulaway while communicating an incentive offer.
- The customer is receiving the message at a particularly salient decision point.

Thus, H_a is shown as being greater than H_b . By knowing the total number of units the retailer removes and knowing the number of trial units (utility incented units) removed by the retailer (H_t), the number of non-trial units disposed of by the retailer can be determined (H_r) through subtraction.

$H_r = H_a - H_t$ where:

H_r = a vector of the monthly number of non-trial units that were disposed of by the retailer

H_a = a vector of the monthly total retailer haulaways (trial and non-trial units from data supplied by the retailer) during the trial period

H_t = a vector of the monthly number of units that were incented and disposed of through the utility retailer program during the trial period (from the program tracking database)

Phrased differently, H_a is the total of all trial and non-trial units removed by the retailer during the trial period. The area under H_r represents non-trial units collected and disposed of by the retailer that were not incented by the utility. These are units that either did not qualify for the trial because of their size, because they were not working, or were units that were eligible for the trial but that customers had the retailer remove without participating in the trial.

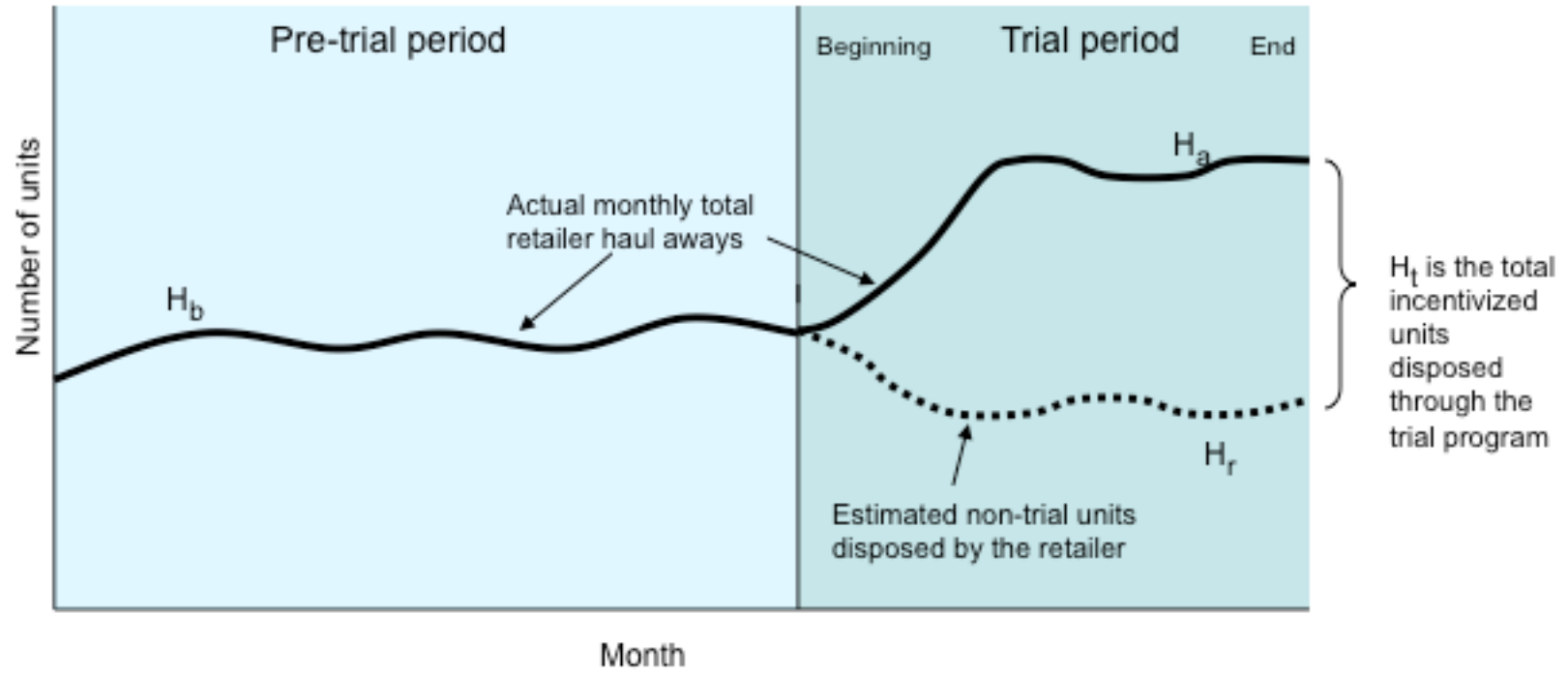


Figure 12 Conceptual View of the Total Units Removed by the Retailer (H_a), Program (H_t), and Non-program Units Disposed of through the Retailer (H_r)

Table 8 summarizes the removals for each treatment store. It combines the data from Table 7 Columns 2 and 3 and provides more detail about ARP removals by store. Column 4 displays the program Incented (ARP Retailer removals) by store for the period from November 2010 through September 2011. The 3,340 removals exclude 56 removals from the last week of October 2010 in order to facilitate a monthly analysis.²¹

Table 8 Total Retailer Removals, Program Incented Removals, and Non-program Retailer Removals November 2010 – September 2011

Stores	Total Requested Retailer Removals	Estimated Total Retailer Removals H_a	Program Incented Removals H_t	Percent Program Incented Removals	Non-program Retailer Removals H_r Adjusted
Treatment #1	596	397	124	31	273
Treatment #2	491	371	190	51	181
Treatment #3	675	527	189	36	338
Treatment #4	775	612	306	50	306
Treatment #5	972	772	332	43	440
Treatment #6	1191	939	476	51	463
Treatment #7	1446	1161	459	40	702
Treatment #8	1299	1058	622	59	436
Treatment #9	1216	964	642	67	322
Treatment Total	8661	6799	3340	49	3459

A closer examination of the fourth column demonstrates that the absolute number of Retail ARP incented removals vary by store. For example, the estimated total retailer removals for Treatment Store #8 was slightly more than three times the removals for Treatment Store #2. Nearly 67 percent (642/964) of removals for Treatment Store #9 were incented removals while just 31 percent (124/397) were program removals for Treatment Store #1.

When the program incented removals are subtracted from the estimated total retailer removals, the result is an estimate of the non-program units that were removed by the retailer. Thus H_a is 6,799, H_r is 3,459, and H_t is 3,340 or the number units removed as a result of the program.

5.5 The Expected Number of Units that the Retailer Would Have Removed in the Absence of the Trial

Retail ARP should have increased the number of units that the retailer removed, but it is also quite likely that some of the customers that received an incentive would have had the retailer remove their unit under the retailer's own program in the absence of the SCE program. The logical next question then is, how many more units did the retailer remove because of the utility program than

²¹ The 3,340 plus 56 equals the 3396 removals presented in Table 5.

they would have without the program? This question cannot be answered directly but it can be answered indirectly by asking two questions.

1. How many total units would the retailer have removed in the absence of the program?
2. How many of those units were incented by the utility?

In Figure 13 the bold blue curve (H_e) shows conceptually the total estimated units that the retailer would have hauled away in the absence of the trial. H_e can be estimated using regression techniques based on historical and contemporaneous data. H_r can then be subtracted from H_e to estimate the number of units that were incented by the utility that would have been removed by the retailer in the absence of the program (F_g), the answer to our initial question.

$$F_g = H_e - H_r \text{ where:}$$

F_g = a vector representing the estimated monthly number of units that were removed that received an incentive but which the customer would have had the retailer remove in the absence of the program

H_e = a vector representing the estimated total retailer monthly removals in the absence of the trial during the trial period

H_u = a vector representing the estimated unadjusted monthly units removed due to the trial

A panel model using pre-trial monthly data was used to estimate the expected removals for both treatment and comparison stores in the absence of the program (H_e). The model predicts the monthly haulaways that would have occurred in the absence of the program during the treatment period. The monthly historical haulaways (pre-program) for each store (supplied by the retailer) were regressed on monthly store sales of refrigerator and freezer units, the number of units that were removed during the months of the American Recovery and Reinvestment Act (ARRA) California Appliance Program, and a dummy variable for each of the treatment and comparison stores, save one, to estimate the differences among the stores.

The ARRA Program was a state run Federally funded program that allowed states to provide incentives for purchases of efficient appliances that ran from May through December of 2010 in California. The California version of the ARRA program required that the customers have a refrigerator removed in order to obtain the ARRA incentive for a new refrigerator. Because ARRA increased the number of removals during the pre-treatment and some of the treatment period, it was necessary to remove the ARRA effects. The stimulus variable is a count by store by month of the units removed as a result of the stimulus program. The retailer supplied the data.

Store dummy variables were included to account for variation in the target markets and cultures of the stores. As noted above, there are differences in total removals and removal rates. Some stores have strong appliance markets while others do not, some may or may not have strong electronic goods sales, and some may or may not have strong sales of other types of goods such as clothing or bedding. The variation among stores reflects differences in the size of the populations served and the demographics.

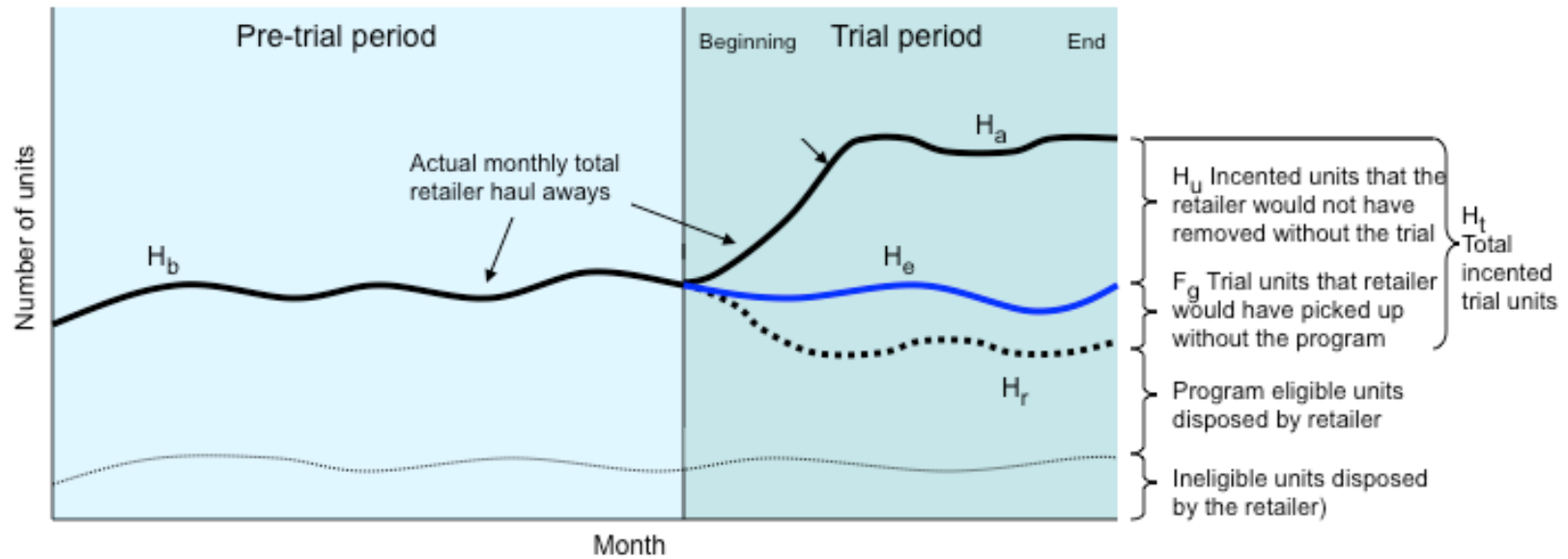


Figure 13 Conceptual View of Total Haulaways (H_a), Total Incented Haulaways (H_u), Non-Program Haulaways (H_r), Expected Retailer Haulaways in the Absence of the Program (H_e), and Incentivized Units that the Retailer Would Have Removed Anyway (F_g)

of the customers. It also reflects the focus of the store managers who analyze store strengths and weaknesses and focus on merchandise segments where they can most influence their overall sales numbers.

Table 9 shows the unstandardized coefficients, standard errors, t-values, and the level of significance for the variables in the model. As expected, the coefficients for the stores vary indicating differences among the stores. All but two of the store coefficients are significant. The correlation coefficient is 0.98 and the adjusted R^2 is 0.96.

Table 9 Panel Model for Haulaways in Treatment and Comparison Stores

Variables	Unstandardized Coefficient	Standard Error	t	Significance
Constant	21.773	2.901	7.505	0.000
Sales	0.237	0.009	25.144	0.000
Stimulus	0.641	0.033	19.376	0.000
Treatment 1	2.605	2.91	0.895	0.371
Treatment 2	-28.274	2.92	-9.682	0.000
Treatment 3	-37.199	2.781	-13.374	0.000
Treatment 4	-47.987	2.788	-17.214	0.000
Treatment 5	-34.072	2.78	-12.258	0.000
Treatment 7	-17.281	2.977	-5.805	0.000
Treatment 8	-24.275	2.878	-8.435	0.000
Treatment 9	-27.92	2.782	-10.037	0.000
Comparison 1	-17.685	2.971	-5.952	0.000
Comparison 2	-17.531	2.917	-6.009	0.000
Comparison 3	0.326	3.435	0.095	0.924
Comparison 4	-26.762	2.788	-9.601	0.000
Comparison 5	-34.102	2.791	-12.219	0.000
Comparison 6	-14.804	2.799	-5.29	0.000
Comparison 7	-17.29	2.788	-6.201	0.000

Moving onward, Table 10 column 2 is the estimated number of refrigerators and freezers (from Table 1 Column 2) that were removed by retailers (6,799) after adjustments for dropouts. For each store and each month, the coefficients from Column 2 of Table 9 of the model were used to predict the expected haulaways during the trial period. Column 3 displays the estimated refrigerators and freezers removed that were then adjusted in the same way as the actual removal data to account for dropouts. Thus in the absence of the program, 4,416 refrigerators or freezers are estimated to have been removed (Table 5 column 3). The difference between the estimated total retailer removals (Column 2) and the estimated units removed in the absence of the program (Column 3) is 2,384 units (Column 5). This is an average increase of 265 units per treatment store for the 11-month period. Once again it is evident that stores vary in terms of the absolute number of units that participate in the program. Treatment #9 had nearly 500 additional removals over the

period of the trial while Treatment #2 had 114. The “lift” for the stores was 2,384 units divided by 4,416 units or 54 percent.

By subtracting Column 5 from Column 4 it is estimated that 956 units of the 3,340 program incented units would have been removed anyway. Thus, a first preliminary raw estimate of the net removals is 2,384/3,340 or 0.71. However, this estimate requires further refinement.

Table 10 Actual and Expected Removals from Treatment Stores during the Trial Period

Stores	Estimated Total Retailer Removals Ha	Projected Retailer Removals from model (adjusted) He	Program Incented Removals Ht	Additional Units Removed as a Result of the Program Hu	Incented Units that Would Have Been Removed Anyway
Treatment #1	397	416	124	-19	143
Treatment #2	371	257	190	114	76
Treatment #3	527	312	189	215	-26
Treatment #4	612	368	306	244	62
Treatment #5	772	418	332	354	-22
Treatment #6	939	675	476	264	212
Treatment #7	1161	855	459	306	153
Treatment #8	1058	639	622	419	203
Treatment #9	964	477	642	488	154
Treatment Total	6799	4416	3340	2384	956

5.6 Adjusting for External Factors

Comparison stores were included in the study and in the panel model so that removals for stores that were not a part of the trial could be calculated. Presumably they were unaffected by the trial so any changes in removals from them would reflect changes due to other factors. The changes could then be used to adjust the data from the treatment store to reflect external effects.

This section addresses two key questions:

- Were there external factors that occurred around the time of the trial that may have changed the number of treatment store removals independently of the trial?
- If so, what effect did that have on the number of removals?

Figure 1 shows that there was a slight uptick in shipments of refrigerators to California in 2010 followed by a slight decline and that there was a slight expansion of units being sold for new homes. If the economy improved and more units were being hauled away during the trial period compared to the pre-trial period, then that could inflate estimates of the units removed. If only the Treatment Stores were considered then some of the increase could be due to something other than the program.

Figure 14 provides a conceptual view of what haulaways in the comparison stores might look like. In this graphic, the trend in sales before the trial is labeled C_b . During the trial period, the expected sales can be estimated using the coefficients for the comparison stores from the panel model described earlier. Because the actual removals are available from the retailer, the actual values can be compared to the estimated values for comparison stores to assess the effects of other factors.

More formally:

$$C_d = C_a - C_e$$

Where

C_d = a monthly vector of the difference in actual and expected haulaways in a comparison store

C_a = a monthly vector of the actual monthly haulaways from a comparison store

C_e = a monthly vector of the estimated haulaways

A ratio of the actual to the expected can be calculated:

$C_r = C_a/C_e$ where:

C_r = a monthly vector of the ratio of actual to expected haulaways from a comparison store

All things being equal between the pre-trial and trial periods, the actual and expected removals for the comparison stores would be about the same. Put slightly differently, if the expected haulaways are subtracted from the actual haulaways for the comparison stores, the difference should be close to zero. However, if there were factors or events outside of the program that influenced refrigerator removals between the treatment and pre-treatment period, the number of haulaways could increase or decrease.

If the values are substantially different, then the ratio of expected to actual can be computed and used as an adjustment factor. A ratio of one implies the actual and expected haulaways are the same or nearly the same, a ratio greater than one implies that the actual haulaways have increased relative to the expected haulaways and a ratio of less than one suggests a decrease.

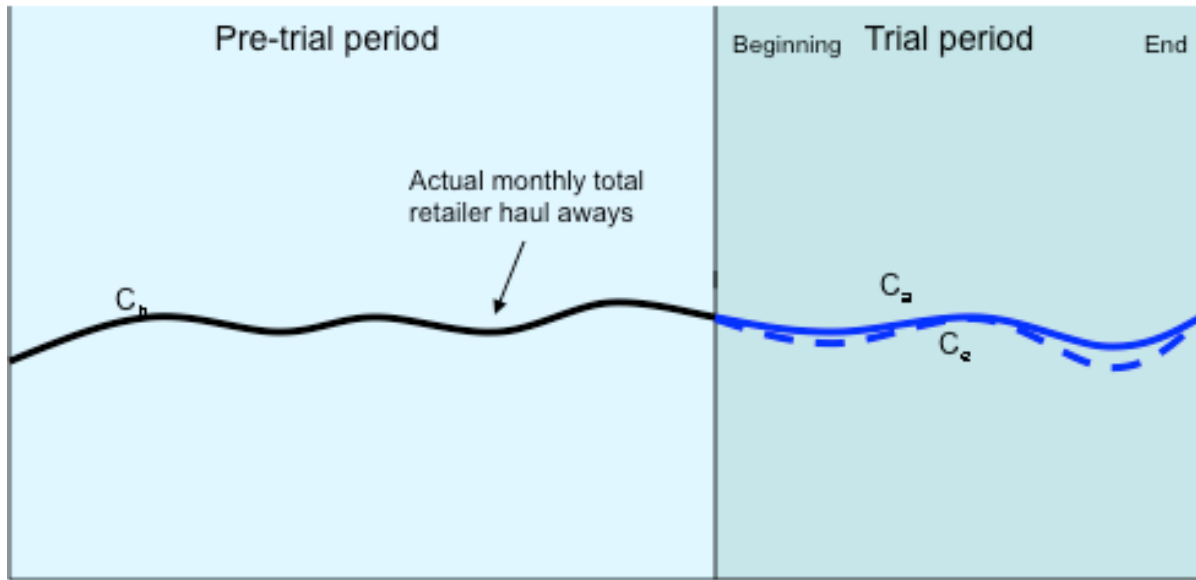


Figure 14 Conceptual View of External Factors Influencing Comparison Group Haulaways

The removals for the comparison group stores were projected in the same way as for the treatment group. The results for the comparison stores are shown in Table 11. For Comparison Store #7, the actual number of units removed relative to the expected declined by 2.6 percent ($1 - 0.974$). For Comparison Store #1, the ratio of actual to expected units did not change compared to the expected. Four stores had increases of 13 percent or more. Overall, the seven comparison stores had an increase of 436 units or an average of 67 units per store. The percent increase in haulaways due to external factors was 10 percent ($423/4223$).

Table 11 The Difference in Actual and Expected Removals after Adjusting Expected Removals to Account for External Factors

Stores	Actual Retailer Removals C_a	Projected Retailer Removals C_e	Change in the Removals	Ratio of Actual to Expected
Comparison #1	377	376	1	1.004
Comparison #2	410	382	28	1.073
Comparison #3	1565	1386	179	1.130
Comparison #4	574	506	68	1.134
Comparison #5	423	355	68	1.192
Comparison #6	705	611	94	1.155
Comparison #7	592	608	-16	0.974
Comparison Group Total	4646	4223	423	1.100

The removals from the treatment stores need to be adjusted to account for the overall 10 percent increase in removals observed at the comparison stores. Columns two and three in Table 12 show the Estimated Total Retailer Removals and the Projected Retailer Removals adjusted for dropouts from Table 1 and Table 3. Column 4 is the Adjusted

Projected Retail Removals that are obtained by multiplying the Projected Retail Removals (adjusted) (Column 3) by 1.1. Following the pattern in Table 3, we can subtract the adjusted projected retailer removals from the estimated total retailer removals to obtain the results shown in column six. Units removed as a result of the program represent the subtraction of Column 4 from Column 2. Column 6 is subtracted from Column 5 to obtain the incented units that would have been removed anyway (Column 7).

Table 12 Removals Adjusted for Overall Changes in the Market

Stores	Estimated Total Retailer Removals H_a	Projected Retail Removals (adjusted) H_e	Adjusted Projected Retailer Removals	Program Incented Removals H_t	Units removed as a result of the program H_u adjusted	Incented units that would have been removed anyway
Treatment #1	397	416	457	124	-60	184
Treatment #2	371	257	283	190	88	102
Treatment #3	527	312	343	189	184	5
Treatment #4	612	368	405	306	207	99
Treatment #5	772	418	460	332	312	20
Treatment #6	939	675	743	476	196	280
Treatment #7	1161	855	940	459	221	238
Treatment #8	1058	639	703	622	355	267
Treatment #9	964	477	524	642	440	202
Treatment Total	6799	4416	4857	3340	1942	1398

This results in new refined number for net removals that incorporates external factors. The new estimate of the net removals is 1942/3340 or 0.58.

5.7 Adjusting for Retailer Units that Would Have Returned to the Market

In the description of the new and used markets, it was observed that retailer refrigerator disposal programs typically dispose of units in ways that result in some units returning to the market. More specifically, the recyclers to whom retail stores sell refrigerators in turn sell good usable refrigerators to used dealers or others who clean and sometimes repair the units and sell them into the market. The rule of thumb that has been repeated to us by recyclers and by used dealers is that refrigerators that are white and less than 10 years old have resale value.

Table 13 shows the distribution of ages for refrigerators removed by Standard and Retail ARP. Fourteen percent of the refrigerators removed by Retail ARP were less than 10 years old. If these refrigerators had been removed by the retailer as part of its own program, then it is likely that they would have been returned to the market. So, the estimate of net removals including external factors is actually an underestimate of the units that can be attributed to the program because 14 percent of those units would be returned to the market if the program didn't exist.

Table 13 Estimated Ages of Refrigerators and Freezers Removed Through Standard and Retail ARP during the Trial Period

Estimated Age	Standard ARP	Retail ARP
< 10	15	14
10 to 12	24	29
13 to 15	25	27
> 15	37	30
Missing	0	
Total	101	100
N	72,692	3,396

Table 14 shows the additional calculations to account for refrigerators that remain in the system. Columns 2, 3 and 4 are the last three columns from Table 12 that showed the comparison group adjustments. Column 5 is the calculation of the number of refrigerators that would have been removed by the retailer in the absence of the program that would have returned to the market.

Table 14 Detailed Estimated Ages of Refrigerators and Freezers Removed Through Standard and Retail ARP during the Trial Period

Stores	Program Incented Removals Ht	Units removed as a result of the program Hu adjusted	Incited units that would have been removed anyway	Incited units removed that would have returned to the market (Column 4 X 14%)	Units removed as a result of the program Hu adjusted for market returns	Incited units that would have been removed anyway adjusted for market returns
Treatment #1	124	-60	184	26	-34	158
Treatment #2	190	88	102	14	102	88
Treatment #3	189	184	5	1	185	4
Treatment #4	306	207	99	14	221	85
Treatment #5	332	312	20	3	315	17
Treatment #6	476	196	280	39	235	241
Treatment #7	459	221	238	33	254	205
Treatment #8	622	355	267	37	392	230
Treatment #9	642	440	202	28	468	174
Treatment Total	3340	1942	1398	196	2139	1201

Column 6 is the new net program removals which is the sum of Columns 3 and 6. Column 7 is the estimate of units that would have been removed without the program. Thus, we can see that the program incited units that would not otherwise have been removed is

now 2,139 and that the newly refined net units removed that includes units that would have been sold by recyclers is 2,139/3,340 or 64 percent.

5.8 A Final Adjustment

Finally, it is possible that customers who used Retail ARP might have used Standard ARP in the absence of Retail ARP. In other words, the Standard ARP removals might have leaked to Retail ARP. In order to estimate the leakage, the number of Standard ARP removals for the treatment and comparison stores can be modeled with a panel model for the pre-treatment period in a fashion similar to the earlier one. Then, the coefficients from the model can be used to predict the number of removals during the treatment period for the treatment and comparison stores. The number of actual removals can be compared to the expected removals for the treatment and comparison groups to see how many units might have leaked from Standard ARP.

In order to facilitate the comparison, it was necessary to determine the zip codes served by each store. Using the retailer sales data, frequency counts for the number of refrigerator and freezer deliveries to each zip code were made for every treatment and comparison store. Because customers can place an order in a store and the refrigerator or freezer can be delivered to any zip code in the country, stores had many zip codes where a handful of appliances were delivered. After inspecting the data, any zip code with fewer than 100 deliveries over the treatment period was eliminated from the store zip code list as was any zip code not in the SCE Service Territory. A count of Standard ARP removals per month for each treatment and comparison store was developed and in turn this data was used to develop the panel model.

Table 15 shows the coefficients resulting from the modeling.

Table 15 Panel Model Coefficients Estimating Standard ARP Removals from Treatment and Control Stores

Variables	Unstandardized Coefficient	Standard Error	t	Significance
Constant	-20.555	25.43	-0.808	0.419
Sales	1.404	0.083	16.967	0.000
Stimulus	-1.738	0.29	-5.993	0.000
Treatment 1	-118.954	24.534	-4.849	0.000
Treatment 2	-52.385	24.366	-2.15	0.032
Treatment 3	57.299	26.045	2.2	0.028
Treatment 4	-96.383	25.505	-3.779	0.000
Treatment 5	105.76	25.574	4.135	0.000
Treatment 7	-190.2	30.115	-6.316	0.000
Treatment 8	266.906	26.096	10.228	0.000
Treatment 9	76.452	24.436	3.129	0.002
Comparison 1	113.203	24.385	4.642	0.000
Comparison 2	160.742	25.227	6.372	0.000
Comparison 3	236.531	24.467	9.668	0.000
Comparison 4	109.592	24.437	4.485	0.000

Variables	Unstandardized Coefficient	Standard Error	t	Significance
Comparison 5	-7.016	25.6	-0.274	0.784
Comparison 6	-12.195	24.382	-0.5	0.617
Comparison 7	-110.023	24.442	-4.501	0.000

Using the coefficients, the number of Standard ARP removals during the treatment period for the treatment and comparison stores were estimated. Table 16 shows the actual Standard ARP units removed, the estimated removals, and the difference for the treatment stores. Table 17 shows the same values for comparison stores.

Table 16 Difference in the Estimated and Actual Standard ARP Removals in Treatment Store Zip Codes during the Trial Period

Stores	Actual Standard ARP Removals	Estimated Standard ARP Removals	Difference
Treatment #1	716	650	66
Treatment #2	1487	1998	-511
Treatment #3	2628	2739	-111
Treatment #4	4336	5147	-811
Treatment #5	2447	2804	-357
Treatment #6	2586	1892	694
Treatment #7	6509	8417	-1908
Treatment #8	5082	5909	-827
Treatment #9	3934	4859	-925
Treatment Total	29,725	34,415	-4,690

Table 17 Difference in the Estimated and Actual Standard ARP Removals in Comparison Store Zip Code during the Trial Period

Stores	Actual ARP Standard Removals _a	Estimated Standard ARP Removals	Change in the Removals
Comparison #1	1873	2211	-338
Comparison #2	2511	2878	-367
Comparison #3	3887	4129	-242
Comparison #4	3245	3844	-599
Comparison #5	4710	5221	-511
Comparison #6	1055	1431	-376
Comparison #7	1328	1505	-177
Comparison Group Total	18,609	21,219	-2,610

Table 18 summarizes the results. All things being equal it appears that the number of Standard ARP removals declined by 13.6 percent in the treatment store market sheds compared to 12.3 percent for comparison store market sheds. The difference is 1.3 percent. The actual number of units leaked due to Retail ARP is estimated to be $(-1.3/-13.6) * (-4690)$ or 448 units.

Table 18 The Leakage from Standard ARP Appears to Be About 1.3 Percent.

	Actual Standard ARP Removals	Expected ARP Removals	Change in Removals	Percent Change in Removals
Comparison Stores	18,609	21,219	-2,610	-12.3
Treatment Stores	29,725	34,415	-4,690	-13.6
				-1.3

In the previous section, the net estimated removals were 2,139. Table 5 shows that 62 of the initial Retail ARP signups resulted in a Standard ARP removal. Thus, the net flow of units is 448 – 62 or 386 units. Assuming that the 386 units would have been removed by Standard ARP, the actual net removals is calculated to be 2,139 – 386 or 1,753 removals. Thus, the net removal rate is 1,753/3340 or 0.52.

5.9 Costs

Table 19 shows the unadjusted removal costs per unit for Standard and Retail ARP. These costs might not transfer well to other situations because the Retail ARP volume is low and because much of the Retail ARP marketing material was borrowed to some degree from Standard ARP. If Retail ARP was a standalone program the costs could be quite different.

The incentives are the same for both programs. The Retail ARP pickup is less costly than that for Standard ARP. The Retail ARP pickup amount includes the cost of the unit paid to the Retailer. Training costs for Retail ARP are somewhat higher than for Standard ARP because of the need to train and retrain retail employees and provide them with a constant supply of materials. Marketing collateral costs are somewhat higher for Standard ARP because of the use of mass mailings. Overall the Retail ARP program per unit cost is about two-thirds the cost of Standard ARP.

Table 19 Program Costs By Category Per Unit

Category	Standard ARP	Retail ARP
Marketing collateral design costs	8.44	1.90
Marketing collateral production costs	33.76	9.02
Training costs/material delivery	1.21	6.59
Pickup	70.90	49.34
Incentive paid	50.00	50.00
Total per unit cost	164.32	116.85

5.10 Summary and Conclusions

In summary, the analysis shows that:

- Retailer programs have dropouts just like utility programs.
- The program removal rates for the treatment stores (program incented removals/estimated total retailer removals) varied between 31 and 67 percent.
- The program incentivized just under half of the estimated total units removed from the stores (3,396/6,799).
- After accounting for dropouts, it is estimated that retailers hauled away 6,799 units during the trial period.
- It is estimated that 4,587 of those units would have been removed by the retailer in any event.
- The utility paid for the removal of 3,396 units.
- Approximately 1,201 of those units would have been removed by the retailer in the absence of the program. An additional 448 units leaked from Standard ARP but 62 of the people who originally signed up for the program had their units removed by Standard ARP so that the net leakage is 386 units.
- If one does not include the leaked units in the net removal rate, then the net removal rate is 0.64. After taking into account what the retailer removed and what would have been captured by Standard ARP, the net removal rate is 0.52.
- There were substantial differences in the absolute number of removals across the stores. That is a function of market area demographics, store culture, and fluctuations in the micro area economies.

6 The Characteristics of Units Removed, the Estimated Gross Unit Energy Consumption, and the Characteristics of Households Using Retail ARP

The purpose of this chapter is twofold: to provide estimates of Unit Energy Consumption and to provide a demographic description of the customers who participated in Retail ARP. Because the method for estimating UEC requires information about the units that were removed, the discussion begins with a description of the use of the units before they were removed and their physical characteristics. To provide context, for the physical and the demographic characteristics of the units removed and the demographics of the participants, comparisons between the Retail and Standard ARP programs are provided. The analysis addresses the following questions.

1. What are the physical characteristics, style, size, and age of units that were removed?
2. How do they differ from Standard ARP units?
3. What is the unit energy consumption (UEC) for Retail and Standard ARP?
4. What are the comparative characteristics of the participant households that had units removed?

The source of the data is the utility participant data for the period between October 2010 and September 2011. The UEC estimates are based on a model developed as part of the 2006-08 ARP Impact Assessment. The comparison of household demographics is based on Retail ARP Survey Data and the survey completed for the 2006-08 Process Evaluation.

6.1 Characteristics of the Units Removed

6.1.1 *Use of Units before Removal by the Program*

Eighty-eight percent of the respondents reported that the unit they replaced was a main unit. The remaining twelve percent reported that they were replacing a secondary unit or did not indicate whether the unit was a primary or secondary unit. Ninety-seven percent of those with secondary units reported that the secondary unit was running all of the time during the last year.

6.1.2 *Types of Units Removed by Standard and Retail ARP*

As shown in Table 20, 99 percent of Retail ARP units were refrigerators compared to 92 percent of Standard ARP units. Thus, in relative terms, Retail ARP captures mostly refrigerators. This probably reflects the slower turnover of freezers, perhaps a lesser likelihood of households replacing them, and perhaps some demographic differences with respect to customers. It also highlights the importance of Standard ARP for capturing freezers.

Among Retail ARP units, side-by-side units predominated (49 percent) followed by top freezer refrigerators (45 percent). Bottom freezer and single door refrigerators made up four and one percent respectively. When compared to Standard ARP, Retail ARP units were more likely to be side-by-side units (49 percent) than Standard ARP removals (32 Percent). Standard ARP units were more likely to be Top Freezer Refrigerators than Retail ARP units (56 percent compared to 45 percent). Thus, Retail ARP captures a different style of unit compared to Standard ARP.

Table 20 Percentage of Appliance Types of Standard ARP and Retail ARP Units

Appliance Type	Standard ARP	Retail ARP
Top Freezer Refrigerator	56	45
Side-by-Side Refrigerator	32	49
Bottom Freezer Refrigerator	2	4
Single Door Refrigerator	1	1
Upright Freezer	6	1
Chest Freezer	2	0
Total	99	100
N	69,249	3,396

6.1.3 Comparison of Appliance Size by Standard and Retail ARP

Retail ARP units were larger than Standard ARP units (Table 21). The modal frequency (42 percent) of Retail ARP units was 20 to 24 cubic feet. Only 34 percent of Standard removals were that size. Twenty-six percent of Retail ARP removals were 25 cubic feet and larger compared to 16 percent of Retail ARP removals. Thirty-two percent of Retail ARP units compared to 50 percent of Standard ARP units were less than 20 cubic feet.

6.1.4 The Ages of Appliances Removed by Standard ARP and Retail ARP

Overall, Retail ARP units were younger than Standard Units. More than half of the Retail ARP units (56 percent) were between 10 and 15 years old compared to 49 percent of Standard ARP units. Fifteen percent of units from Standard ARP removals were less than 10 years of age compared to 14 percent of Retail ARP units. Seven percent more Standard than Retail ARP units were more than 15 years old.

Table 21 Percentage by Size Category for Standard ARP and Retail ARP Units

Size in Cubic Feet	Standard ARP	Retail ARP
10 to 14	9	3
15 to 19	41	29
20 to 24	34	42
25 to 27	16	26
28 to 32	1	<0.5
Missing		<0.5
Total	101	100
N	69,232	3,396

6.1.5 Working Condition of Units

One of the concerns associated with appliance removal programs is that the units are in poor working condition and would have been removed any way. Participants in Retail ARP who were surveyed were asked about the condition of their units. Forty-two percent of the participants said that their units were working and in good physical condition. Another 26 percent said that their units worked but needed some minor repairs. Based on their physical condition as assessed by participants, at least 42 percent and perhaps as many as 67 percent of the units were potentially candidates to be returned to the market. Around seven percent of the respondents reported that their units were not working. These units could have been cooling but were perceived by respondents as not working for other reasons.

Table 22 Percent Estimated Age of Standard and Retail ARP Units

Estimated Age	Standard ARP	Retail ARP
< 10	15	14
10 to 12	24	29
13 to 15	25	27
> 15	37	30
Total	101	100
N	69,249	3,396

In the survey, Retail ARP participants were also asked why they replaced the appliance. They could provide multiple reasons but if they did so they were asked to designate a main reason. Respondents basically had a choice between a better working unit, a more aesthetic unit, or a more efficient unit. Table 24 is sorted from the most common to least common reason for participating. Almost 72 percent of respondents reported wanting a better working unit or wanting a

Table 23 Condition of the Appliance that Was Removed

	Frequency	Percent
It worked and was in good physical condition	141	41.5
It worked but needed minor repairs like a door seal or ha...	87	25.6
It worked but had some problems like it wouldn't defrost	86	25.3
Or, it didn't work	23	6.8
Other (Specify)	1	0.3
(Do Not Read) Don't Know	2	.6
Total	340	100.1

newer unit as their first choice. Overall 84.2 percent of respondents reported wanting a better working or newer unit as one of their reasons for replacing it. Eleven percent and 10 percent respectively said the first reason for replacing the appliance was wanting a more efficient unit or wanting a different size or type of unit. Overall, only 10 percent said that they replaced the unit for a better-looking one and two percent because they were remodeling.

Table 24 Why Did You Replace the Appliance?

	First Reason		Second Reason		Third and Forth Reasons		Total	
	Frequency	Percent Respondents	Frequency	Percent Respondents	Frequency	Percent Respondents	Frequency	Percent Respondents
Wanted a better working unit	134	39.4	12	3.5	3	0.9	149	43.8
Wanted a newer unit	109	32.1	22	6.5	6	1.8	137	40.4
Wanted a more efficient unit	38	11.2	16	4.7	5	1.5	59	17.4
Wanted a different size/type	34	10	19	5.6	3	0.9	56	16.5
Wanted a better looking unit	15	4.4	15	4.4	1	0.3	31	9.1
Remodeling home	4	1.2	1	0.3			5	1.5
Other (specify)	4	1.2	1	0.3			5	1.5
(Do Not Read) Don't know	2	0.6					2	0.6
Total	340	100.1	86	25.3	18	5.3	149	43.8

To summarize these findings, the Retail ARP units tend to be side-by-side units that are younger and larger than Standard ARP units. From an energy use perspective, the fact that they are younger units would suggest that they are more efficient and would use less energy than older units while the fact that they are larger and tend to be side-by-side units suggests that they might consume more energy than the Standard ARP units.

6.2 Gross Energy Savings Per Unit for Retail and Standard ARP

Measured consumption data was not collected. However, estimates of the consumption of the Retail ARP and Standard ARP units can be estimated by inserting the average characteristics of the variables in the in-situ UEC (Unit Energy Consumption) model reported in the 2010 evaluation Retail ARP.²² In addition, the estimates can be compared to the UEC calculated for SCE in the Cadmus 2010 study.

The Cadmus model predicts the energy consumption of appliances that were removed through Standard ARP based on a series of characteristics associated with them. The regression coefficients for the Cadmus' in-situ model are displayed in Table 25. The model was developed by regressing measured savings data for refrigerators or freezers in households on household and appliance characteristics from two different studies. The independent variables are the average proportion of units with a single door, the average proportion of units that are side-by-side, average age of the unit, average proportion of primary (versus secondary) units removed, proportion of units in a warmer climate zone, and whether the unit was in a 2009 sample as opposed to an earlier sample. The warmer climate zone was used to differentiate climate effects in different utility service territories.

Table 25 Regression Model Results – In-situ Estimated UEC ($R^2 = 0.32$)

Independent Variables	Coefficient	t-Value
Intercept	506.05	3.2
Dummy: Single Door	-629.71	-3.2
Dummy: Side-by-Side	435.71	6
Age (Years)	25.88	5.4
Dummy: 2009 Metering Sample	-340.35	-4.8
Dummy: Primary Appliance	256.47	3.4
Household Size	71.15	2.8
Dummy: Warmer Climate Zone	225.77	3.2

In the present study, the model was used to estimate three different UECs, one for Standard ARP units removed during the retail ARP period, one for Retail ARP units removed, and one for Standard ARP during the 2006 – 2008 period. Table 26 displays the estimates of the values for the independent variables to estimate the UECs. SCE's program database for Retail ARP period (November 2010 – September 2011) was used to determine the average characteristics for units that were removed. Retail ARP participant survey data were used to determine the size of the household and the status of the unit

²² "Residential Retrofit High Impact Measure Evaluation Report" CADMUS: Portland Oregon, 2010.

(primary or secondary). The data from the 2006-2008 process survey were used to determine the size of the household and status of the unit for the standard program during the trial period. More recent data were not available.

From the previous section, the proportion of side-by-side units is estimated to be 0.3184 and 0.4944 for Standard and Retail ARP units respectively during the trial period. These proportions reflect the fact that a higher percentage of the side-by-side units were removed through Retail ARP than through Standard ARP. It is also noted that the average proportions are quite similar for Standard ARP during the trial period and the 2006-2008 program years. This would suggest some consistency in the proportion of side-by-side removals for Standard ARP over time. In Table 26, the reader can see how the proportions and values of the independent variables varied across time (compare values between columns) and for the different populations and samples.

Table 26 Average Participant Characteristics for Model Independent Variables

Independent Variables	Retail ARP Period 2010 – 2011		2006-2008
	Standard ARP	Retail ARP	Standard ARP
Dummy: Single Door	0.0146	0.0057	0.0275
Dummy: Side-by-Side	0.3195	0.4922	0.3102
Age (Years)	15.4	14.553	14.7589
Dummy: 2009 Metering Sample**	1	1	1
Dummy: Primary Appliance *	0.6598	0.896	0.6947
Household Size *	3.1885	3.05	3.0023
Dummy: Warmer Climate Zone**	0.5491	0.5491	0.5491

* Determined using participant survey. Standard ARP data used the participant survey for the 2006-08 evaluation

** Data was taken directly from The Cadmus Group Report

UECs (Table 27) were estimated by obtaining the product of the coefficients and the appropriate estimates of the independent variable and then summing across the variables. The UEC estimates are shown in the last row. The appliances removed through Retail ARP have an estimated UEC of 1334 kWh annually, those removed by Standard ARP during the Trial period 1214 kWh, and those removed from SCE service territory during the 2006 – 2008 program years 1181 kWh. The two estimates for Standard ARP are very close suggesting very little change between the two time periods. However, the estimate for Retail ARP is 120 kWh greater than for Standard ARP during the same time period. The higher percentage of side-by-side units and their greater size noted in the previous section likely explain the difference in savings.

Table 27 The Annual UEC Estimates for Standard and Retail ARP during the Trial Period and for Standard ARP in the 2006-2008 Program Cycle

Independent Variables	Model Coefficients	Retail ARP Period 2010 - 2011				2006-2008 Impact Study Standard	
		Standard		Retail			
Dummy: Single Door	506.05	506.05		506.05		506.05	
Dummy: Side-by-Side	-629.71	0.0146	-9.19	0.0057	-3.59	0.0275	-17.32
Age (Years)	435.71	0.3195	139.21	0.4922	214.46	0.3102	135.16
Dummy: 2009 Metering Sample**	25.88	15.4	398.55	14.553	376.63	14.7589	381.96
Dummy: Primary Appliance *	-340.35	1	-340.35	1	-340.35	1	-340.35
Household Size *	256.47	0.6598	169.22	0.896	229.80	0.6947	178.17
Dummy: Warmer Climate Zone**	71.15	3.1885	226.86	3.05	217.01	3.0023	213.61
	225.77	0.5491	123.97	0.5491	123.97	0.5491	123.97
Annual UEC Estimate		1214.32		1323.97		1181.25	

6.3 Household Demographics of Retail and Standard ARP Participants

While thinking about the differences in characteristics of the units and energy savings, it is also useful to examine household demographics. In this section, the demographic characteristics of Retail ARP households are described and compared to the data for the most recent Standard ARP Participant Survey that was completed in 2009. The demographic characteristics include:

1. Number of refrigerators and freezers after participating
2. Home ownership
3. Size of the home
4. Years lived in the home
5. Number of residents in the household
6. Number of children in the household
7. Whether the home has been recently remodeled
8. Total household income

During the Retail ARP Survey, respondents were asked how many refrigerators, mini-refrigerators, and freezers they had in their homes after participating in Retail ARP. Forty-seven percent reported that they had one refrigerator. When combined with the 25 percent that had a refrigerator and freezer, the total with just one refrigerator was 72 percent. Twenty-eight percent reported two refrigerators. Half of those had just two

refrigerators, while the remaining reported additional forms of refrigeration: a mini refrigerator, one or more freezers, and some number of freezers and mini refrigerators. Six percent reported that they had a refrigerator and a mini-refrigerator.

Table 28 Number of Refrigerators and Freezers in Household after Participating in Retail ARP

	Frequency	Percent
Refrigerator only	159	47
Refrigerator and one or two freezers (1)	86	25
Two or more refrigerators	47	14
Two or more refrigerators one or more minis (no freezers)	14	4
Two or more refrigerators and one or two freezers	16	5
Two or more refrigerators, one or more freezers and one or more minis	16	5
Total	340	100

Eighty percent of households that participated in Retail ARP owned their own premises. This is four percent more than for Standard ARP participants based on the 2009 Survey. However, a smaller percentage of persons refused to answer the question than for Standard ARP so that the difference may mostly be accounted for by the refusals.

Those who participated in the retailer Retail ARP had homes with a median square footage of 2,200 square feet. This is larger than the median square footage of those households participating in Standard ARP (1,977 square feet). The most common size home for both Retail and Standard ARP participants is in the range of 1,000 to 2,000 square feet. However, the percentage of Retail ARP participants in homes between 2,000 and 4,000 square feet exceeded the percentage of Standard ARP participant homes of that same size by about six

Table 29 ARP Participants Are Primarily Homeowners

Own/Rent	Retailer Percent	Standard ARP Percent
Own	80	76
Rent	15	16
Refused	5	8
Total	99	100
N	340	454

Table 30 Square Footage of Residences of the Retailer ARP and Standard ARP Participants

Home (square feet)	Retailer Percent	Standard ARP Percent
Less than 500	1	1
500 to just under 1,000	7	7
1,000 to just under 2,000	39	43
2,000 to just under 4,000	30	24
4,000 and up	2	3
Refused/Did not know	21	22
Total	100	100
N	340	454

percent (Table 30). Retail ARP participants tended to have slightly larger homes than Standard ARP participants.

There were slightly more Retail ARP households with single residents (10 percent) than Standard ARP households (five percent), fewer households with two residents (31 percent compared to 34 percent), and more households with three to five residents, 48 percent compared to 46 (Table 31). The differences between the distributions are small.

Retail ARP households had many fewer participants with residents under 18 years of age but a much larger percentage of non-response than Standard ARP. Thus, it is difficult to assess whether there are differences or not (Table 32).

Retail ARP participants had been living in their homes longer than Standard ARP participants. Fifty-six percent of Retail ARP participants had been living in their homes eleven years or more compared to 45 percent of Standard ARP participants. Sixteen percent of Retail ARP participants had been in their homes five years or less compared to 27 percent of Standard ARP participants. Retail ARP appears to serve more established householders than Standard ARP (Table 33).

Retail ARP participants were less likely to have remodeled in the last five years (28 percent) compared to Standard ARP participants (34 percent) (Table 34).

Table 31 Households Tend to Have More than Three Residents

Residents in Home	Retailer Percent	Standard ARP Percent
1	13	8
2	31	34
3 to 5	48	46
6 or more	5	8
Refused	4	4
Total	100	100
N	340	454

Table 32 Households Tend Not to Have Residents Under 18 Years of Age

Residents under 18	Retailer Percent	Standard ARP Percent
0	47	59
1 to 3	34	36
4 or more	2	0
Refused	-	1
DKNA	16	4
Total	99	100
N	340	454

Table 33 Years in Residence

Years in Home	Retailer Percent	Standard ARP Percent
0 to 5	16	27
6 to 10	22	20
11 to 20	28	21
21 or more	28	25
No Answer	5	7
Total	99	100
N	140	454

Except for households making less than \$25,000 (Table 35), the percentage of Retail ARP participants is fairly flat across the income categories. Compared to Standard ARP, there tend to be fewer retailer program participants with incomes less than \$50,000 and a higher percentage with incomes greater than \$150,000.

Table 34 Percent of Retail ARP Participants Remodeling Their Homes in the Last Five Years

Remodeled Home	Retail ARP Percent	Standard ARP Percent
No	65	57
Yes	28	34
Refused	6	9
Total	99	100
N	176	454

Table 35 Income Distributions of Participants that Cancelled

Annual Household Income	Retailer ARP Percent	Retailer ARP Valid Percent	Standard ARP Percent	Standard ARP Valid Percent
Less than 25,000	6	8	9	13
25,000 to just under 50,000	13	18	16	24
50,000 to just under 75,000	14	20	14	21
75,000 to just under 100,000	14	20	12	17
100,000 to just under 150,000	13	18	12	17
More than 150,000	11	16	6	8
Refused	29	-	32	-
Total	100	100	100	100
N	176		454	

In summary, Retail ARP participants tend to be owners, have larger homes, have more household members, have lived in their homes fewer years, and have higher incomes.

7 Mystery Shopping Results

The key to the program theory for Retail ARP is the one-to-one sales interaction in the store. It is well established that one-to-one interactions are among the most effective methods of marketing, in this case, encouraging participation in Retail ARP. For this particular retailer, sales personnel work on commission. They did not receive an incentive for the extra time that it took to sell and enroll a customer in Retail ARP. Thus, it was important to understand what the salespeople were saying to the customers and whether sales personnel continued to promote the program throughout its lifetime.

7.1 Mystery Shopping

A mystery shopper, an individual or a couple, visited nine participating Retail ARP stores and three comparison stores that were participating in the Standard ARP on three occasions completing a total of 36 mystery shopping events. The first round of shopping events occurred between March 19 and March 27, 2011; the second round between June 4 and June 11, 2011; and the final round between July 4 and September 5, 2011. The visits lasted an average of 26 minutes and occurred between 9:00 AM and 6:00 PM. There were three teams of mystery shoppers. One team completed 25 of the 36 mystery shopping events posing as a couple. Two individual shoppers completed the other eleven mystery shopping events.

The shoppers followed a protocol that provided guidance as to how to conduct an event. The shoppers were trained on the protocol. The protocol was designed to allow the shoppers great flexibility so that they could respond to the salesperson while systematically collecting information. The shoppers worked their way through a purchase scenario breaking off contact just before they had to purchase the refrigerator typically citing the need to measure the size of the space in their kitchen. After leaving the store, the shopper(s) filled out a form, much like an interview guide, to collect the following data.

1. How many salespeople were available on arrival?
2. How long did it take for salespeople to approach the shoppers?
3. Were the stores displaying ARP marketing materials?
4. What specific marketing materials did the shoppers see displayed?
5. In the opinion of the shoppers, how effective were salespeople at promoting ARP?
6. What characteristics did effective salespeople display?
7. Did salespeople promote the rebate?
8. During the sales event, who typically brought up the discussion of removing the old refrigerator?
9. During the sales event, what ARP features did salespeople promote?
10. Did salespeople promote the environmental benefits of ARP?

11. Were there salespeople that provided incorrect information about ARP to the shoppers?
12. Did salespeople mention the SCE sponsorship of ARP?

The questions about the availability of salespeople and how long it took to engage were designed to assess whether salespeople were busy and might be inclined to rush a sale and perhaps undersell the Retail ARP. The questions about the marketing materials were intended to assess what customers would see, whether salespeople might use the signage to open the discussion, or, in the absence of any discussion of the trial program, whether observing the signage might cause the customer to discuss the program. The shoppers were asked to assess the effectiveness of the salesperson in selling the refrigerator and then selling the recycling program. By comparing the two assessments it was possible to determine whether sales personnel might be underselling the trial relative to the refrigerator. Although the survey collected data about the benefits customers said salespeople promoted, the mystery shopping allowed the collection of observational data about what salespeople actually said. Finally, the shoppers assessed the correctness of the information that was provided.

7.2 Store Activity Levels During the Shopping Events

The willingness of sales staff to promote Retail ARP could be influenced by activity levels and staffing within the appliance department.

7.2.1 Floor Activity During Shopping Events

Upon entering the appliance area of the store, the shoppers browsed for a few minutes to get a sense of the traffic and to see how soon a salesperson would engage. The shoppers were asked to rate the level of store activity in terms of the presence of other customers at the time of the shopping event. Twenty-eight of the stores were quiet or slightly busy, meaning one to four other customers were shopping in the appliance department. Five Retail ARP stores were moderately busy with five to eight other customers shopping the department, and three of them were very busy having customers waiting for assistance (Table 36). With the exception of the three stores that were very busy, floor traffic was not likely to have influenced the opportunity to sell the recycling program to the mystery shoppers.

Table 36 In Terms of the Number of Customers, Would You Consider the Appliance Sales Floor to Be Quiet, Somewhat Busy, Moderately Busy, or Very Busy?

	Retail ARP	Standard ARP
Quiet (no other customers)	11	5
Slightly busy (one to four other customers)	8	4
Moderately busy (five to eight other customers)	5	
Very busy (customers waiting for assistance)	3	
Total	27	9

7.3 Promotional Materials in Stores during Shopping Events

Shoppers were trained to observe the promotional materials that were displayed in the stores. Those materials are described in Section 4.1.1 of this report.

7.3.1 The Display of Promotional Materials

Table 37 shows what the shoppers reported with respect to the presence of informational materials. One Retail and one Standard ARP store were reported to be missing signs, clings, and other graphics during one shopping event. Except for the one retail store, the information appeared on the exterior of refrigerators and freezers on 45 and 95 percent of the observed units in the remaining stores with a median of 74 percent. There were only three locations where less than 65 percent of the units were estimated to display information.

In the Standard ARP stores, the shoppers found external information (Energy Star® clings) on the units during six of nine shopping events. In five of these six cases, 70 percent or more of the units had information on the exterior. The shopper(s) estimated that about 15 percent of the units in the sixth store had the information on the outside. During three events shoppers reported they observed tents providing information about recycling on top of the units. At one of these three events, a shopper reported a single tent; at a second the shopper estimated that 10 percent of units had tents; and at a third, 15 percent of the units were estimated to have tents.

Table 37 Where Were Marketing Materials Displayed in the Stores?

	Retail ARP	Standard ARP
On the outside of some units	21	6
On the outside of all units	5	0
At check out desk	6	n/a
Brochures on a counter or desk	7	1
Tents on top of the units	n/a	3
Tents inside of the units	n/a	1
Other informational sources	4	1

*multiresponse

In addition, during two Retail ARP events, shoppers observed program signage inside the refrigerators. At two other events, signage on the outside of the refrigerators was covered or partially covered by store pricing and product information. At one event a shopper observed information displayed at the checkout desk. At one event the shopper(s) only saw signage promoting Energy Star® units. One of the control store shoppers reported a few refrigerators with magnetic signs displaying Standard ARP program information.

Overall, in-store retail marketing collateral for Retail ARP appeared to be visible in abundance except for one shopping event. It is likely that Retail ARP participants who were aware of their surroundings encountered Retail ARP marketing materials. As we shall see later, 66 percent of respondents recalled seeing the clings, which suggests that a majority of customers were aware, while a third of customers may not have noticed or processed the information in the sales environment. It is also possible that the remaining 34 percent of customers saw the signage but forgot that they saw it.

7.4 Enthusiasm and Effectiveness of Salespeople

The mystery shoppers were asked to rate the effectiveness of the salespeople they encountered with regard to selling the appliance and in promoting Retail (trial) or Standard (control) ARP. The idea behind asking about the effectiveness for each activity is that salespeople might be effective at selling appliances but be less interested or less effective at selling Retail ARP. The comparison affords a way of judging whether any deficiencies in selling the recycling program were a function of sales skills or a lack of enthusiasm or less effort for the program. The reader should keep in mind that the salespeople were on commission and that completing the Retail ARP data requirements might keep a salesperson from another sales opportunity.

7.4.1 Effectiveness in Selling Refrigerators and in Promoting Retail ARP or Standard ARP

A scale to rate sales effectiveness was not available. Thus, it was necessary to create a method to accomplish this task. The rating was completed through a four-step process. First, the mystery shopper was asked to describe the salesperson's behavior when selling the appliance. The second step was to rate the salesperson's behavior on a five-point scale by asking, "On a scale of very ineffective to very effective, please rate the

effectiveness of the salesperson on selling the new appliance.” The third step was to describe the salesperson’s behavior when selling Retail ARP/Standard ARP. The fourth step was to have the shopper rate the effectiveness of the salesperson in selling the recycling program on the five-point scale.

7.4.2 Qualitative Assessment of In-store Interactions

As noted above, the mystery shoppers were asked to capture and characterize the behaviors of the salesperson. Table 38 provides descriptions of salesperson behaviors related to selling appliances. Twenty-six of Retail ARP store shopper responses and 5 of Standard ARP store shopper responses described the salesperson as friendly and helpful.

In seven Retail ARP store events and four Standard ARP store events, the salesperson was product knowledgeable, meaning the person could easily tell the customer about the features of the different refrigerator models and brands that the retailer had to offer. Three of Retail ARP store shoppers said that the product knowledge of the salesperson was unclear. Further into the survey the shoppers described the selling style of these salespeople as letting the customer ask a question to which the salesperson responds, making it difficult to assess the knowledge of the salesperson without asking about every refrigerator in stock.

In five of Retail ARP events, but in none of the Standard ARP events, did the salesperson ask questions pertinent to assessing which refrigerators the shopper might be interested in. In four Retail and two Standard ARP store events, shoppers said that the salesperson mentioned store promotional sales to them. None of the Standard ARP store shoppers and only two of the Retail ARP shoppers said that the salesperson mentioned energy savings or the rebate.

Three of the Retail ARP store shoppers said that the salesperson was quiet or hard to understand. Three Standard and two Retail ARP store shoppers said that the salesperson appeared hurried or busy.

Table 38 Behavioral Characteristics of the Salesperson During Appliance Sale

	Retail ARP	Standard ARP
Friendly and helpful	26	5
Focused on the customer	18	6
Showed the customer features	14	5
Product knowledgeable	7	4
Asked pertinent questions	5	0
Effective/somewhat effective casual selling style	3	3
Mentioned store sales/promos	4	2
Product knowledge unclear	3	0
Quiet or hard to understand	3	0
Mentioned energy savings and/or rebate	2	0

	Retail ARP	Standard ARP
Hurried and busy	2	3
No answer	0	0
Total	87	28

* Multiresponse

Table 39 combines the behavioral characteristics of the salespeople with the effectiveness ratings while selling the appliances. Both Retail ARP and control store responses are presented.

Salespeople were reported as friendly, professional, and/or made a good connection with the shoppers across all effectiveness categories. Characteristics that made salespeople stand out as very or somewhat effective include product and feature knowledgeable, familiarity with brand and model differences, promotion of special sales and price matching, willingness to spend time with the shopper, clear interest in making a sale, not being pushy or overselling the refrigerators, and/or thoroughly answering questions.

Salespeople who were neither effective nor ineffective did not approach customers when they arrived, were overpromoting special sales, were overselling the refrigerators as well as being commission focused.

Salespeople who were neither effective nor ineffective had fair to no product and feature knowledge and also had fair to no brand and model knowledge. They were also less likely to ask about customers' interests. Salespeople who were somewhat ineffective shared these same characteristics.

Somewhat ineffective salespeople had to be prompted for information by shoppers, did not show an interest in making the sale, or tended to steer the shoppers to lower priced refrigerators.

Table 39 Effectiveness Characteristics of Salespeople in Selling Appliances as Identified by Shoppers

	Very effective or somewhat effective	Neither effective or ineffective	Somewhat ineffective
Product and feature knowledgeable	√		
Familiarity with brand and model differences	√		
Promoted special sales	√		
Promoted price matching or extra insurance coverage	√		
Willingness to spend time with the shopper	√		
Thoroughly answered questions	√		
Clearly interested in making a sale	√		√
Did not oversell the refrigerators (not pushy)	√		√

	Very effective or somewhat effective	Neither effective or ineffective	Somewhat ineffective
Friendly, professional, and made a good connection with the shoppers	√	√	√
Did not approach shoppers			√
Overly promoting special sales or over selling the refrigerators			√
Commission focused			√
Fair to no product and feature knowledge			√
Fair to no brand and model knowledge			√
Did not ask the shoppers questions			√
Did not say much without being prompted			√
Little interest in making the sale			√
Steered customers toward low-price refrigerators only			√

***Combined representation of characteristics identified by Retail ARP and control store shoppers**

Table 40 shows the information for salesperson behaviors when selling ARP that were observed by the mystery shoppers. In 13 of the 26 retail events the mystery shopper reported that the respondent was positive and not pushy. In six Retail ARP events and three Standard ARP events the mystery shopper observed that the salesperson was essentially neutral towards the program.

Three of Retail ARP store salespeople were real champions of the program. They were more positive and enthusiastic about the program than their peers, offered details beyond the rebate and convenient pickup such as energy conservation and cost savings on energy bills, and encouraged the shoppers to participate if they showed hesitation.

Table 40 Observed Behaviors when Selling Retail or Standard ARP during the Mystery Shopping Event

Behavioral Description	Retail ARP	Standard ARP	Total
Positive and effective (not pushy)	13	1	14
Neutral	6	3	9
Used rebates as a sales pitch	8	4	12
Recycling rebate champion	3	0	3
Revisited or reinforced the benefits of the program	2	0	2
Sales and pricing focused	2	1	3
Unenthusiastic or indifferent	1	1	2
Used convenience as a sales pitch	4	0	4
Implied the shopper should sell their existing refrigerator	1	0	1
Responded to shopper looking at sticker	2	0	2

Behavioral Description	Retail ARP	Standard ARP	Total
Provided shopper with program information card	n/a	1	1
Gave incorrect information	1	0	1
Did not know about the program or was not a regular sales associate	2	4	6
Total	45	15	60
Total Valid	27	9	36

Table 41 displays the behaviors that the salespeople exhibited related to their effectiveness in explaining and selling the recycling program. Characteristics that make a salesperson stand out as very or somewhat effective in explaining and selling Retail ARP included initiating the conversation about the program with the shopper, giving clear and detailed descriptions of the program, emphasizing the convenience of the in-store signup, and emphasizing energy savings and the benefits of recycling.

The salespeople who were neither effective nor ineffective had a positive attitude about the ARP, a characteristic shared with those who were somewhat or very effective. This characteristic differentiated these salespeople from salespeople who were somewhat or very ineffective salespeople.

Behaviors shared by those who were neither effective nor ineffective or were somewhat ineffective or very ineffective included salespeople who undersold the program compared to their efforts in selling a refrigerator, who gave little or no details or elaboration about the program, and who promoted cost savings over the benefits of recycling.

The somewhat or very ineffective salespeople had to be asked about the program, did not know about the program, never mentioned the program even after being prompted by the shoppers, or gave the shoppers incorrect information about the program.

Table 41 Common Effectiveness Characteristics of Salespeople in Explaining and Selling the Retail and Standard Appliance Recycling Program

	Very effective or somewhat effective	Neither effective or ineffective	Somewhat ineffective or very ineffective
Initiated conversation about the program	√		
Gave clear and detailed descriptions of the program	√		
Emphasized that the store was part of a special test program with SCE	√		
Emphasized the convenience of in-store signup	√		
Emphasized the convenience of the removal	√		
Emphasized energy savings and the benefits of recycling	√		

	Very effective or somewhat effective	Neither effective or ineffective	Somewhat ineffective or very ineffective
Had a positive attitude about the program	√	√	
Undersold the program compared to the refrigerator sale		√	√
Little or no elaboration or detail given		√	√
Promoted cost savings over recycling benefits		√	√
Had to be asked about it			√
Did not know about it			√
Gave incorrect information			√
No mention of the program even with prompting			√

***Combined representation of characteristics identified by Retail ARP and control store shoppers**

Now, we can turn to the question of how the salespeople in the retail and comparison stores compared in their effectiveness at selling refrigerators and freezers and the recycling program. Table 42 displays the results. In general in treatment stores, the salespeople were judged more effective at selling the refrigerator than the recycling program. Salespeople in nineteen events (70 percent) were rated very or somewhat effective at selling refrigerators compared to 13 salespeople (48 percent) who judged to be effective at selling the recycling. Eight salespeople were rated as somewhat or very ineffective at selling recycling compared to four persons who received one of those ratings for selling refrigerators.

A similar pattern appears in the Standard ARP store data although there the mystery shoppers did not rate the salespeople in any of the nine events as effective or very effective at selling refrigerators. Two thirds of the salespeople were rated very or somewhat ineffective at selling the Standard ARP. Overall, this suggests that sales staff were probably some combination of less informed, interested, and effective at selling the recycling than they were in selling appliances.

Table 42 Comparative Effectiveness of the Salesperson in Selling a New Appliance and Selling Recycling for Retail and Standard ARP

	Retail ARP		Standard ARP	
	Selling Appliances	Selling the Recycling	Selling Appliances	Selling the Recycling
Very effective	9	3	0	0
Somewhat effective	10	10	4	1
Neither effective or ineffective	4	6	2	2
Somewhat ineffective	4	7	3	1
Very ineffective	0	1	0	5
Total	27	27	9	9

7.4.3 Other Characteristics of the Shopping Events

As shown in Table 43 in 21 of 27 Retail ARP shopping events, the shopper said that the salesperson initiated the conversation and in the other six, the shopper brought it up.

Table 43 Did the Salesperson First mention Removing the Old Unit or Did the Shopper Need To Bring It Up?

	Retail ARP	Standard ARP
The salesperson brought it up	21	2
Shopper brought it up	6	7

The shoppers described the timing of when the topic of the recycling program arose. For Retail ARP shoppers the topic arose most often at the middle to the end of the shopping event, although it did come up early in the shopping event on a few occasions. For the Standard ARP shoppers, it always arose at the end of the event.

The shoppers also calibrated the timing with respect to the content of the sales conversation. The conversation arose almost equally frequent in three situations, while viewing refrigerators and possibly in response to the shopper viewing the cling attached to the unit, while discussing delivery, and while discussing the cost of the refrigerator or freezer.

The shoppers said that three of the Standard ARP store salespeople emphasized that having SCE remove the refrigerator was a better deal than having the retailer provide the removal. Other aspects emphasized included a free delivery promotional offer by the retailer and that the shopper should call SCE.

Table 44 When the Discussion of the Program Arose in Terms of Timing and Content?

	Retail ARP	Standard ARP
Early in the shopping event	4	0
Midway into the shopping event	6	0
At the end of the shopping event	10	7
After showing the shopper several refrigerators	6	0
When discussing delivery with the shopper	8	2
When discussing costs with the customer	6	1
In response to the shopper looking at program signage	4	1

Shoppers at Retail ARP store events recorded whether the partnership with SCE was mentioned (Table 45). The partnership with SCE was acknowledged at all of the shopping events. Fifteen of them mentioned the partnership once and twelve of them mentioned it two or three times. The salesperson that was not a regular refrigerator salesperson

mentioned SCE to the shoppers while admitting that she really did not know anything about the program and thought that the customer needed to contact SCE.

Table 45 Did the Salesperson Mention that the Program Was Offered by SCE?

	Retail ARP Store
Yes, once	15
Yes, two or three times	12
Total	27

*Control not asked

7.5 Mystery Shopping Summary

In the initial stages of the shopping events most of Retail ARP staff were friendly, helpful, and willing to assist customers in finding a refrigerator that suited their needs. Because of the variation in selling styles, product knowledge was unclear in many cases.

The most effective salespeople were proactive and initiated the conversation about the program with the customer. Only the most effective salespeople were promoting recycling in terms of energy savings and the old refrigerator being destroyed and materials recycled. A couple of salespeople incorrectly stated that the refrigerator would be donated to charity.

The \$50 rebate and the free haulaway were used as key selling points by almost all of Retail ARP store salespeople and by half of the Standard ARP store salespeople. All of the salespeople told the customers that the program is sponsored by SCE.

About half of Retail ARP store salespeople were not persistent about the benefits of recycling, but the half who were persistent often mentioned it more than once, gave a thorough explanation of it, and related it to cost savings.

Energy savings and rebates were not typically mentioned during the initial interaction with the salesperson, but played a role further into the sales pitch. The shoppers thought that control stores could ask more pertinent questions during the initial interaction to establish what types of refrigerators they were interested in.

When the appliance removal came up with the shoppers, most of Retail ARP store salespeople mentioned the recycling rebate and told the shoppers about the program freely and without needing to be prompted. Some Retail ARP store salespeople were promoting the convenient in-store signup. They were also emphasizing that the retailer will remove the refrigerator for SCE. Some also mentioned the rebate for energy efficient refrigerator purchases.

Retail ARP store salespeople were not consistently asking questions to see if the customers qualify for the program but this may not be surprising since the shoppers did not go to the point of purchase. They also were not mentioning the convenience of the program. Directions for the customer to keep the refrigerator running and place the sticker on it were not often given but then the shoppers had not reached the point where they were actually purchasing a unit. Two salespeople were wrongly stating that the refrigerators are given to charity and another salesperson told the customers they had to

arrange their pickup online, which is incorrect in a Retail ARP store. Retail ARP stores can sign customers up on the online system in the store.

Control stores did not give information about the program freely and without prompting. Some control store salespeople were promoting the recycling rebate and some were handing out the information cards. They were also promoting free removal by the retailer. One control store salesperson also promoted the refrigerators being given to charity.

The attitudes toward the program in Retail ARP stores were good or neutral. Only a few salespeople were real champions of the program. Few Retail ARP store salespeople revisited or reinforced the information they told the shoppers about program, used the convenience of the program in their sales pitch, or responded to customers looking at the recycling program stickers. One salesperson implied to the shoppers that they should try to sell the old unit.

Almost half of the control stores do not know about Standard ARP. The other control store salespeople have good attitudes are positive, effective, and not pushy, or are neutral toward the program.

Most salespeople in Retail ARP and control stores asked customers if their old unit is working. Almost half of Retail ARP store salespeople and none of the control salespeople asked if they were SCE customers and about the size of their current refrigerator. Salespeople did not ask anything else beyond these questions, at least not before there was agreement on a refrigerator purchase.

Some were using recycling as part of their sales pitch. There did not appear to be any recycling program champions in the control group.

8 Participant Response to the Program

This chapter is focused on customer perceptions and response to the program. It addresses a number of topics.

1. Whether the shopper was influenced by what they saw and the interaction with the salesperson when they went to the store.
2. Shopper's knowledge of Standard ARP
3. What motivated shoppers to participate in Retail ARP
4. Customers' response to the signup process
5. Whether customers replaced a main or secondary unit
6. The condition of the unit that was replaced
7. Why the participant replaced the unit
8. What the participant knew about recycling prior to going shopping

The material in this chapter provides a view of the program from the perspective of a participant largely based on the participant survey. The participant survey was conducted with a random sample of customers who used the Retail ARP trial program. The surveys were conducted on a rolling basis so that most customers were surveyed about four to six weeks after they purchased their new appliance. These customers had completed all of the steps in the program although some may not yet have received their rebate at the time of the survey.

8.1 Shopper Intentions and the Program Influence

This section explores shopper intentions, prior experience with the program, and the influence of the in-store shopping experience.

8.1.1 Shopper Intentions

Retail ARP was designed to influence customers' actions at the point of purchase. That influence could include deciding to purchase a new unit, purchasing a unit from the specific retailer, and making the decision to have a unit removed from the customer's home. Eighty-five percent of the respondents told us that when they set out to go shopping they had already decided that they were going to buy a new refrigerator or freezer. The respondents who were undecided (14 percent) were asked whether the program influenced their decision to purchase. Sixty percent of these or nine percent of the total respondents indicated that the recycling program influenced their decision to purchase a new appliance. Roughly 37 percent of respondents said that the recycling program influenced them to purchase a refrigerator or freezer from this specific retailer. The program had a small influence with respect to purchasing a new refrigerator and a somewhat larger effect on where the respondents purchased their refrigerators.

Before going shopping, 67 percent of the participants had decided to get rid of an existing refrigerator and another 12 percent were thinking about it. Seventeen percent had not really thought about what to do with an existing refrigerator. Thus, 29 percent of those entering the store hadn't thought about removal or weren't sure about whether to have a refrigerator or freezer removed but decided to do so while in the store. Many of the 67 percent may have decided to have the refrigerator removed by the retailer as opposed to getting rid of an old unit some other way. More than half of the respondents (56 percent) knew that SCE had a program that would remove a refrigerator and give them a \$50 incentive.

Prior experience with Standard ARP may have influenced people to participate in the program. Five percent of the respondents reported that they had discarded a refrigerator or freezer in the last four years. Four percent discarded one and one percent discarded two units. Three percent of all respondents reported using Standard ARP to discard at least one unit. Thus, a small percentage of respondents had experience with discarding units in the previous four years and slightly more than half of those had some experience with Standard ARP. Because of the low percentage of respondents, it does not appear the prior experience with Standard ARP influenced participation with Retail ARP.

8.1.2 In-store Marketing

As described earlier, the retailer placed clings with yellow borders, white backgrounds, and blue lettering displaying the program offerings on refrigerators and freezers on the sales floor. Sixty-six percent of the respondents reported observing the cling while the balance (34 percent) reported that they did not see it, didn't remember, or didn't know. The clings attracted the attention of about two-thirds of the respondents.

The salespeople were also trained to promote the program. Approximately 90 percent of customers remembered the discussion about the program with the salesperson. Seventy-three percent of the respondents reported that the salesperson initiated the discussion. Seventeen percent of the customers said that they initiated the conversation about the recycling program, three percent said that they learned about the program some other way, and eight percent didn't know or couldn't remember.

When customers initiated the discussion about the program, over half of these customers had previously heard about the program and 33 percent reported that they had observed in store displays or signs (clings) on the appliances. Slightly fewer than half of these customers asked specifically about the recycling program and 29 percent reported that they asked generally about recycling. Thus, for those who asked, the evidence suggests that they had already heard about the program and were asking about it specifically, and if they hadn't heard about it, the cling led them to ask a general or specific question that led to a discussion about the recycling program.

Respondents were asked what they remembered the salesperson telling them about the benefits of the program. Ninety-five and 94 percent of the respondents respectively remembered the \$50 incentive and the convenient and free removal. Seventy-three percent remembered the electrical savings while slightly more than half remembered the dollars savings on their electrical bill. Forty-four percent remembered hearing about environmental benefits. About 33 percent remembered that this was a limited time offering. What the customers remembered hearing about was the incentive and convenience.

Table 46 Survey Respondents' Recollection of Benefits Mentioned by the Salesperson

The salesperson mentioned	Percent
The \$50 incentive	95
Free convenient removal in conjunction with the delivery	94
The energy savings from replacing an old unit	73
The dollar savings on your electrical bill	51
Environmental benefits of recycling	44
Limited time offer	33

Then respondents were asked why they decided to participate in the program. The question was open-ended and respondents could provide multiple reasons although if they did so they were asked to designate a main reason. Table 47 displays the first three reasons in order sorted from the most to least common reason participants cited overall. Sixty-five percent of respondents reported that convenience or an easy way to get rid of their appliance as their first reason. This was also first among all reasons (68 percent) when all reasons for participating were counted. Seven percent reported the incentive as their first reason and 16 percent reported it as one of their three reasons. Overall, 15 percent each reported that free pickup and 14 percent reported that the environment as motivation for participation.

It is striking is that while those remembering the incentive and convenience from the sales pitch, such a small percentage named the incentive as a motivator of their participation compared to convenience. One could imagine that convenience might be the number one reason but one might expect that a high percentage would then name the incentive as a second or third reason. This was not the case.

The lesser importance of the incentive is further confirmed in a later question in the survey where the 83 percent of respondents said that they would have participated without an incentive. Ten percent of the respondents who said that they would have required an incentive and another seven percent were not certain whether or not they would have.

Table 47 What Is the MAIN Reason You Decided to Have the Retailer Pick Up and Dispose of Your Existing Appliance? Respondents Who Provided More than One Response Were Asked Which Was the Main Reason.

	First Reason		Second Reason		Third Reason		Total selecting as one of the reasons	
	Frequency	Percent Respondents	Frequency	Percent Respondents	Frequency	Percent Respondents	Frequency	Percent Respondents
Easy way/convenient	221	65.0	8	2.4	2	.6	231	67.9
The incentive	23	6.8	30	8.8	1	.3	54	15.9
Free removal service / Others don't pick up / Don't have to take to the dump	40	11.8	10	2.9			50	14.7
Environmentally safe disposal / Recycled / Good for environment	27	7.9	17	5.0	2	0.6	46	13.5
Never heard of any others / only one I know of	13	3.8	3	0.9			16	4.7
Other (SPECIFY)	11	3.2	3	0.9	2	.6	16	4.7
(DO NOT READ) Don't know	4	1.2					4	1.2
Recommendation of salesperson	1	.3	1	0.3			2	0.6
Total	340	100.0	72	21.2	7	2.1		-

needed an incentive to participate. The 17 percent who said that they needed or might have needed an incentive to participate is consistent with the 16 percent who mention the incentive as motivating them to participate. Nineteen of 58 respondents who said they would not participate without an incentive or weren't sure if they needed an incentive said that they would have participated with a \$25 incentive. These data are consistent with prior process evaluations in which respondents reported that the incentive and convenience were primary motivators with many respondents reporting that they would participate without an incentive.

8.2 The Signup and Removal Processes

8.2.1 The Signup Process

SCE and the retailer were very attentive to developing a streamlined process to facilitate signups and meet legal requirements. As was noted earlier, the retailer's legal team would not allow the retailer to transfer customer data from the retailer to the recycling program. The customer (or the salesperson) entered the basic contact information through a browser on a computer in the appliance department connected to SCE's Enerpath system. When the transaction was completed customers were presented with a sticker with an order number to be placed on the side of their refrigerators and a two-part proof of recycling form. One part of the form is tendered to the logistic team that states that the customer has transferred ownership of a refrigerator or freezer to the recycling program.

Because of having to re-enter information and the forms, there was concern that this part of the process might be cumbersome for customers and prevent them from participating. At least initially, there were some glitches with equipment connections at some of the retailer stores. For example, in a few cases the system would not validate a customer's address necessitating a call to the 800 number to process the customer's application.

Customers were asked about the various aspects of the signup process. Eighty-one percent of participants remembered working with the salesperson to complete the signup. Participants were asked their perceptions of the amount of time required. As can be seen in Table 48, 63 percent of the respondents thought the process moved quickly. Another 17 percent thought it moved reasonably quickly. Only eleven respondents (four percent) thought the process lagged. Only one of those mentioned the address issue. Thus, customers did not perceive the in-store processing as a barrier. Even so, the process could be more efficient if the customer's basic information could be electronically transferred between the retailer's and the Enerpath system.

Table 48 Respondents Perception of the Length of the Signup Process

	Frequency	Percent
Quickly	214	63
Reasonably quickly	65	17
Slowly	11	4
(DO NOT READ) Don't know	1	0
Total	291	84

Eighty-five percent of the respondents remembered getting the order number at the store while six percent reported getting it at a later date. One percent claimed not to have received an order number and nine percent could not remember.

8.3 Removal of the Unit

A concern was that the customer might not attach the sticker to the appliance because of its appearance and/or would lose it and not have it when the logistics team arrived. As shown in Table 49 about half of the customers attached the sticker as soon as they got home, another seven percent affixed it later, and about a third attached it just before the delivery and removal took place. Only seven percent said that they didn't have the sticker at the time of removal and four percent could not remember. Drivers could provide a sticker for those who did not have one. For the most part, the concerns about stickers getting lost were unfounded.

Table 49 You Should Have Been Given a Sticker to Write the Order Number on. Did You Place the Sticker on the Old Unit?

	Frequency	Percent
As soon as you got home	165	49
At some later time	22	7
Just before or at the time of delivery and removal	117	34
Didn't have a sticker when the delivery and removal took place	24	7
Don't know or don't remember	12	4
Total	340	100

Customers were also asked about the proof of recycling form. As noted above, participants were to sign the form and give it to the logistics driver. The form had to be returned for the customer to obtain the rebate. The driver was responsible for securing it.

Sixty-eight percent of the customers had the form ready (Table 50). Twenty-seven percent of customers reported that they did not sign one or that they didn't know about or remember the form. These customers likely signed the form along with other paperwork at the time of delivery but just didn't remember it.

Table 50 At the Time of Purchase You Should Have Received a Confirmation of Recycling Form to Sign and Give to the Driver. Did You Have the Form Ready When the People Delivered the New Unit and Removed the Old Unit?

	Frequency	Percent
Yes	232	68
No, I had one but I had to find it	2	0
No, I had to get one from the driver	16	5
No, I did not sign one	37	11
(DO NOT READ) Don't know	53	16
Total	340	100.0

With respect to the actual pickup process, 88 percent of the respondents indicated that they received a call in advance of the pickup while the remainder said that a call was not received. Participants were requested to have the appliance plugged in and operating so that the logistics personnel could determine if the unit was working. In the survey, respondents were asked if they observed the logistics team feeling inside the unit to determine if the unit was cooling. Ninety-six percent of the respondents said that they were present or familiar with the pickup process. Among those who were present and observed the removal, eighty-six percent replied that they had seen the crew check, four percent said that they had not observed such actions, and the remaining ten percent replied that they did not know. These data suggest that the majority of the units were checked.

8.3.1 Receiving the Incentive

Fifty-four percent of the respondents recalled receiving an incentive check. The remainder had not received the check or did not recall receiving one. Since the survey was a rolling survey, and respondents may have been contacted to complete the survey within two to three weeks of having had a removal, the percentage not having received a check (45 percent) is reasonable and is consistent with the length of time reported for receiving a check. Among those who received a check and answered the question of how long it was before receiving the check, 54 percent of the respondents reported that they received the incentive payment within three weeks, 82 percent received it within four weeks and all respondents who reported receiving a check said that they had received the check within

eight weeks. Because of the way the survey was conducted it was not possible to determine if some respondents had not received a check.

Table 51 How Long Did It Take to Get the Check after They Picked Up Your Old Appliance?

	Frequency	Percent	Cumulative Percent
Within days	1	0.7	0.7
1 week	7	4.6	5.3
2 weeks	39	25.8	31.1
3 weeks	35	25.8	54.3
4 weeks	42	27.8	82.1
5 weeks	12	7.9	90.1
6 weeks	10	6.6	96.7
7 weeks	2	1.3	98.0
8 weeks or more	3	2.0	100
Do not Remember	28	8.2	
Not applicable	4	1.2	
Total	183	53.8	100

Eighty-seven percent of those receiving a check believed that the length of time to receive the check was reasonable. Six percent felt that it took too long.

Table 52 Did It Take Too Long to Get the Rebate?

	Frequency	Percent
No	160	87.4
Yes	11	6.0
(DO NOT READ) Don't know	12	6.6
Total	183	100.0

8.4 Customer Satisfaction with Program Processes

Respondents were asked about their satisfaction with three aspects of the process on a 1 to 5 scale where 1 is not at all satisfied and 5 is very satisfied. Eight-nine percent reported that they were very satisfied with the signup process, 93 percent were very satisfied with

the removal process, and 86 percent reported that they were very satisfied with the program overall.

Table 53 Satisfaction with Various Elements of the Process

Satisfaction with:	Do not know or no reply	Not at all satisfied	Somewhat dissatisfied	Neither satisfied or dissatisfied	Somewhat Satisfied	Very satisfied	Total percent
		(1)	(2)	(3)	(4)	(5)	
The signup process	0.6	1.2	0.6	2.6	6.2	88.8	100
The removal process	0.6			0.9	5.3	93.2	100
The program overall	0.9			4.4	8.5	86.2	100

8.4.1 Knowledge about the Recycling Program

Participants were asked a series of questions about what they knew about refrigerators and recycling before visiting the store (Table 54). About three-quarters knew that refrigerators were potentially harmful if not disposed properly. Forty-one percent knew what it costs to run a second refrigerator. About 44 percent claimed to know that the materials were recycled. And, 29 percent knew that none of the materials go to landfills.

Table 54 Participant Knowledge about Refrigerator Recycling

Knowledge item	Frequency	Percent of respondents (340)
Old refrigerators can be harmful to the environment if not properly disposed	254	74.7
Electricity to run a second refrigerator could cost as much as \$180	140	41.2
Coolant, compressor oil, and hazardous materials are destroyed or recycled	150	44.1
The refrigerator is completely disassembled and the metals and glass are recycled	145	42.6
None of the materials go to the land fill	100	29.4

8.5 Disposing of the Unit in the Absence of the Program

Survey respondents were asked what they would have done with their unit in the absence of the program. They were encouraged to offer a first and second choice. Table 55 shows the participants' responses. The responses are displayed by the likely disposal path and the general results of whether the units would remain in service or not. Thirty-one percent said that their first choice would be to have used a community waste management program. Another three percent mentioned the SCE Standard ARP. About 14 percent said that they would have had the appliance dealer remove the old unit. From other studies, between 15 and 25 percent of these units will remain in service and the rest are destroyed. A quarter of these units is about seven percent. Together these units represent a total of about 36 percent of units that would have remained in service.

Thirty-two percent of respondents indicated that they would keep, sell, or give away the units meaning that the units are likely to remain in service. Add to this the two percent of units that would flow back into the market from the retailers, and about 34 percent of units would remain in the market. Finally, 17 percent said that they did not know what they would do with the unit or mentioned some another disposal option.

8.6 Summary of the Participant Survey Results

Nearly all customers (84 percent) had decided to purchase a new refrigerator before going shopping so that the program had little influence on the basic decision to purchase a new appliance. However, the program influenced about 37 percent of the customers to purchase from a specific retailer. The program encouraged a small percentage (nine percent) of people who had not decided to buy a new unit to do so.

Sixty-six percent of participants reported seeing the signage. The sales associates were important conduits for information. Ninety percent of the customers remembered receiving information about the program from the sales associate. Seventy-three percent said that the sales associate raised the issue and 17 percent asked about the program.

Of the benefits of appliance recycling described by the sales associates, the most frequently remembered were the free and convenient removal and the incentive (95 percent and 94 percent respectively). However, when customers described what motivated them to participate it was the convenience of the program (68 percent listed convenience as one of their top three reasons). About 16 percent of customers gave the incentive as one of their top three reasons. The lesser importance of the incentive is further reinforced by the fact that 83 percent said that they would have participated without an incentive.

Table 55 Suppose the SCE Recycling Incentive Program You Used Had Not Been Available, What Do You Think You Would Have Done with the Old Appliance?

	First Choice		Second Choice		Combined			
	Frequency	Percent	Frequency	Percent	Frequency	Average Percent	No longer in service	In Service
Unit would no longer be used								
Use a community recycling or trash company to dispose of the unit	105	30.9	71	20.9	176	25.9	25.9	
Use SCE's regular recycling incentive program that required a second trip	11	3.2	6	1.8	17	2.5	2.5	
Some units would no longer be used and although some would likely remain in service								
Have the appliance retailer remove the old unit at the time of delivery	46	13.5	17	5	63	9.25	7.25	2
The unit would likely remain in service								
Give it away to a friend, neighbor or charity,	71	20.9	54	15.9	125	18.4		18.4
Sell it to a private party through an ad or to a used appliance dealer	32	9.4	21	6.2	53	7.8		7.8
Kept the old unit	17	5.4	18	5.3	35	5.35		5.4
Other disposal outcome								
Some other way (SPECIFY)	11	3.2	10	2.9	21	3.05		3.1

	First Choice		Second Choice		Combined		Average Percent	No longer in service	In Service
	Frequency	Percent	Frequency	Percent	Frequency				
Do not know or no answer	47	13.8	143	42.1	190	27.95			
Total	340	100.3	340	100.1					

*The percentages in the column are percent of respondents so the total is greater than 100

Based on participant responses when asked what they would have done with their old unit in the absence of the program, at a minimum, it is likely that 34 percent of the units would have remained in service. Depending on what those who did not express a preference decided and whether or not their decisions are similar to those who expressed an opinion, the units that could remain in service would likely range between 34 and 40 percent.

The participants who signed up in the store reported the signup process to be fairly expeditious.

Customers reported being very satisfied with the program. Almost 95 percent reported that they were somewhat or completely satisfied with various elements of the program and the program overall. Among those who reported receiving an incentive check, 45 percent reported receiving it within three weeks. Eighty-five percent said that they were satisfied with how long it took to receive the incentive.

Most participants knew about the environmental benefits of recycling their old refrigerator generally, but were somewhat less knowledgeable about the specifics of the recycling such as the refrigerator components being recycled or the cost of operating a second refrigerator unit.

9 Findings and Conclusions

The following are the key findings for this report.

9.1 Market Findings

In California, there is an underlying seven percent annual purchase rate of refrigerators for occupied dwellings that can increase to eight or nine percent depending on the economy. These purchases replace old and under-utilized working and non-working refrigerators some of which stay in the home and others of which are given away; sold; or removed by a retailer recycling program, a recycler, or a local recycling program. In the SCE service territory, roughly a quarter of these units are removed by existing retailer recycling programs and a roughly equal or slightly larger number, depending on funding and the year, by the SCE utility recycling program. The remainder stay in place or are given or sold to another household where the units remain in use. A small percent of units recycled by retailers may reenter the market. In other words, the supply of old and under-utilized units is constantly replenished.

A few large retailers sell about 84 percent of new refrigerators and freezers. Smaller retailers, whose share is declining, sell the remainder. Dealing with the old and under-utilized refrigerators represents a cost to the retailers. Retailers have dealt with this in a variety of ways. In the recent past some retailers have turned a blind eye and allowed the logistics companies to deal with the old units. More recently, retailers have been selling these units to recyclers for \$10 - \$15 apiece. The recyclers dismantle some units (about 80 percent) and sell the materials, returning a net of about \$5 depending on the materials markets. The remaining units are sold into the used appliance market at \$40 - \$50 per unit. This allows the recycler to turn a profit. The units that are sold into the market return to the grid and they are much less efficient than new units.

The value of Retail ARP is three fold. It addresses consumers at the most salient decision point when they are deciding what to do with an old unit. Second, its marketing strategy is very effective and a very low cost method. Third, Retail ARP has the additional value of likely capturing the 20 percent of units that retailers remove that might have returned to the grid. It does not address the issue of second units in households or households that want to dispose of a unit without buying a new unit. That is the complementary role of Standard ARP.

9.2 The Market Effects of Retail ARP

During the Retail ARP trial period (November 2010 through September 2011), customers asked participating retailers to remove 8,661 (retailer and Retail ARP) units. After requesting a removal, some customers changed their minds about having a unit removed, so it is estimated that the retailer actually removed 6,799 units.

Without the program and the incentive it is projected that the retailer would have removed 4,416 units after adjusting for customers who dropped out. This number was adjusted upwards to 4,857 to account for changes outside the control of the program or the retailer. Thus the program increased the number of units that the retailer would have removed by 1,942 (6,799-4,857) units or about 40 percent (1,942/4,857*100). In other words, the

program increased the number of units removed through the treatment stores by about 40 percent.

The utility paid an incentive for 3,340 of these units. After various adjustments it is estimated that 1,201 of those units would have been removed any way. Thus, the program achieved a net removal rate of about 64 percent. Approximately 448 units leaked from Standard ARP to Retail ARP and there were 62 transactions initiated through Retail ARP that resulted in a Standard ARP pickup. The result is that a net of 386 units leaked from ARP. If these units are included in the calculations of the net removal rate, the net removal rate is 0.52.

An additional important point is that the removal rate varied substantially across the treatment stores largely due to the store demographics and store culture.

9.3 Estimated Energy Savings

The data show that Retail ARP units were larger and slightly younger than units being removed by Standard ARP. Retail ARP participants tended to be homeowners, have larger homes, have more household members, have lived in their homes fewer years, and have higher incomes compared to Standard ARP participants.

It is estimated that units removed through the Retail ARP had a unit energy consumption (UEC) of 1323 kWh compared to 1214 kWh for units removed through Standard ARP during the same period. The 1214 kWh for Standard ARP was slightly higher than the estimate of 1181 kWh for the 2006 -08 Standard ARP. The higher UEC for Retail ARP is attributable to the units being larger and being side-by-side units compared to the Standard ARP units that were removed. The larger size and the difference in style more than offset the fact that the Retail ARP units were younger than the Standard ARP units.

Based on inspection reports 80 percent of attempted unit removals by Retail ARP resulted in actual pickups, two percent resulted in removal through the standard program, six percent of the units were not removed because the unit was not working or the customer cancelled the removal, one percent of customers had already given away or sold their unit, six percent of delivery and/or removals were rescheduled, two percent of the units were refused by the driver for various reasons, and the remaining four percent of units were not removed because of some type of administrative issue.

9.4 Observation of Sales Activities

Reports from the mystery shopping events indicated that most of the retailer staff were friendly, helpful, and willing to assist customers in finding a refrigerator that suited their needs. Because of the variation in selling styles, product knowledge was unclear in many cases.

The most effective salespeople were proactive and initiated the conversation about the program with the customer. Only the most effective salespeople promoted recycling both in terms of energy savings and the old refrigerator being destroyed and materials recycled.

The \$50 rebate and the free haulaway were used as key selling points by almost all of Retail ARP store salespeople and by half of the comparison store salespeople. All of the salespeople told the customers that the program was sponsored by SCE.

When the question of appliance removal came up with the shoppers, most Retail ARP store salespeople mentioned the recycling rebate and told the shoppers about the program freely and without prompting. Some Retail ARP store salespeople promoted the convenient in-store signup. They also promoted the fact that the retailer would remove the refrigerator for SCE. Some mentioned the rebate for energy efficient refrigerator purchases. Energy savings and rebates were not typically mentioned by salespeople during initial interaction with the customer but played a role further into the sales pitch.

Some misinformation was communicated. One salesperson told customers that refrigerators are given to charity, and a different salesperson told the customers they had to arrange their pickup online.

Salespeople in comparison stores often did not give information about Standard ARP and when they did so it was usually in response to prompting. They tended to promote the recycling rebate and some handed out information cards. They also promoted the retailer's removal options. There was some misinformation communicated at comparison stores as well.

9.5 The View Point of Participants

Nearly all customers (84 percent) had decided to purchase a new refrigerator before going shopping so that the program had little influence on the basic decision to purchase a new appliance. However, the program influenced about 37 percent of the customers to purchase from this specific retailer. The program encouraged a small percentage (nine percent) of people who had not decided to buy a new unit to do so.

Sixty-six percent of participants reported seeing the signage. The sales associates were important conduits for information. Ninety percent of the customers remembered receiving information about the program from the sales associate. Seventy-three percent said that the sales associate raised the issue and 17 percent said they had to ask about the program.

The most frequently remembered benefits were the free and convenient removal and the incentive (95 percent and 94 percent respectively). However, when customers described what motivated them to participate, 68 percent listed convenience as one of their top three reasons. About 16 percent of customers gave the incentive as one of their top three reasons. The lesser importance of the incentive was further reinforced by the fact that 83 percent said that they would have participated without an incentive.

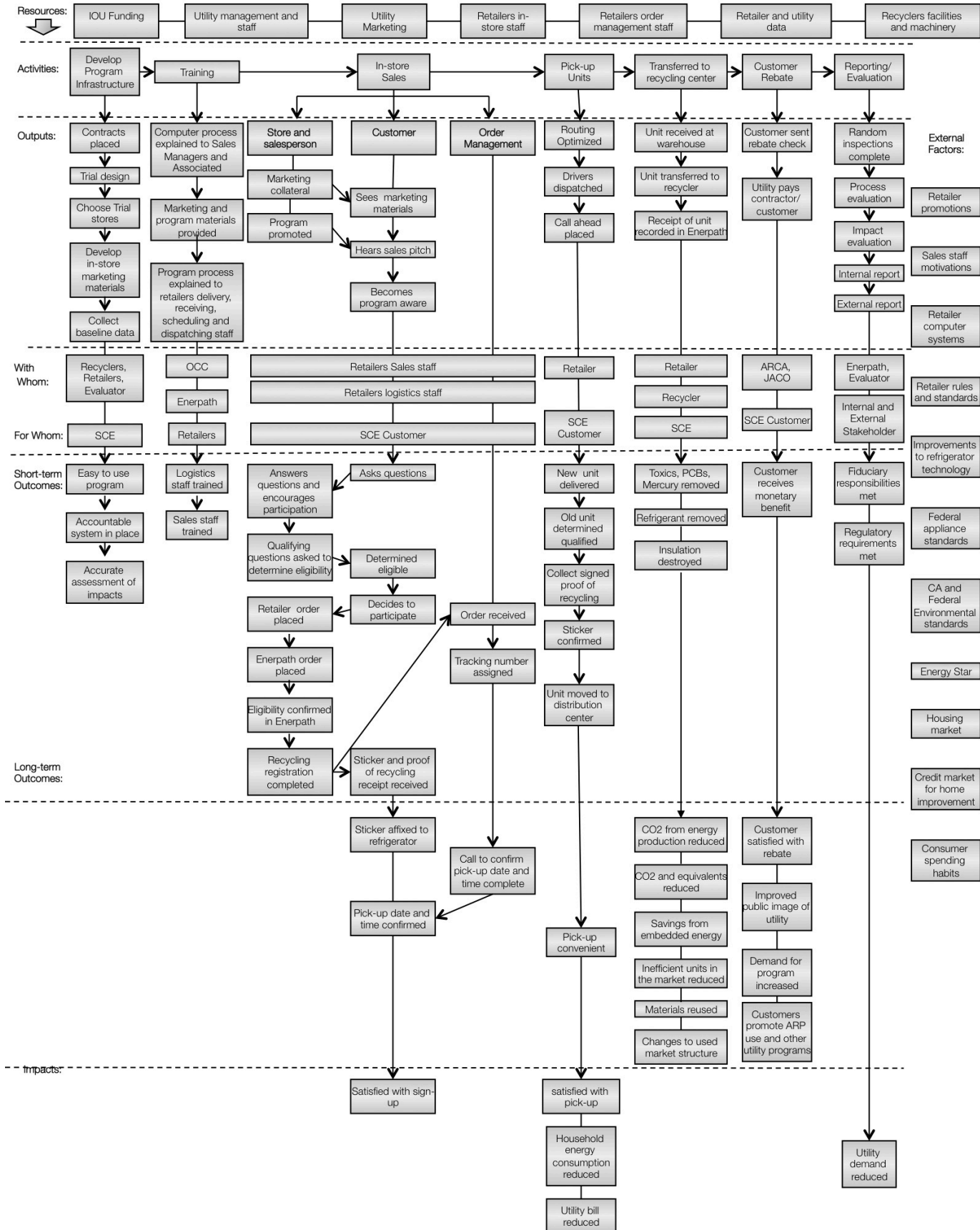
When asked what they would have done with their old unit in the absence of the program, approximately 34 percent gave an answer that implied that their units would have remained in service. Depending on what those who did not express a preference decided and whether or not their decisions are similar to those who expressed an opinion, the units that could have remained in service would likely range between 34 and 40 percent.

The participants who signed up in the store reported the signup process to be fairly expeditious. Customers reported being very satisfied with the program. Almost 95 percent reported that they were somewhat or completely satisfied with various elements of the program and the program overall. Among those who reported receiving an incentive

check, 45 percent reported receiving it within three weeks. Eighty-five percent said that they were satisfied with how long it took to receive the incentive.

Most participants knew about the environmental benefits of recycling their old refrigerator generally, but were somewhat less knowledgeable about the specifics of recycling such as the refrigerator components being recycled or the cost of operating a second refrigerator unit.

Appendix A ARP Retail ARP Logic Model



Appendix B Mystery Shopping Protocol

SCE Appliance Retailer Program

March 2, 2011

Program Background

Since 1994, SCE has had an Appliance Recycling Program that now gives a \$50 incentive to customers for qualified refrigerators and freezers that are recycled in an environmentally responsible manner. Customers participate by calling an 800 number or sign up online and request a scheduled pickup. An SCE contractor picks up eligible refrigerators and freezers directly from a customer's home. The program is marketed through bill inserts, direct mail, radio, and other methods.

In October 2010 the Appliance Recycling Program started to work with brand name appliance retailers allowing customers to sign up for the SCE program when they purchase a new refrigerator. This provides a second way for a customer to participate in the SCE program. Customers sign up for the program online at the retail store. After signup, the customer receives a sticker from the salesperson to place on the unit to be removed. Customers write their names and order numbers received online in the store on the sticker. When the customer returns home, the sticker is placed in the upper right corner of the left side when facing the front of the unit that is to be removed.

The retailer's crews remove an eligible refrigerator or freezer when they deliver the new refrigerator or freezer. This saves a trip to the customer's home just to pick up a refrigerator or freezer. It is convenient for the customer because someone only has to be home once when the new refrigerator or freezer is delivered and the old refrigerator is removed. And, the customer is presented with information about the program one-on-one in the showroom, which increases the chance that the customer will participate. If customers do not sign up at the store, they can still sign up for the regular program but they will not be able to have the old unit removed when the new unit is delivered.

In order for an appliance to qualify for either of the appliance recycling programs, it must be working and it must be between 10 and 32 cubic feet. SCE is only interested in refrigerators that are working because they might continue to be used as a second refrigerator and/or they are typically old and less efficient. SCE imposes size limitations to avoid taking mini-fridges that provide too few savings to make removal cost effective or very large refrigerators, of which there are very few, that are very difficult to move.

In addition to the SCE program, major appliance retailers also have their own removal programs. Most retailers will remove a non-working unit for free or for a small fee. They will also remove a working unit, but they do not always recycle the units they remove allowing some to be resold.

This mystery shopping is part of a larger evaluation of SCE's new retailer recycling program. You should carefully review and fully understand this background information because it will help you understand what you hear when you go shopping

Shopping in a Store with the Retailer Program

Most of the stores in which you will be shopping have the retailer program. A few stores do not have the retailer program and will only have information about the regular program. This section only applies to stores with the program. See the later section for shopping in stores that do not have the retailer program and only give information about the standard program. Be sure you know which store type you are entering before shopping.

The main objective of this mystery shopping is to find out whether and how refrigerator salespeople are using and/or promoting the \$50 rebate offered by Southern California Edison for recycling old refrigerators.

Important things to listen and look for:

- Signs or advertisements for SCE's recycling rebate program (brochures on tables and clings on refrigerators and freezers). At the back of this document there are some pictures that will help you know what kinds of things you may see in the store.
- What information about delivering your new refrigerator and disposing of your old one is given by the salesperson.
- When in the conversation with the salesperson the information about delivering your new refrigerator and disposing of your old one is given.
- Information about energy and other benefits (energy cost savings, reduced environmental hazards, convenient removal, the incentive, free pickup, etc.) for purchasing new refrigerators and especially for recycling old units that is given to you by the associate.

Scenario

- You are an individual scoping out refrigerators for your household or a couple buying a new refrigerator.
- You currently have a white refrigerator (GE you think) side-by-side that is still working and is probably 15 years old.
- You are pretty sure that the refrigerator you have is under 3 feet wide and about 6 feet tall, but you don't have the exact measurements. (Only provide this information when asked about size.)
- You want a new refrigerator/freezer because you would like more freezer space.
- You are considering a bottom freezer and would like to know the benefits compared to the side-by-side you have.
- You really want a stainless steel model with a built-in icemaker.
- Brand doesn't matter to you, but you would like one that is reliable and trouble free.
- You are interested in an energy efficient model.
- You'd like to spend less than \$2,000.

- You live in the (insert) neighborhood. Specifically at (insert street and city), CA (insert zip code). We will provide you with neighborhood, address, and zip that will change for each store location. Use the neighborhood if asked. If further pressed use the address, although it is unlikely to be needed.
- You are certain you are an SCE electric customer (if asked).

Important do's and don'ts:

- Practice what you are expected to do with someone pretending to be a salesperson walking through several different scenarios. The biggest problem may be appearing to be an overly knowledgeable shopper or being too practiced. A lot of people do not know the make of their existing refrigerators. Many do not know the size and may have no idea what a cubic foot is. However, many will know they want an energy efficient refrigerator and are likely to know about Energy Star.
- Act as much like a normal shopper as you can. If you want to take some notes with you make them in your own handwriting, for example, something like a checklist. Be sure that it looks like a list of questions a shopper might ask and not a list that a researcher might ask.
- Keep in mind that some salespeople are working on commission, so observe whether sales staff are busy and try to choose times when there are no customers waiting and more than one salesperson is available.
- Absolutely do not use a tape recorder during the shopping event. There may be legal issues with recording a person's conversation without the other person's knowledge. After the event, when you are away from the store you may use a recording device to capture your recollections. Again, absolutely no recording device is to be used during the shopping event.
- Do not openly carry this or any other program related documents with you during the shopping event. If a salesperson sees this document or parts of it, he or she may identify you as a mystery shopper or someone doing competitive intelligence or may think you are evaluating their performance. That is quite likely to color how the salesperson approaches you.
- Store managers will be notified that mystery shoppers may be in their store during a specific timeframe but they will not be told the specific day and hour and only given a general idea about the nature of the shopping.

Purchase Scenario:

- What happens in the store will be fluid and you will have to improvise. The following scenario is designed to help you understand what may happen and to help you get the information you need. However, the timing and content may differ from store to store and salesperson to salesperson, so you will have to go with the flow.
- If the salesperson doesn't approach you after you've browsed the refrigerators for a few minutes then look for one that isn't busy with another customer and ask for assistance. If they are all busy, please leave and return 15 minutes later.

- Explain to the salesperson that you are looking for a new refrigerator and want to replace the side-by-side that you currently have because it doesn't have enough freezer space and you don't like the look of a white refrigerator in your kitchen anymore. You are looking for a modern looking stainless steel refrigerator. Also explain to the salesperson that you think you'd like a bottom freezer and you're wondering if there are benefits compared to a top freezer. Let them show you what they have and ask questions accordingly.
- Discuss the features. Compare models and maybe debate a little bit with your partner (if you are posing as a couple) about the features.
- The salesperson may ask you about the size or what the measurements are for the space in your home where the refrigerator will go. You might think about this for a few seconds and then tell the salesperson your current refrigerator fits snugly into its space and that you estimate it to be less than 3 feet wide and few inches less than 6 feet tall. Note: Not having exact measurements will give you a way to avoid actually placing an order for a refrigerator at the register. Plus, this is a question that many people don't know the answer to so this will help in establishing your credentials as a legitimate customer.
- Let the salesperson guide you through the refrigerators until you think the person has finished showing you what's in stock that meets your specifications.
- Look at the models and then pick one and explain to the salesperson that you're pretty sure that you want it but before you buy it you want to measure the space for it exactly. Ask for a card. Ask about the price if it is not posted on the unit. Write the price and the dimensions on the card.
- If at this point the salesperson hasn't mentioned delivery, ask if there is a delivery charge. *Listen carefully to the explanation. *
 - The salesperson should tell you about delivery charges. If the salesperson says it is free, ask how that works. You are likely to be told that there is a fee that you pay upfront and that you send in a form and receive a rebate card. However, there may be other ways this is handled.
 - The salesperson should tell you something about disposing of your old but working refrigerator. Try not to directly ask the salesperson about the disposal. Only ask about disposing of the old one if the salesperson doesn't mention it when explaining delivery. You might ask, "Can you take the old unit?"
 - The salesperson may provide a couple of options. One is the SCE recycling program and other is that the appliance dealer will haul the unit away for a small fee (\$10) or perhaps waive the fee. If the salesperson does not tell you about the recycling program, point to a cling on one of the refrigerators and ask what that is about. The salesperson should tell you how the SCE program works. Really important. If asked you must say your old unit is working. If asked you must say that it is a full sized unit. If the person does not tell you about the program, ask about the incentive, and then follow with

questions about how to sign up, how long it takes, etc. Hint that you are leaning but you aren't quite sure if you are ready to give up the old refrigerator and see if that results in a bit more of a sales push for the recycling program. Ask if there is a way to get it removed later. See if the salesperson will tell you about the standard program and give you a brochure. Carefully note the information given to you about the disposal of your old refrigerator. Try to get as much information as possible but don't push so hard that you give yourself away.

- Admire the unit a bit more. Check the features one more time. Maybe jot them down on a piece of paper and thank the salesperson. Leave the store and fill out the following questionnaire immediately.

Refrigerator Visit Questionnaire

Visitors: _____

Store: _____

Date of visit: _____

Time entered the store: _____

Time left the store: _____

Attach business card for salesperson.

After leaving the store, go to a quiet place where you will not attract attention and reconstruct as much of the conversation in the store as possible. Please write full notes in the following boxes. Review what you have written down to make sure that it is **accurate and complete**. You may supplement your notes with a recording but the notes should stand on their own.

1. Did you see any signs, decals, or advertisements for refrigerator recycling rebates?

No

Yes

1a. Where were the signs/advertising? (Check all that apply)

On the outside of all units

On the outside of some units (approx percent of units____%)

At check out desk

Brochures on a counter or desk

Other, please

describe_____

2. Please discuss your interactions with the salesperson. (Was the salesperson helpful; hurried; interrupted by other salespeople or staff, etc.? Report anything that may have distracted the salesperson or interfered with the sales conversation.

8. Did the salesperson tell you that you could receive a \$50 rebate for having your old refrigerator recycled?

No Yes

9. Did the salesperson tell you that the refrigerator would be hauled away for free?

No Yes

10. Did the salesperson tell you that the old refrigerator would be destroyed and the materials recycled?

No Yes

11. Did the salesperson describe the benefits of recycling old refrigerators in terms of energy savings?

No Yes

12. Did the salesperson describe the benefits of recycling old refrigerators in terms of savings on your electricity bills?

No Yes

13. Did the salesperson mention the limited time offer at this retailer/store?

No Yes

14. What other aspects of the program did the salesperson emphasize?

15. Did the salesperson mention that the program was offered by SCE?

- No Once Two or three times More than three times

16. Describe the persistence of the salesperson in promoting the recycling. Was it mentioned once? Did the salesperson come back to the theme more than once?

17. Did the salesperson try to establish your eligibility for the recycling program?

- No Yes

17a. Did the salesperson ask if you are an SCE customer?

- No Yes

17b. Did the salesperson ask if your old unit is working?

- No Yes

17c. Did the salesperson ask about the size of the old unit?

- No Yes

17d. What else did the salesperson ask for?

18. In terms of the number of customers, would you consider the appliance sales floor to be:

- Quiet (Very few customers and a sales associate was available or almost immediately available)

- Somewhat busy (Several customers and just one or two salespeople available to customers)
- Moderately busy (Numerous customers and all salespeople busy with customers)
- Very busy (customers waiting for salespeople)

19. Was there anything else that occurred or that was said on your visit that you think would have influenced or discouraged the use of the recycling program?

20. On a scale of very ineffective to very effective, please rate the effectiveness of the salesperson on selling the new appliance

- Very ineffective
- Somewhat effective
- Neither effective or ineffective
- Somewhat effective
- Very effective

Please comment on your rating in terms of the salesperson providing information, underselling or overselling, and customer relations skills.

21. On a scale of very ineffective to very effective, please rate the effectiveness of the salesperson in explaining and selling the recycling program

- Very ineffective
- Somewhat effective
- Neither effective or ineffective
- Somewhat effective
- Very effective

Please comment on your rating in terms of the salesperson providing information, underselling or overselling, and customer relations skills.

Shopping in a Store WITHOUT the Retailer Program

Most of the stores in which you will be shopping have the retailer program. This section only applies to stores without the program. Be sure you know which store type you are entering before shopping. Use the “with retailer protocol” for shopping in stores which have the retailer program.

In stores without the program there will be no clings but you will find tents. Examples of tents are found in the back. Tents may be found on top of refrigerators and freezers or inside the refrigerator. Some of the tents have tear sheets that customers can take with them. The tents advertise the SCE Energy Star rebate and the regular retailer program, the version where the customer has to arrange a second appointment for a pickup. In other words, you will see tents advertising Energy Star and the standard recycling program.

Sales staff in these stores should know about and promote the regular SCE recycling program where the customer calls the 800 number or goes online to sign up but the pickup is done separate. You should be very careful not to reveal that you know about the retailer program.

The main objective of this mystery shopping is to find out whether the appliance salespeople promote the Standard Appliance Recycling Program with the \$50 rebate offered by Southern California Edison for recycling old refrigerators.

Important things to listen and look for:

- Signs or advertisements for SCE's standard recycling rebate program (this should be tents). At the back of this document there are some pictures that will help you to know what kinds of things you may see in the store.
- What information is given about disposing of your old refrigerator or freezer.
- When the information is given about disposing of your old refrigerator or freezer.
- Energy and other benefits (energy cost savings, reduced environmental hazards, convenient removal, the incentive, free pickup, etc.) for recycling old units given to you by the associate.

Scenario:

- You are a couple buying a new refrigerator.
- You currently have a white refrigerator (GE you think) side-by-side that is still working and is probably 15 years old.
- You are pretty sure that the refrigerator you have is under 3 feet wide and about 6 feet tall, but you don't have the exact measurements and you don't know the cubic feet. If asked you can tell the salesperson it is full-sized.
- You want a new refrigerator/freezer because you would like more freezer space.
- You're considering a bottom freezer and would like to know the benefits compared to the side-by-side you have.
- You really want a stainless steel model with a built-in icemaker.
- Brand doesn't matter to you, but you would like one that is reliable and trouble free.
- You are interested in an energy efficient model.
- You'd like to spend less than \$2,000.
- You live in the (insert) neighborhood. Specifically at (insert street and city), CA (insert zip code). *We will provide you with neighborhood, address, and zip that will change for each store location. Use the neighborhood if asked. If further pressed use the address, although it is unlikely to be needed.*
- You are certain you are an SCE electric customer

Important do's and don'ts:

- Practice what you are expected to do with someone pretending to be a salesperson going through several different scenarios. The biggest problem may be appearing to be an overly knowledgeable shopper or being too practiced. A lot of people do not know the make of their existing refrigerators. Many do not know the size and may have no idea what a cubic foot is. However, many will know they want an energy efficient refrigerator and are likely to know about Energy Star.

- Act as much like a normal shopper as you can. If you want to take some notes with you make notes in your own handwriting, for example, something like a checklist, and be sure that it looks like a list of questions a shopper might ask not a list that a researcher might ask.
- Keep in mind that some salespeople are working on commission, so observe whether sales staff are busy and try to choose times when there are no customers waiting and more than one salesperson is available.
- Absolutely do not use a tape recorder during the shopping event. There may be legal issues with recording a person's conversation without the person's knowledge. After the event, when you are away from the store you are encouraged to use a recording device to capture your recollections. Again, absolutely no recording device is to be used during the shopping event.
- Do not openly carry this or any other program related documents with you during the shopping event. If a salesperson sees this document or parts of it, he or she may identify you as a mystery shopper or may think you are evaluating his or her performance. That is quite likely to color how the salesperson approaches you.
- Store managers will be notified that mystery shoppers may be in their store during a specific timeframe but they will not be told the specific day and hour and only given a general idea about the nature of the shopping.

Purchase Scenario:

- What happens in the store will be fluid and you will have to improvise. The following scenario is designed to help you understand what may happen and to help you get the information you need. However, the timing and content may differ so you will have to go with the flow.
- If the salesperson doesn't approach you after you've browsed the refrigerators for a few minutes then look for one that isn't busy with another customer and ask for assistance. If they are all busy, please leave and return 15 minutes later.
- Explain to the salesperson that you are looking for a new refrigerator and want to replace the side-by-side that you currently have because it doesn't have enough freezer space and you don't like the look of a white refrigerator in your kitchen anymore. You are looking for a modern looking stainless steel refrigerator. Also explain to the salesperson that you think you'd like a bottom freezer and you're wondering if there are benefits compared to a top freezer. Let them show you what they have and ask questions accordingly.
- Discuss the features. Compare models and maybe debate a little bit with your partner (if you are partner shopping) about the features.
- The salesperson may ask you what the measurements are for the space in your home where the refrigerator will go. You might think about this for a few seconds and then tell the salesperson your current refrigerator fits snugly into its space and that you estimate it to be less than 3 feet wide and few inches less than 6 feet tall. Note: Not having exact measurements will give you a way to avoid actually placing

an order for a refrigerator at the register. Plus, this is a question that many people don't know the answer to so this will help in establishing your credentials as a legitimate customer.

- Let the salesperson guide you through the refrigerators until you think the salesperson has finished showing you what's in stock that meets your specifications.
- Look at the models and then pick one and explain to the salesperson that you're pretty sure that you want it but before you buy it you want to measure the space for it exactly. Ask for a card. Ask about the price if it is not posted on the unit. Write the price and the dimensions on the card.
- If at this point the salesperson hasn't mentioned delivery, ask if there is a delivery charge. *Listen carefully to the explanation.*
 - The salesperson should tell you about delivery charges. If the salesperson says it is free, ask how that works. You are likely to be told that there is a fee that you pay upfront and that you send in a form and receive a rebate card. However, there may be other ways this is handled.
 - The salesperson should tell you something about disposing of your old but working refrigerator. Try not to directly ask the salesperson about the disposal. Only ask about disposing of the old one if the salesperson doesn't mention it when explaining delivery. You might ask, "Can you take the old unit?"
 - The salesperson may provide a couple of options. One is the SCE recycling program and other is that the appliance dealer will haul the unit away for a small fee (\$10) or perhaps waive the fee. If the salesperson does not tell you about the SCE recycling program but only the appliance dealer program, ask if there are other ways to dispose of the unit. At this point, the salesperson may mention the SCE program. If the SCE program hasn't been mentioned and if there are tents saying something like "I thought I saw a sign over there with information about recycling over there." Either way, ask about how the program works and see what information you are given. Probe for more details. Don't do this unless it is really obvious that you might have casually have seen the literature.
- Admire the unit you chose a bit more. Check the features one more time. Maybe jot them down on a piece of paper and thank the salesperson. Leave the store and fill out the following questionnaire immediately.

Refrigerator Visit Questionnaire

Visitors: _____

Store: _____

Date of visit: _____

Time entered the store: _____

Time left the store: _____

Attach business card for salesperson.

After leaving the store, go to a quiet place where you will not attract attention and reconstruct as much of the conversation in the store as possible. Make your notes. Make sure your notes are complete, accurate and readable. You may supplement your notes with a voice recording if you like.

1. Did you see any tents, signs, or advertisements for refrigerator recycling rebates?

 No

 Yes

1a. Where were the signs/advertising? (Check all that apply)

 Clings on the outside of all units

 On the outside of some units (approx percent of

units____%)

 Tents on top of units (percent of units with tents____)

 Tents inside units

 Brochures on a counter or desk

 Other, please

describe_____

7. Please describe the point during the shopping that disposing of your old refrigerator was mentioned? If mentioned at multiple points please describe each point.
(Examples: ♦ At the beginning of the shopping after asking me if I had an old refrigerator ♦ While showing me the first refrigerator ♦ I asked the salesperson about it near the end of the shopping)
8. Did the salesperson tell you that you could receive a \$50 rebate for having your old refrigerator recycled?
- No Yes
9. Did the salesperson tell you that the refrigerator would be hauled away for free?
- No Yes
10. Did the salesperson tell you that the old refrigerator would be destroyed and the materials recycled?
- No Yes
11. Did the salesperson describe the benefits of recycling old refrigerators in terms of energy savings?
- No Yes
12. Did the salesperson describe the benefits of recycling old refrigerators in terms of savings on your electricity bills?
- No Yes

13. Did the salesperson tell you that Southern California Edison (SCE) sponsored the rebate?

- No Yes

14. What other aspects of the program did the salesperson emphasize?

15. Describe the persistence of the salesperson in pressing the program. Was it mentioned once? Did the salesperson come back to the theme?

16. Did the salesperson try to establish your eligibility for the recycling program?

- No Yes

16a. Did the salesperson ask if you are a SCE customer?

- No Yes

16b. Did the salesperson ask if your old unit is working?

- No Yes

16c. Did the salesperson ask about the size of the old unit?

- No Yes

16c. What else did the salesperson ask for?

17. In terms of the number of customers, would you consider the appliance sales floor to be:

- Quiet (Very few customers and a sales associate was available or almost immediately available)
- Somewhat busy (Several customers and just one or two salespeople available to customers)
- Moderately busy (Numerous customers and all salespeople busy with customers)
- Very busy (customers waiting for salespeople)

18. Was there anything else that occurred or that was said on your visit that you think would have influenced or discouraged the use of the recycling program?

19. On a scale of very ineffective to very effective, please rate the effectiveness of the salesperson in terms of selling the new appliance

- Very ineffective
- Somewhat effective
- Neither effective or ineffective
- Somewhat effective
- Very effective

Please comment on your rating in terms of the salesperson providing information, underselling or overselling, enthusiasm for the product, and customer relations skills.

20. On a scale of very ineffective to very effective, please rate the effectiveness of the salesperson in explaining and selling the recycling program

- Very ineffective
- Somewhat effective
- Neither effective or ineffective
- Somewhat effective
- Very effective

Please comment on your rating in terms of the salesperson providing information, underselling or overselling, enthusiasm for the recycling product, and customer relations skills.

Example of clings on a refrigerator

This picture (Figure 15) shows the SCE clings on a refrigerator. The clings are triangular with a yellow border, white background, and blue print and when both are present they form a square. This picture shows clings for two programs. The cling in the upper left promotes SCE's \$50 rebate for an Energy Star qualified refrigerator. You can see the Energy Star logo slightly below half way down the left side of the cling. The cling on the lower right is for the SCE recycling program. Refrigerators and freezers that qualify for both the Energy Star rebate and recycling will have this configuration. When both clings are present they usually appear in the upper left corner of the front of the refrigerator but in this case there was a pre-existing American Pride cling so the cling is offset to the right. Some refrigerators may not qualify for the Energy Star rebate but qualify for the recycling rebate. In that case, the recycling cling will be in the upper right front corner of the appliance and be the lower right portion of the combined clings. Important! If you are shopping a store that does not offer the retailer program you may see the Energy Star Cling (upper left cling) but you should not see the recycling cling (lower right cling). Some refrigerators may not have a cling at all because they are not Energy Star compliant.

If the store does not offer the retailer program you should see tents (Figures 5, 6, 7) that include an explanation of the regular recycling program either on top of the refrigerator or inside the refrigerator. Some of these tents may have tear sheets that customers may take home.



Figure 15: An Energy Star Program Cling (upper left) and a Recycling Cling (lower right).

Here is a picture with a row of refrigerators with clings (Figure 16). In the retailer trial stores most if not all refrigerators and freezers should have a recycling cling even if they don't have an Energy Star cling. One of the things you are asked to do is to look at the refrigerators and freezers and make an estimate of the number with and without clings. Don't be obvious about this. If it is not easy to make a quick visual assessment then skip this step. Customers don't usually count refrigerators. It is a dead give away that you are up to something.



Figure 16: A Row of Refrigerators with Clings

In the retailer trial stores there may be a table or rack with literature describing the SCE recycling program. Figure 17 is a picture of such a table. Look around and see if you can find this literature being displayed. Make an assessment as to whether this should be obvious to customers or whether they would likely miss it. Note whether there is a good supply of brochures. Note if there is any obstruction of this literature, for example, the box in the lower right corner and assess whether this is permanent or temporary. Again, do a good visual scan but don't be so obvious that you give yourself away.



Figure 17: Recycling Literature at a Trial Store

Another example (Figure 18) of the literature this time on near the register.



Figure 18: Recycling Brochures Near a Register in a Trial Store

Figure 19 shows the tents. They may be on top of the appliance or inside an appliance. The first one has the tear off pad.



Figure 19: A Tent with a Tear Off Pad for Recycling and Two Other Types of Tents.

\$50*
REBATE

**SOUTHERN CALIFORNIA
EDISON**
An EDISON INTERNATIONAL Company

**When you buy a
new ENERGY STAR® -
qualified refrigerator!**

**If your refrigerator is more than 10 years
old, you could **save up to \$105**** a year by
replacing it with a new ENERGY STAR unit.**

**Need to recycle your old refrigerator or freezer?
SCE will haul it away for free and give you an **EXTRA \$50!*******

www.sce.com/pickup

*\$50 Rebate for Energy Star-qualified models purchased by December 31, 2010; valid for SCE customers only. Terms and conditions apply.
**Savings based on 2000 electricity rates, assuming average usage and conditions. Actual savings may vary.
***Valid for SCE customers only. Appliances must meet certain criteria to qualify. Terms and conditions apply. Recycling program will continue until funding is exhausted or program is terminated, whichever occurs first. Programs are funded by California utility companies and administered by SCE under the auspices of the California Public Utilities Commission. Programs are subject to change without prior notice. ©2010 Southern California Edison. All rights reserved.

FOR OVER 100 YEARS...LIFE. POWERED BY EDISON.

Figure 20: Text on Tents

Figure 21 is an example of a tear off sheet.

It's easy to recycle your old, working refrigerator or freezer.

Just follow the steps below to schedule your **FREE** pickup.



1. Go to www.sce.com/pickup or call **1-800-234-9722** (TTY 800-234-9710) to schedule a pickup of your old, working unit.
2. Write your confirmation number in the box below.
3. The old unit must be plugged in and working (cooling) when the delivery team arrives for the pickup.
4. You'll receive a \$50 check in the mail within four to six weeks.

Confirmation Number



Why not donate part or all of your incentive to SCE's Energy Assistance Fund, which provides assistance to our customers in need once a year? It's tax-deductible!

**The Appliance and Recycling Program is available to SCE customers only. Refrigerators or freezers must be in working order, between 16 and 32 cubic feet and located at a valid SCE billing address within the SCE service territory. A \$50 check will be mailed free to six weeks after pickup. Pickup is limited to free refrigerators or freezers per household, per year. This program is funded by California ratepayers and administered by SCE under the auspices of the California Public Utilities Commission. This program will continue until further notice or until funding is exhausted, whichever occurs first. Program is subject to change without prior notice. ©2011 Southern California Edison. All rights reserved.

FOR OVER 100 YEARS...LIFE. POWERED BY EDISON.

Figure 21: Text on Tear Off Sheet

Appendix C SCE Appliance Recycling Program Pilot Participant Survey

Prefill

Name:

Phone #:

Address:

Store:

Appliance removed:

Interview

May I please speak with _____(*name*)? Good morning/afternoon. I'm _____ calling on behalf of Southern California Edison. We are talking to customers who purchased a new (*ApplianceVar*) and had a (*ApplianceVar*) removed by *DealerVar* when the new refrigerator was delivered. You should have received an SCE incentive of \$50.

Our records show that on _____(*prefill date*) a _____(*ApplianceVar*) was removed by (*DealerVar*) when they delivered your new appliance. Were you involved in the purchase and/or delivery of the new unit to your home or is there someone better to talk to?

- (1) Yes, I was involved (go to I-4)
- (2) Someone better to talk to (go to I-3)
- (3) Don't know about the removal (go to I-2)

I-2. Someone in your household may have purchased a new appliance at (*DealerVar*) and had a (*ApplianceVar*) removed by (*DealerVar*) when the new one was delivered. Now, do you recall?

- (1) Yes (Go to I-4)
- (0) No (Go 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 _____

I-4. Let me just confirm, you purchased an *appliancevar* from *DealerVar* and had an appliance removed that qualified for a incentive? Is that correct?

(0) No, where did you purchase your new appliance? _____

(1) Yes, that is correct

(9) Don't know

I-5. Along with the recycling incentive, you could also get an SCE incentive for buying an efficient appliance. Did you qualify for that offer?

(0) No

(1) Yes

(9) Don't know

In some instances a customer may not have received a check yet. If they ask about it say that it may take up to 6 weeks and you should be receiving it shortly. If they ask who to call, tell them to call XXX- XXX-XXXX

Prior to Shopping Block

1. Prior to going shopping for your new (*ApplianceVar*), had you decided to buy a new (*ApplianceVar*) or were you just thinking about buying a new one?
 - (1) Decided
 - (2) Just thinking about it
 - (9) (*DO NOT READ*) Don't know

2. Prior to going shopping for your new (*ApplianceVar*) had you...(*READ LIST. ENTER ONE ANSWER ONLY.*)
 - (1) Already decided to get rid of an existing (*ApplianceVar*)
 - (2) Thought about what to do about getting rid of an existing (*ApplianceVar*) but hadn't decided
 - (3) Hadn't really thought about what to do with your old (*ApplianceVar*)
 - (9) Don't know

3. Before going shopping for your new appliance, did you know that SCE had an appliance recycling program where you could call and someone would come and pick up an existing unit and give you a incentive?
 - (0) No
 - (1) Yes
 - (9) (*DO NOT READ*) Don't know

Sears/Best Buy Store Block

Now, I want you to think about what happened when you went shopping at the store where you bought the appliance.

4. When you were in the store, do you remember seeing a sign or decal with a yellow border and blue print posted on appliances advertising a \$50 incentive for recycling your old unit?
 - (0) No
 - (1) Yes

- (9) Don't know
5. When the topic of removing your existing (*ApplianceVar*) came up, did you ask about it or did the salesperson bring it up?
- (1) You asked about it (*go to Q6*)
- (2) Salesperson brought it up (*go to Q8*)
- (3) It wasn't discussed (*go to Q8*)
- (4) Other (Specify_____)(*go to Q8*)
- (9) Don't know (*go to Q6*)
6. Did you ask generally about what to do with your old unit or specifically about the SCE recycling incentive program that was used?
- (0) Just how to get rid of the old unit (*go to Q8*)
- (1) About the SCE incentive Program (*go to Q7*)
- (9) (*DO NOT READ*) Don't know (*go to Q8*)
7. What prompted you to ask about the SCE recycling incentive program? (*READ LIST. ENTER ONE ANSWER ONLY.*)
- (1) Previously heard about program
- (2) The in-store display or sign on the appliance
- (4) Other (Specify_____)
- (9) (*DO NOT READ*) Don't know
8. Did you make arrangements through the store to have the old unit removed... (*READ LIST. ENTER ONE ANSWER ONLY.*)
- (1) At the time of purchase
- (2) At a later date
- (9) (*DO NOT READ*) Don't know

9. (If Q1=2 or 9, ask Q9; otherwise skip to Q10) Did the fact that (*DealerVar*) promoted SCE's recycling incentive program influence you to purchase a new appliance?
- (0) No
- (1) Yes (Could you explain how: _____)
- (9) (*DO NOT READ*) Don't know
10. Did the fact that (*DealerVar*) promoted SCE's recycling incentive program influence you to purchase a new appliance from that specific dealer?
- (0) No
- (1) Yes (Could you explain how: _____)
- (9) (*DO NOT READ*) Don't know
11. When you were talking to the salesperson, did the salesperson tell you about removing your appliance and having it recycled, did the salesperson tell you about: (Rotate the answers)
- 11a. The \$50 incentive (1) Yes (0) No (9) Don't know
- 11b. Free convenient removal at the same time as delivery (1) Yes (0) No (9) Don't know
- 11c. The environmental benefits of recycling (1) Yes (0) No (9) Don't know
- 11d. The dollar savings on your electrical bill from removing a unit (1) Yes (0) No (9) Don't know
- 11e. The energy savings from replacing old unit (1) Yes (0) No (9) Don't know
- 11f. Limited time offer at this retailer/store (1) Yes (0) No (9) Don't know
- (do not rotate this item)
- 11g. Were there other things you remember the salesperson emphasizing? _____

12. Did the salesperson answer all your questions about the appliance recycling incentive program?

- (0) No (Go to 12a)
- (1) Yes (Go to 13)
- (9) Not Applicable (Go to 13)
- (8) (DO NOT READ) Don't know (Go to 13)

12a. What information would you liked to have had? _____

13. What is the MAIN reason you decided to have the retailer pick up and dispose of your existing appliance? (DO NOT READ LIST. ENTER ONE ANSWER ONLY. If multiple are mentioned, of those, which is the main reason? If respondent says something like: "I didn't need or want the refrigerator" re-ask the question)

- (1) Incentive payment
 - (2) Free removal service/Others don't pick up/Don't have to take it myself.
 - (3) Environmentally safe disposal/Recycled/Good for Environment
 - (4) Savings on electric bill
 - (5) Recommendation of a friend/relative
 - (6) Recommendation of salesperson
 - (7) Utility sponsorship of the program
 - (8) Easy way/convenient
 - (9) Never heard of any others/only one I know of
 - (10) Other (SPECIFY:_____)
 - (11) (DO NOT READ) Don't know
- _____
- _____

14. Were there any other reasons? IF YES: What were they? (Multiple response) (DO NOT READ LIST)

- (1) Incentive payment
- (2) Free removal service/Others don't pick up/Don't have to take it myself.
- (3) Environmentally safe disposal/Recycled/Good for Environment
- (4) Savings on electric bill
- (5) Recommendation of a friend/relative
- (6) Recommendation of salesperson
- (7) Utility sponsorship of the program
- (8) Easy way/convenient
- (9) Never heard of any others/only one I know of
- (10) Other (SPECIFY: _____)
- (11) Don't know

15. Do you remember working with the salesperson on a computer to sign up for the incentive and removal and getting the number for the orange sticker?

- (0) No (*go to Q20*)
- (1) Yes (*go to Q16*)
- (9) (*DO NOT READ*) Don't know (*go to Q16*)

16. Did the signup process seem to go... (*READ LIST. ENTER ONE ANSWER ONLY.*)

- (1) Quickly (*go to Q18*)
- (2) Reasonably quickly (*go to Q18*)
- (3) Slowly (*go to Q17*)
- (9) (*DO NOT READ*) Don't know (*go to Q18*)

17. What caused the signup to take so long? _____

18. (If Q17 referred to address issues, then skip to 20, otherwise ask Q18) Did the salesperson have any difficulty finding your address in the computer system?
- (0) No (go to Q20)
 - (1) Yes (go to Q19)
 - (9) (DO NOT READ) Don't know (go to Q20)
19. Was this resolved through the salesperson calling the 800 number or by some other means?
- (1) 800 #
 - (0) Other (Please explain _____)
 - (9) (DO NOT READ) Don't know
20. Were there any problems/other problems getting the order number to write on the sticker?
- (0) No
 - (1) Yes (Could you describe the problem _____)
 - (9) Don't know
21. Did you get the order number at the time of purchase or did you get it at a later date?
- (1) At time of purchase
 - (2) Later date
 - (3) Did not receive an order number
 - (9) (DO NOT READ) Don't know
22. You should have been given a sticker to write the order number on. Did you place the sticker on the old unit: (READ LIST. ENTER ONE ANSWER ONLY.)
- (1) As soon as you got home (go to Q24)
 - (2) At some later time (go to Q24)
 - (3) Just before or at the time of delivery and removal (go to Q24)

- (4) Didn't have a sticker when the delivery and removal took place
(go to Q23)
- (9) (DO NOT READ) Don't know (go to Q24)

23. Did you receive an sticker at the store?

- (0) No
- (1) Yes
- (9) (DO NOT READ) Don't know

24. At the time of purchase you should have received a confirmation of recycling form to sign and give to the driver. Did you have the form ready when the people delivered the new unit and removed the old unit?

- (1) Yes
- (2) No, I had one but I had to find it
- (3) No, I had to get one from the driver
- (4) No, I did not sign one
- (9) (DO NOT READ) Don't know

25. How satisfied were you with this signup 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
- (6) (DO NOT READ) Don't know

Pickup Block

I am now going to ask you a few questions about the delivery and removal of your old unit

26. Did someone call in advance to confirm the appointment or let you know they were coming?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know

27. Were you present at the time of the pickup or are you familiar enough with the pickup to answer some questions about it?

- (0) No (*go to Q30*)
- (1) Yes (*go to Q28*)
- (9) (*DO NOT READ*) Don't know (*go to Q28*)

28. Did someone in the crew check to see if the appliance was working by opening up the door and feeling for cool air?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know/Don't remember

29. Were there any problems with the removal?

- (0) No
- (1) Yes (Could you explain: _____)
- (9) Don't know

30. How satisfied were you with the 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 (*go to 30a*)
- (2) 2 (*go to 30a*)
- (3) 3

- (4) 4
- (5) 5 Completely satisfied
- (6) (*DO NOT READ*) Don't know

30a. Can you explain why you were not very satisfied? _____

Incentive Block

31. Did you receive the \$50 incentive check for the recycling incentive program?

- (0) No (*go to Q34*)
- (1) Yes (*go to Q32*)
- (2) Received a different amount, How much _____ (*go to Q32*)
- (9) (*DO NOT READ*) Don't know (*go to Q32*)

32. How long did it take to get the check after they picked up your appliance?

- (0) _____ (Record days)
- (1) 1 week
- (2) 2 weeks
- (3) 3 weeks
- (4) 4 weeks
- (5) 5 weeks
- (6) 6 weeks
- (7) 7 weeks
- (8) 8 weeks or more
- (9) Not Applicable
- (10) (*DO NOT READ*) Don't know

33. Do you think this was too long?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know

34. Would you have participated in the program without the incentive?

- (0) No (go to Q35)
- (1) Yes (go to Q36)
- (9) (*DO NOT READ*) Don't know (go to Q35)

35. If the incentive check had been \$25, would you have participated in the program?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know

36. Thinking about all the aspects of getting your old (*ApplianceVar*) removed from signup through removal and the receipt of the incentive, how satisfied were you 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 (go to 36a)
- (2) 2 (go to 36a)
- (3) 3
- (4) 4
- (5) 5 Completely satisfied
- (6) (*DO NOT READ*) Don't know
- (7) Refused

36a. Can you describe why you weren't satisfied? _____

Other Disposal Options Block

37. Suppose the SCE Recycling Incentive Program that you used had not been available, what would you have done with the old *ApplianceVar*?

- (1) Had the appliance retailer remove the old unit at the time of delivery even if I had had to pay a small fee
- (2) Used SCE's regular recycling incentive program that requires you to set up a second removal appointment for your old unit
- (3) Kept the old unit
- (4) Gave it away to a friend, neighbor or charity,
- (5) Sold it to a private party through an ad or to a used appliance dealer
- (6) Used a community recycling or trash company to dispose of the unit
- (7) Some Other Way (SPECIFY: _____)
- (9) (*DO NOT READ*) Don't know

38. What alternative would have been your second choice? (*DO NOT READ*)

- (1) Had the appliance retailer remove the old unit at the time of delivery even if I had had to pay a small fee
- (2) Used SCE's regular recycling program that requires you to set up a second removal appointment for your old unit
- (3) Kept the old unit
- (4) Gave it away to a friend, neighbor or charity,
- (5) Sold it to a private party through an ad or to a used appliance dealer
- (6) Used a community recycling or trash company to dispose of the unit
- (7) Some Other Way (SPECIFY: _____)
- (9) (*DO NOT READ*) Don't know

39. (*If Q37 = 5 or Q38 = 5 ask, otherwise skip*) If you had sold this appliance to someone, how much money do you think you would have received for it?

- (1) DOLLARS _____ (\$1 - \$2000)
- (9) (*DO NOT READ*) Don't know

Appliance block

Now I am going to ask you some questions about the appliance that was removed.

(If ApplianceVar = "freezer" then skip to Q41)

(If ApplianceVar = "refrigerator" then continue to Q40)

40. Was the refrigerator 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.)*

- (1) Main *(go to Q42)* (2) Secondary/Spare *(go to Q41)*

41. In the last year, how much was the *(ApplianceVar)* used?

- (1) Kept it running all the time.
 (2) For special occasions only
 (3) During certain months of the year only
 (4) Never plugged in or running
 (9) *(DO NOT READ)* Don't know
 (5) Other *(Specify_____)*

42. 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
 (4) Or, it didn't work
 (9) *(DO NOT READ)* Don't know
 (5) Other *(Specify_____)*

43. Why did you replace the appliance (*check all that apply*)?

- (1) Wanted a better working unit
- (2) Wanted a better looking unit
- (3) Wanted a newer unit
- (4) Wanted a more efficient unit
- (5) Wanted a different size/type
- (6) Remodeling home
- (9) (*DO NOT READ*) Don't know
- (7) Other (*Specify* _____)

Previous Disposal Block

44. Have you discarded any other refrigerators or freezers in the last four years?

- (1) Yes (*go to Q45*)
- (0) No (*go to Q47*)

44a. How many? _____

45. Did you use SCE's recycling program for this/any of the unit(s)?

- (1) Yes, all of them
- (2) Yes, some of them. How many _____?
- (0) None of them

Customer Knowledge Block

46. Before you decided to dispose of your appliance at the retailer's store, were you aware that a second refrigerator in your home could cost up to \$180 a year for electricity?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know

47. 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?

- (0) No
- (1) Yes
- (9) (*DO NOT READ*) Don't know

48. Did you know that the *ApplianceVar* that was removed:

48a. Will be completely taken apart and the metals and glass recycled (1) Yes (0) No (9) (*DO NOT READ*) Don't know

48b. That the coolant, motor oil, and insulation that might contain hazardous materials would be removed, and recycled or destroyed. (1) Yes (0) No (9) (*DO NOT READ*) Don't know

48c. That none of the material from the units would go to a land fill (1) Yes (0) No (9) (*DO NOT READ*) Don't know

49. 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.)

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

Customer Energy Conservation and Behaviors Block

Now we would like to ask you a few general questions about energy use and the environment

51. Please indicate whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with each of the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	(DO NOT READ) Don't know
a. Saving energy helps the environment.	<input type="checkbox"/> (1)	<input type="checkbox"/> (2)	<input type="checkbox"/> (3)	<input type="checkbox"/> (4)	<input type="checkbox"/> (5)	<input type="checkbox"/> (9)
b. Saving energy in my home helps me save money	<input type="checkbox"/> (1)	<input type="checkbox"/> (2)	<input type="checkbox"/> (3)	<input type="checkbox"/> (4)	<input type="checkbox"/> (5)	<input type="checkbox"/> (9)
c. There is little I can do to reduce the amount of energy and water we use in my household.	<input type="checkbox"/> (1)	<input type="checkbox"/> (2)	<input type="checkbox"/> (3)	<input type="checkbox"/> (4)	<input type="checkbox"/> (5)	<input type="checkbox"/> (9)
d. What I do only makes a difference if others do it too.	<input type="checkbox"/> (1)	<input type="checkbox"/> (2)	<input type="checkbox"/> (3)	<input type="checkbox"/> (4)	<input type="checkbox"/> (5)	<input type="checkbox"/> (9)
e. What I do makes a difference even if it is small	<input type="checkbox"/> (1)	<input type="checkbox"/> (2)	<input type="checkbox"/> (3)	<input type="checkbox"/> (4)	<input type="checkbox"/> (5)	<input type="checkbox"/> (9)

52. I am going to ask about some things people might regularly do in their homes. Please tell me if you or members of your household do these regularly (read list and ask yes or no for each)

52a. Generally don't pay much attention to whether lights, electronics and appliances are running	<input type="checkbox"/> (1) Yes	<input type="checkbox"/> (0) No	<input type="checkbox"/> (9) (DO NOT READ) Don't know
52b. Turn off lights when not in the room	<input type="checkbox"/> (1) Yes	<input type="checkbox"/> (0) No	<input type="checkbox"/> (9) (DO NOT READ) Don't know
52c. Manually adjust OR use programmable thermostat to set different temperatures at various times of the day	<input type="checkbox"/> (1) Yes	<input type="checkbox"/> (0) No	<input type="checkbox"/> (9) (DO NOT READ) Don't know
52d. Use energy saving/sleep features of computer	<input type="checkbox"/> (1) Yes	<input type="checkbox"/> (0) No	<input type="checkbox"/> (9) (DO NOT READ) Don't know

Customer Characteristic Block

We are almost done, only a few more questions.

53. And today, how many refrigerators do you have running at least part of the time today?
_____ (If the response is 0 or 1, then skip to Q56, otherwise ask Q55)

54. How many of these refrigerators are mini-fridges, bar refrigerators, or mini wine coolers?

- (0) None
- (1) One
- (2) Two
- (3) Three
- (4) Four

55. Today, how many standalone freezers are running at least part of the time _____

56. 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? _____

57. How many people reside in your home? _____

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

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

60. Do you own or rent the home that you live in?

- (1) Own (2) Rent (9) Refused

61. Have you remodeled your home in the past 5 years?

- (1) Yes (0) No (9) Refused

62. What is the approximate square footage of your home? _____

- (1) Less than 500
 (2) 500 to just under 1,000
 (3) 1,000 to just under 2,000
 (4) 2,000 to just under 4,000
 (5) 4,000 and up
 (6) (*DO NOT READ*) Don't know
 (7) Refuse

63. Please stop me when I reach the category that best represents your total annual household income?

- (1) Less than 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 than 150,000
 (7) Refuse

64. The interview was done in

- (1) English
 (2) Spanish

(3) Other

Thank you for participating in our survey. This will help Southern California Edison to better serve their customers.

If you have any questions about this survey please call Caroline Chen at 619-423-1512