

Final Report  
**Process and Market  
Evaluation of  
Southern California Edison's  
Appliance Recycling Program  
2006 - 2008**

A Report Prepared for  
**Southern California Edison**

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The logo for Innovologie features the word "INNOVOLOGIE" in a bold, white, sans-serif font, oriented vertically. A thin white line curves from the top left, arching over the text and extending down the left side of the page. The background is a blue gradient that transitions from a darker blue on the left to a lighter blue on the right.

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John  
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## Origins of the Study

This study was conducted at the request of Southern California Edison. The California Public Utilities Commission approved the request. Southern California Edison managed the study. It was funded through the public goods charge (PGC) for energy efficiency and it is available for download at [www.calmac.org](http://www.calmac.org).



## Executive Summary

### Introduction

The Appliance Recycling Program (ARP) is available to eligible customers on a first come first served basis in the Southern California Edison (SCE) service territory.

In 2006-08, the program targeted residential customers to prevent future use through retention or transfer of inefficient but functioning (meaning still cooling) 10 to 27 cubic foot refrigerators and/or freezers. The primary goal of the program is to use monetary incentives and free pick-up to induce customers to have the appliances removed from their premises. Additional goals are to educate customers about the energy efficiency and energy savings benefits of recycling older refrigerators and freezers and the non-energy benefits from recycling in an environmentally friendly manner.

### Key Goals of the Evaluation

The goals of the evaluation were to examine responses to the recommendations from the 2004-05 study, assess the effects of changes to the program including changes to the logistics system, assess changes in customer response to the program and the characteristics of the customers using the program, examine changes in customer disposal practices, examine cancellation rates and changes to the cancellation rates, assess changes in elapsed time from the request for an appliance removal to actual removal, examine the used appliance market to see if intervention in that market is warranted and if program assumptions about it are correct, and assess the opportunities for partnering with appliance dealers to reduce costs and increase the number of refrigerators being removed.

### Key Activities of the Evaluation

The major activities of this evaluation included the analysis of participant data, in-depth staff and contractor interviews, a survey of 454 randomly selected participants, a survey of 400 randomly selected households that signed up for the program and then cancelled, and a survey of 400 randomly selected households from among SCE residential customers who had disposed of a refrigerator by any method since 2005. There was also a more qualitative survey of used appliance dealers, an examination of retailer refrigerator deliveries and removal, and investigation of a retailer program in another jurisdiction.

### Findings of the Evaluation

The following summarize the key findings from this study.

#### *Appliance Recycling Program Use*

- The program removed 69,052 units in 2006 (86 percent were refrigerators), 60,315 units in 2007 (87 percent were refrigerators), and 90,242 units in 2008 (88 percent were refrigerators). The 50 percent increase in 2008 was largely a function of the availability of funding and more intense marketing.
- Thirty-eight percent of all units were more than 15 years old, 52 percent were 10 to 15 years old and 11 percent were less than 10 years.
- Forty-eight percent of the collected units were between 15 and 19 cubic feet and 34 percent were between 20 and 24 cubic feet. The percentage of units in the 20 to 24 cubic feet category increased between 2006 and 2008 (from 32 to 37

- percent), while there was a decline in the percentage of units between 15 and 19 cubic feet (51 to 45 percent). This is in line with national trends.
- The highest percentage of units had amperages of 6 to 9.9 amperes (69 percent). This is due to larger units being collected. The percentage for this category increased from 63 to 73 percent from 2006 to 2008. This is in line with national trends.

#### *Characteristics of Households*

- Seventy six percent of participants owned their home.
- The median square footage of households participating in the ARP was 1,977 square feet. The most common size of participants' homes was in the range of 1,000 to 2,000 square feet (43 percent).
- About 42 percent of participant households had one or two residents.
- The largest percent of participants had lived in their homes for less than five years. The next highest percentage had lived in their homes for 21 years or more.
- About 34 percent of the participants had remodeled their home in the last five years.
- The most common household income category for those who participated was \$25,000 to just under \$50,000 (24 percent).
- The average number of refrigerators in a participant household subsequent to the removal was 1.39 and the average number of freezers was 0.38.

#### *How the Program Is Marketed*

- SCE changed its marketing strategy so that it is now using multiple channels and multiple messages.
- Forty-nine percent of participants heard of the program through the utility (31 percent came from a bill insert), 17 percent were referred to it by a friend/neighbor, 12 percent heard about it from an appliance store, and 11 percent hear of it through the media.
- There is evidence that drop mailings resulted in a response of about 1,200 new appointments per mailing.
- In the 2004-05 survey of disposers in the general population, 58 percent of the disposer households were aware of the program. In the 2009 study, 70 percent of disposers in the general population were aware of the ARP program. In other words, awareness increased primarily due to enhanced marketing.
- Among those who did not use ARP but disposed of a unit, lack of awareness was the biggest reason for not participating (29 percent), followed by disposing of the unit through the dealer from whom they bought a unit (27 percent), giving the unit away to a friend or relative (21 percent), wanting to retain the unit for future use (16 percent), inconvenience (12 percent), and the unit was not working (11 percent).
- Comparing refrigerator disposers to freezer disposers, freezer disposers were more likely than refrigerator disposers to have heard about the program from the utility (60 percent compared to 47 percent). Refrigerator disposers were more likely to have heard about the program from the appliance stores (13 percent compared to 6 percent) and referrals from friends/neighbors (18 percent compared to 10 percent).

- Customers who had heard about ARP were most likely to have heard about it from the utility but customers who disposed of a main refrigerator (44 percent) were less likely to have heard about it from the utility than those who disposed of a secondary or a spare (54 percent). Those who disposed of main were more likely to have heard about the program from an appliance store (14 percent) than those who disposed of a secondary or spare (8 percent).
- Among disposers in the general population, 97 percent of the disposers who had participated in ARP indicated that they would be very likely (87 percent) or somewhat likely (12 percent) to participate in the future. Eighty-two percent of disposers who were previously unaware of the program said they would be very likely (49 percent) or somewhat likely (32 percent) to participate in the future. Sixty-two percent of disposers in the general population who knew about the program but did not dispose of unit through the program said they were very likely to participate in the future and 30 percent said they were somewhat likely to participate.

#### *Motivation to Participate*

- Program participants mentioned the \$50 incentive most frequently as the primary motivating factor (55 percent), followed by convenience (44 percent), and the environment (17 percent). In the 2004-05 study the corresponding percentages were 46 percent for the incentive, 65 percent for convenience, and 22 percent for the environment. The incentive has become more important. This may be because of the economy or because of the increased penetration of the program into the market. Only four percent of the respondents cited the importance of the savings on the electric bill even though on an annual basis the savings are typically six times as large as the incentive.
- When asked if the incentive was essential to their participation, approximately 71 percent of the respondents said that they would have participated in the ARP without the incentive compared to 81 percent in 2004-05.
- The incentive appeared to be a bigger motivator for ARP disposers of spare compared to main refrigerators (62 percent compared to 52 percent) and convenience and the environment were more important for disposers of main refrigerators.

#### *Having a Second or Third Refrigerator*

- A secondary analysis of the HEES data suggests that second and third units are relatively young, that is, less than ten years old. Second, and especially third units, are much smaller than first units with the majority of third units being the mini or very small units. This suggests second and third units are not just older refrigerators left over from earlier refrigerator transactions but may be deliberate purchases. This may explain why it is difficult to get households to give up second and third units.
- The HEES analysis also shows that 2500 square feet is the point where the percentage of 2nd and 3rd refrigerator households is greater than the percentage of single refrigerator households. Twenty-five hundred square foot households and above might be a good break point for targeting second refrigerators.

*How Refrigerators are Disposed and the Penetration of the Program among Disposers*

- The percentage of units captured by ARP between the 2006 study and the 2009 study has almost doubled (15 percent to 28 percent).
- From 2006 to 2009, the number of transfers being taken by dealers has increased by about a fifth from 21 percent to 26 percent.
- From 2006 to 2009, the number of units being given away to friends and neighbors has declined by about 20 percent (29 percent to 23 percent) and the number of units being sold has dropped by about 60 percent (11 percent to 6 percent). This is significant because units that are sold or given away are likely to continue to be used.
- From 2006 to 2009, the number of units being junked, taken by a recycler, or taken to the landfill has declined from 18 percent to 14 percent.
- In the absence of the program 44 percent of ARP participants would have given the unit away, 23 percent would have taken it to dump/recycler, 13 percent would have had the dealer remove it, 12 percent would have sold it, and six percent would have kept it.
- In the absence of the program approximately 64 percent of the units removed through the ARP would have remained in use, 32 percent would have been de-manufactured, and four percent are unknown.
- With the ARP, approximately 63 percent of disposed units are removed from use, while without it, only 42 percent of units would be removed from use.

*Program Satisfaction*

- In general, program satisfaction did not vary a great deal from the previous study. This is because satisfaction levels were already quite high. There were some changes as noted below.
- In terms of the overall service, 84 percent of 2006-2008 ARP participants were completely satisfied and 94 percent were somewhat satisfied or completely satisfied with the service.
- The overall satisfaction with the ARP sign-up experience increased between the 2004-05 survey and the 2006-08 survey with completely satisfied customers increasing from 83 percent to 86 percent.
- Customers who signed up over the telephone were more satisfied than customers who signed up online (88 percent of completely satisfied customers versus 83 percent of completely satisfied customers). This is a reversal from 2004-05 when the on-line customers were more satisfied.
- Ninety percent of customers were completely satisfied with the pick-up experience. Satisfaction with the overall pick-up experience declined slightly from 93 to 90 percent between the two program periods.
- In terms of information gaps, 31 percent people who disposed of a refrigerator but did not use the program were unaware that keeping and using an old unit could cost up to \$300 a year, 18 percent were unaware of environmental effects of refrigerant, and 26 percent were unaware of the recycling process in the program.
- Ninety percent of ARP customers said they learned everything they wanted to know about the program before participating.
- At least 94 percent of the customers who signed up by telephone said that during the scheduling process the representative was polite and courteous, the

representative was able to answer all their questions, and a convenient time for pick-up could be scheduled.

- Ninety-nine percent of customers who signed up online stated that they were able to schedule a pick-up appointment for a convenient date and time, 96 percent stated that the website answered all the questions that they had, 93 percent said they received a confirmation e-mail, but only 87 percent said the website was easy to find.
- With respect to pick-up, 88 to 95 percent of the customers said the representative arrived on time, was polite and courteous, and appeared neat and professional.
- Eighty-two percent of customers remember receiving a call one to two days in advance of pick-up.
- Seven percent thought that the time between schedule and pick-up was too long.
- Five percent of respondents said they did not receive an incentive check.
- Twelve percent said that the time between pick-up and receiving the check was too long.
- Over all, the incentive appears to be the right amount.

#### *Changes to the Logistics System*

- The change to the Enerpath logistics system has significantly decreased the time from scheduling to pick-up.
- The average pick-up time was 15 days for the 2004-05 program, and less than 14 percent were picked up in under a week.
- From January 2006 to June 2007, the pick-up time was reduced to 10 days, and approximately 45 percent were picked up within 1 week.
- With the Enerpath system, the average pick-up time was reduced to seven days in the last two quarters of 2007 and five days in 2008.
- In 2008, 78 percent of units were removed within a week after scheduling and 40 percent were removed within three days.
- The Enerpath system has features that serve to enhance the overall quality of the data collected.
- The Enerpath system does need some fine-tuning, in particular, the number of categories for the age variable need to be enhanced and it might be easier to do trend analysis in the future if “birth year” rather than age were captured. It might be beneficial to scan or take a picture of the nameplate rather than a picture of the unit. However, there may be difficulties with getting a usable image and many older units do not have barcodes.

#### *Program Cancellations and The Cancellation Survey*

- During the 2006-08 program years, there were nearly 50,000 canceled orders representing 52,000 units.
- Over the three-year period, cancellations averaged 19 percent of all orders. However, the cancellation rate declined from 21 percent in 2006 and 2007 to 17 percent in 2008.
- Customers who signed up over the Web cancelled slightly more often (22 percent) than those who signed up over the telephone (19 percent).
- Customers who cancelled their unit were far likelier to have units less than 10 years of age. Fifty-two percent of cancelled units were less than 10 years (16

- percent of which were less than six years of age) compared to 14 percent of all units disposed of through the program.
- There were 21 percent fewer medium sized units cancelled than were disposed of by participants. Large units made up 23.5 percent of all cancellations, but only seven percent of all units disposed of through the program.
  - Cancellation survey respondents stated that the biggest reason for cancellation was that the appliance didn't qualify for the program (25 percent), followed by their deciding somebody else could use the unit (22 percent), they decided to keep it (13 percent), they couldn't meet the scheduled time (11 percent), and the recycling company didn't show up (8 percent).
  - Thirty-seven percent of respondents who cancelled reported that they gave their unit to someone else, 14 percent kept the unit in use, and six percent each were sold or stolen. Therefore it is likely that at least 63 percent of units cancelled remained in use.
  - Approximately 37 percent of the cancelled units were kept but not used or removed so that they likely were no longer in use (primarily through appliance dealers who took nine percent, the waste management centers that took 12 percent, and 13 percent were kept in storage).
  - If the pick-up time was reduced to within a week for cancellations, 80 percent said they would not have cancelled. Reducing it further only produced small gains.
  - If the incentive had been increased to \$75, 70 percent of respondents said that they would not have cancelled. Increasing it to \$100 and \$125 only slightly increased participation.
  - An important finding is that forty-two percent of respondents that cancelled were not aware of the electrical costs of old units. Awareness would have changed the decision for 71 percent of unaware respondents.
  - Twenty-four percent of respondents that cancelled were not aware of the environmental harm of old units. Awareness would have changed the decision for 89 percent of these respondents.
  - A combined total of forty-nine percent of the respondents that cancelled did not know one or the other of these pieces of information and three-quarters of them, or thirty eight percent of those who cancelled, said that if they had known the missing piece or pieces of information that they would not have cancelled. Again, this information might influence a substantial number of people who decide to cancel.

#### *Potential for Removal of Units Through Retailers*

- Approximately 26 percent of refrigerators leave households through the new appliance dealer channel without a program and without an incentive other than convenience and free removal.
- On eight sample days, a large new appliance dealer distribution center dispatched 887 refrigerators to a total of 871 customers. The orders included instructions to remove refrigerators at 286 (33 percent) of the 871 sites. However, 111 (eight percent) of these orders were cancelled before the removal took place so that refrigerators were removed at 175 sites (20 percent).
- Therefore, when purchasing a new refrigerator, roughly a third of customers initially arrange to have a refrigerator removed by this retailer. Before the

delivery occurs between 25 and 40 percent of these customers (8 to 13 percent of the deliveries) decide not to have the unit removed.

#### *Program Effects on Used Appliance Dealers*

- The used refrigerator market was examined to determine whether the market is large enough to warrant a direct program intervention and to confirm program assumptions. After a diligent effort, the used appliance dealer sample turned out to be small because of the challenges of locating used appliance dealers, recruiting them, and then encouraging them to participate. The following findings are useful as a general portrait of what is happening among used appliances dealers.
- The average number of refrigerators and freezers sold per year among dealers who responded to our survey was 175 and ranged from 24 to 540. The average number of refrigerators and freezers acquired per year was 179.
- Ninety-one percent of respondents accepted both pick-ups and drop-offs, and nine percent only allowed drop-offs.
- Seventy-three percent of respondents advertise in the yellow pages, 45 percent use the Internet and craigslist, 36 percent use the Penny Saver and get referrals from community waste managers, and 27 percent advertise in newspapers and get referrals from new appliance dealers.
- When a unit is dropped off, 55 percent of dealers pay the customer for the used refrigerator, 18 percent charge the customer, and 45 percent obtain units for the recycle value. On average units are acquired for \$34 per unit and sold for \$61 per unit.
- When a unit is picked up, 40 percent of dealers pay the customer for the used refrigerators, 20 percent charge the customer, and 30 percent obtain units for the recycle value.
- When doing pick-ups, none of the dealers accept all the units, 50 percent accept working ones, 20 percent nonworking ones, and 10 percent only accept out-of-box units.
- Three out of 11 dealers (27 percent) obtain used refrigerators or freezers from new appliance dealers and 73 percent do not.
- The used dealer pays an average of \$30 per used refrigerator and sells them for an average of \$72.50.
- Five dealers have arrangements with communities to handle used refrigerators and freezers and six do not have such arrangements.
- Half of the used appliance dealers buy or sell used refrigerators from multifamily operators (condos/apartments).
- Thirty-seven percent of all used refrigerators obtained by dealers are less than 10 years old. Twenty-seven percent are from 10 to 14 years old, 20 percent are 15 to 19 years old, and 16 percent are 20 years or older. In 2006, 84 percent of used units were less than 10 years old.
- Sixty percent of used appliance dealers are able to sell all the units they obtain and 80 percent say that they could sell more. Twenty percent say that they could not sell any more if they could obtain more units.
- Seventy percent of the dealers sell units through a store, 70 percent take them to a recycler, 70 percent salvage parts, 30 percent sell units to operators of multifamily units, 20 percent sell them to other dealers, 20 percent take them to

community waste centers, 20 percent sell them to brokers, and 10 percent de-manufacture them.

## Recommendations

The following are recommendations for the program.

### *Program Overall*

The program is making significant inroads into the refrigerator transfer market. **We recommend that the program be maintained at least at 2008 funding levels with additional funding to support the pilots and additional research recommended below.**

### *Program Design*

**We strongly recommend that the program showcase the Enerpath System to other program managers.** It potentially represents a model that could be used to design a more general system for order taking, tracking, and rebate payments across all programs thereby providing a unified method for dealing with customers. A further advantage is that it would enable rapid exchange of data between programs and present opportunities for cross selling.

We found the data from Enerpath to be accurate, to the extent that we could evaluate, with few of the problems we have observed in the implementation of other refrigerator tracking systems. **We recommend that the number of categories for appliance age probably needs to be increased, especially above 15 years of age. We also recommend categorizing age in terms of birth year(s) facilitating comparisons across program years.**

With respect to working with new appliance dealers:

- About 32 percent of a new appliance dealer's customers who purchased a refrigerator scheduled a removal but in the end only 20 percent of the customers who purchased a new refrigerator actually had a removal. Appliance dealers have a cancellation problem that is greater than the program's cancellation problem.
- The data collected from one major distribution center suggests that as many as 80 percent of refrigerator sales actually leave preexisting units in place (100 – 20 percent removed). The actual percent is further reduced by units going into new housing or into housing without an existing unit. We were unable to determine those numbers from this sample. Even after accounting for this, there are a sizeable number of units that could be captured through dealers.

We examined another program that collaborates with new appliance dealers to remove refrigerators.

- That program uses a sticker system to mark units that are to be removed.
- There seem to be relatively few problems with the sticker.
- The program encourages retail sales personnel to promote the program. A very high percentage of the customers who chose this program indicated that they participated because of information from the sales associate.
- The issue of determining whether units are working or nonworking remains. The question is how to train the logistics teams or whether to train them at all.

- **A well-designed and monitored experiment to examine collaboration with new appliance dealers should provide additional insight and is strongly recommended. The experiments should focus on whether collaboration reduces costs while maintaining a reasonable net-to-gross ratio.**

Convenience is a major driver of participation but the importance of the direct incentive appears to have increased slightly from our 2006 findings. We think the difficult economy may have resulted in this change. **The incentive should be maintained although it does not need to be increased. We recommend promoting cost savings and the environmental benefits to increase the number of customers and reduce the number of cancellations.**

### *Marketing*

The refrigerator recycling market can be thought of as having two target segments, 1) primary or secondary refrigerators that are replaced by the purchase of another unit and 2) second, third or fourth refrigerators in existing households that can be removed. We believe that SCE is making significant inroads in capturing refrigerators that are replaced by new units. **There is a need for continued efforts to increase the capture of second refrigerators in existing households recognizing that many of these units may be newer units and encouraging households to not retain an existing unit or purchase a second or third unit.**

As in the previous study, **we recommend additional research on households with two or more refrigerators.** We need to understand what portion of this market is made up of refrigerators and freezers that are used and useful and likely cannot be removed and what portion of these units can be targeted and removed. We also need to understand the target audiences. As yet, this market is not well understood and has not been significantly penetrated.

Among program participants, bill inserts were the most effective marketing channel and relatives and friends were the second most important. Information from appliance stores also was important for participants. Among those in the general population who disposed of a refrigerator by any method in the last four years (disposer sample), knowledge of the program had increased from 2004-05. This increased awareness probably resulted from direct mailing of letters or brochures. When compared to program participants or people who cancelled participation in the program, people in the disposer sample were more likely to say that they heard about recycling from the media (TV). Overall, for participants, participants who cancelled, and disposers, the general media, newspaper, radio, and TV, had a relatively small impact compared to the more direct utility methods. **We recommend continuing to use utility channels, direct mail, the website, and appliance stores. We recommend that SCE conduct some experiments to evaluate various marketing messages and market channels.**

Website users were more likely to cancel their appointments than those who signed up by telephone and less satisfied with the program. Aside from the lack of a personal touch, webpage access appears to be minor issue. **We recommend that an attempt be made to project a more personal touch on the webpage.**

The cancellation data bears out our suspicion that a high percentage of cancelled units are given away. It also confirmed that many of these units are younger. The characteristics of customers who cancel are also different than for participants. **These units are still worth**

removing but some refinements of message channels and tailoring of messages is likely to be needed to prevent the escape of these units.

#### *Education and Training*

The incentive is an important message but other messages such as the cost of operation and the environmental issues are important as well. People who cancelled and who were not aware of electrical costs or environmental harm said that they might not have cancelled if they had known this information. **Messages about this program should continue to highlight the direct incentive, the operational incentive, and the environmental effects.**

The range of effects could include:

- A reduction in the emissions from the generation of electricity
- A reduction in the capital requirements for electricity generation and transmission
- The effects of release of refrigerant from second refrigerators that continue to be used
- Pocket book effects
  - Incentive or capital buy down
  - Operating costs
- Convenience
- Other household effects such as increased space
- Refrigerator recycling as a lead to other energy efficiency activities

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# 1. Introduction — The Appliance Recycling Program (ARP)

The ARP is available to eligible customers on a first come first served basis in the Southern California Edison (SCE) service territory.

In 2006-08, the program targeted residential customers to prevent future use through retention or transfer of inefficient but functioning (meaning still cooling) 10 to 27 cubic foot refrigerators and/or freezers. The primary goal of the program is to use monetary incentives and free pick-up to induce customers to have the appliances removed from their premises. Additional goals of the program are to educate customers about the energy efficiency benefits of recycling older refrigerators and freezers and the non-energy benefits from recycling in an environmentally friendly manner.

The program accepts a maximum of two refrigerators and/or freezers annually from a household or business that have either been displaced by another refrigerator or freezer and/or represent a second, third, and even fourth refrigerator that is being disposed by a household. The program offers free pick-up of the appliance and a cash incentive for participation. Program contractors pick up and dispose of the refrigerators in an environmentally safe manner.

## 1.1 A Brief History of the Refrigerator Recycling Programs

### 1.1.1 A Historical Overview

Refrigerator recycling programs have been around since the inception of demand-side management programs in the late 1970s. Pacific Gas and Electric (PG&E), partnering with the Salvation Army, started one of the first refrigerator recycling programs in the late 1970s. Since those early efforts, many utilities have attempted either a pilot or a full refrigerator and freezer recycling program. In 2006, the authors were able to locate 54 evaluation studies for more than 54 programs. Since then, many utilities and public benefits programs have implemented either pilot or full-scale programs. As this report was being written, the states were deciding whether or not to include recycling in their program designs in response to provisions of American Recovery and Reinvestment Act of 2009 (ARRA).

### 1.1.2 SCE's Efforts

In 1994, SCE implemented its first full-year of refrigerator and freezer recycling. SCE's program accepted only working secondary refrigerators.<sup>1</sup> Participants received \$25 or \$50

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Many terms are used to refer to refrigerators in households. The "primary" or "main" refrigerator usually refers to the refrigerator that is found in the kitchen and is the most used refrigerator. If a household has a very small kitchen and a small refrigerator in a small space and has a larger refrigerator in a nearby room that holds frequently used food items, the household may think of the refrigerator in the nearby room as the main or primary refrigerator. Nationally, about 26 percent of households have a second, third, or even fourth refrigerator. The percentage in single-family dwellings approaches 40 percent indicating that most households with multiple units are single-family dwellings. High percentages of these second, third, and fourth refrigerators are plugged in and working all of the time. These secondary or tertiary refrigerators may be used for longer-term storage, for example, a household may shop warehouse stores on a monthly basis and store food from those trips. Such units may be found in a shared household where there may be two units. We know that such units are likely running but we know very little about what is stored in them and whether they are mostly full or according to urban legend mostly storing stale beer.

It can be difficult to distinguish whether or not a refrigerator is a primary or secondary unit. Approximately 26 percent of people who purchase a new refrigerator actually have a refrigerator removed when the new unit is delivered. Basically they are replacing and removing a unit. Of course they may have additional refrigerators in the household.

savings bond for participating in the program. A report from the 1994 program year reported 48,000 recycled refrigerators with net savings of 31.1 GWh per year and net savings of 674 kWh and 473 kWh per refrigerator or freezer respectively. A report for the 1996 program year stated that 25,000 refrigerators were recycled with utility level net savings of 29.1 GWh and net savings per unit of 1,141 and 1,182 kWh per unit for refrigerators and freezers respectively. In 2002 the utility collected 38,409 refrigerators and 4,761 freezers resulting in a net savings of 30.8 GWh.

Beginning in 1999 the program rules were relaxed to allow for the pick-up of primary as well as secondary units. Primary units that were being replaced became the dominant units removed by the program. A cash incentive replaced the savings bond and participants could opt to select a package of five compact fluorescent light bulbs (CFLs) instead of the incentive. The CFLs were not a wildly popular option.

Concerns about gross savings led the California Public Utilities Commission (CPUC) to impose restrictions on the eligibility of refrigerators in the 2004-05 program years. Refrigerators manufactured after 1990 and refrigerators smaller than 14 cubic feet were not eligible for the program. Refrigerators newer than 1990 were perceived to be more efficient than earlier refrigerators and were assumed to reduce the gross savings and the overall benefit-to-cost ratio. The age restriction was removed during the 2005 program year and refrigerators of 10 cubic feet or more were once again eligible for the program. The 2004-05 program offered a \$35 dollar incentive for refrigerators and freezers. SCE petitioned and was granted permission to increase the incentive for freezers from \$35 to \$50 after May 1, 2005. The SCE refrigerator incentive was raised to \$50 in 2006.

The market has changed in various ways. Over the years a market for used refrigerators developed in Mexico. That provided a place for recyclers to dispose of refrigerators. That market was for smaller refrigerators, such as 14 cubic foot units. That market now appears to be in decline.

New appliance dealers, in particular the large national retail chains such as Sears, Best Buy, Lowe's, and Home Depot, never were or are no longer in the business of selling used refrigerators and now contract with recyclers to take the units that are removed from households. The recyclers take all appliances that the retailers' logistics services remove from homes. In the case of refrigerators, they may resell working units in good condition that are less than ten years old. New appliance dealers also contract with some of the same entities to take out-of-box and scratch and dent units. Used dealers who sell appliances are primarily interested in clean full-featured units that are less than 10 years old. As we shall see later based on somewhat limited data, the number of dealers selling used appliances continues to decline. Used dealers attribute this to the decline in the availability of used refrigerators which is directly associated with the above referenced trends. In some areas such as the SCE service territory, recycling programs may further reduce the availability of used refrigerators.

Another major factor in the market has been the changes in environmental law. In California, firms servicing or dealing with refrigerators must now be licensed. The

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(Continued from the previous page) Some may place the refrigerator they are replacing somewhere to store it and then have it removed shortly thereafter. Technically then, these households have a second refrigerator but, practically, the refrigerator that is removed is a primary refrigerator that was slow to be moved. Because of the difficulties in determining the status of a refrigerator, most refrigerator recycling programs pick-up any refrigerator that is working.

refrigerant in the refrigerators and freezers must be removed before the appliances can be recycled and an attempt to remove refrigerant must be made even if it is clear that there is no longer refrigerant in the unit. Because of the cost of safe removal of refrigerant from all units, not just working units, firms and organizations that previously had been taking used units no longer participate in this activity. Most recently, the Salvation Army has been the only charity taking used appliances and they will only take appliances that are determined to be working and are easily removed. They directly sell about a quarter of the units and auction the remainder. Thus, these units remain in service.

## 1.1 Overview of Logic Models

Logic models are used to describe and understand programs. Typically a logic model includes a graphic and a written description of the program. A logic model presents two interrelated logics (or two causal sequences) associated with a program in a two dimensional space. A logical sequence of key program activities is presented in one dimension. For instance, the development of the program infrastructure must occur before the program is marketed; the program must be marketed before customers can be recruited, etc. It is implicitly assumed, if not always stated, that there is feedback from later to earlier activities. In other words, if marketing activities are unsuccessful, program managers or evaluators will observe this and the marketing activities and/or content will be changed.

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

Program logic models have numerous uses. They can:

- Provide a brief but powerful description of a program.
- Assist in developing a credible theory for how a program works.
- Assist in identifying gaps in existing programs.
- Assist in identifying program elements that may not be useful.
- Provide a systematic basis for developing evaluation questions.
- Provide a systematic basis for identifying metrics.
- Help to track the development of a program, i.e., determine if the necessary elements of the program are falling into place.

## 1.2 An ARP Logic Model

Figure 1 is a logic model for the ARP. The activities are oriented in the horizontal direction and the performance spectrum in the vertical.

### 1.2.1 Activities and Outputs

Because they are so closely intertwined, the activities and outputs are discussed at the same time. The blue area (second from the top) displays the main program activities:

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

These activities produce the program outputs shown in the darker blue area, the third section from the top.

*Program infrastructure development activities* involve such things as gathering market knowledge, developing savings estimates, setting the goals for the program, designing the program, establishing the rules, developing the marketing approaches and content, and establishing the institutional and operating structures that are needed. The outputs associated with infrastructure development activities include tracking systems; the contracts for the recycling firms; marketing materials, including print advertisements and public service announcements; and a functioning program operation.

A key change in the infrastructure for this program was an upgrade to the tracking system. Previously, each of the contractors operated their own logistics tracking system. Enerpath now operates an integrated logistics tracking system. Enerpath's system provides the interface that is used for sign-up, customer tracking, routing, real-time tracking of daily routes, real-time inventory tracking using personal digital assistants (PDAs), rebates, and other aspects of the program.

*Program promotions* draw targeted customers into the program. The outputs of program promotions are bill inserts, direct mailings, advertising placed in print media, television and radio advertisements, public spots that are placed or played on radio or television, news releases, media events that attract the news media, information provided to appliance retailers who make it available to customers, e-mail blasts, and utility/program websites. The program also leverages other statewide and outreach campaigns such as those that offer information and education, e.g., Flex Your Power Statewide Marketing and Outreach Campaign, Univision.

Another key activity is *processing inquiries and requests for appliance removal*. Customers place a call to the recycling contractors' call centers or sign up via the utility/contractor website. The central data based contains a list of SCE residential accounts. Upon receiving a call, the contractors verify that the customer is a utility customer, that the unit is operable, that the unit is within the specifications of the program, and that the customer has not reached the limit of two units for the current year. The contractors then schedule the soonest possible day and time for appliance removal that is convenient for the customer based on a pre-established routing schedule. The customers are informed that they will receive a reminder call 24 hours in advance and are told that the unit must be plugged in and operating so that the driver can verify that the unit is functional. The call centers also handle calls from customers who call to cancel or reschedule the appointment and customers seeking information.

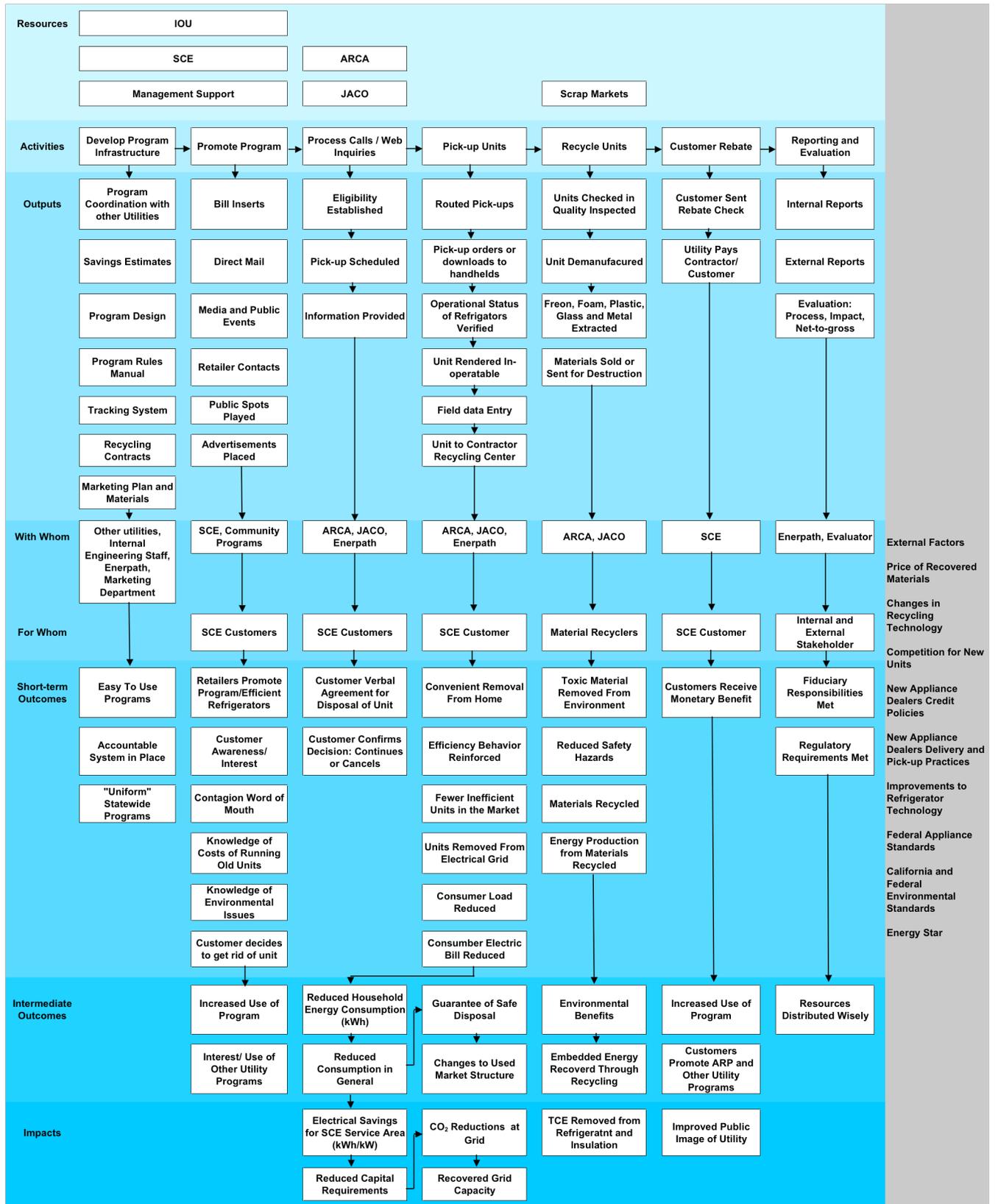


Figure 1 Logic Model of the California Residential Appliance Recycling Program

The key outputs of this activity are:

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

The contractors, Appliance Recycling Centers of America (ARCA) and JACO Environmental Inc. (JACO), *complete the pick-up of the units*. The contractors call the customer 24 hours in advance to give them a four-hour pick-up window. California law requires the four-hour window. The customers are reminded that the units must be plugged in to verify that they are operable. The operators usually try to speak directly with a person but will leave a message on an answering machine.

Each driver now has a personal digital assistant (PDA). The daily routing, a list of the customers, and information about the appliance(s) to be removed is downloaded to the PDA. While on the route, the driver may call ahead to forewarn the customer of the actual pick-up time. The pick-up crews go to the household to retrieve the refrigerators. The crew verifies that the refrigerator motor is running and that it meets other requirements. They then cut the cord and smash the controls. The crews have found that some customers become emotional about this procedure so they will typically cut the cord but wait until they are on the truck to disable the controls. The crew enters, verifies, or edits the PDA data for the appliance and indicates that the pick-up has been completed. The crews bypass households where no one is home even if a refrigerator is sitting outside of the home. However, JACO will remove a unit if there is a note left on the machine specifically identifying it for removal. If they miss the householder on the first pass and the route is fairly compact, drivers may swing by a household a second time. Pick-ups can be added to the route while the driver is in transit. Thus, same day pick-ups may be available. The PDA also allows the driver to "prospect" for units from a list of households that have indicated that they would be willing to have their unit removed early if it is convenient. Finally, the PDA allows the dispatcher to know where the truck is at all times and to know the status of the load.

Approximately 20-25 units will be collected on a route on a given day, although this number can vary based on geographic location and time of the year. It is not unusual to have a few missed appointments (i.e., "last minute" cancellations, requests to reschedule, and "no shows").

Units are taken to the recycling center for de-manufacturing. When the units arrive at the recycling center, the units are "checked-in." The check-in procedure verifies the number of units on the truck and the characteristics of the units.

*Recycling the units* involves removing glass and plastic components, any parts with PCBs and mercury, and the refrigerant and oil; opening the case to remove the foam insulation; disposing of the foam insulation; and then selling the refrigerant and other materials to appropriate dealers or burning the insulation. There are variations in the processes of the two contractors.

The contractor *sends an incentive check* to the customer and provides the participation data to SCE.

### 1.2.2 *With Whom and for Whom*

The primary targets of this program are residential customers that own more than one refrigerator and/or freezer. There is a cast of partners with which the program works. In terms of program promotion, SCE works with its marketing department, which in turn works with a contractor(s) to do the promotion. On occasion, there are marketing activities at the corporate utility level that may include mention of the ARP. SCE uses Organizational Support Services to do outreach with major new appliance dealers in the SCE service territory. Enerpath is contracted to handle all the data collection, scheduling, and routing tasks. ARCA and JACO partner with other firms to dispose of the materials that are recovered from the refrigerators.

### 1.2.3 *Short-term Outcomes*

Outcomes are the result of partners and target audiences responding to the outputs of the programs. In response to a visit from the retailer detailer<sup>2</sup>, retailers may place information on the sales floor. They may also respond as a result of inquiries by customers. As we shall see later, customers do learn about the program from new appliance dealers.

The remaining short-term outcomes are primarily customer outcomes. The promotional aspects of the program result in customer awareness of the program. The promotion may also induce contagion as customers who have heard about the program tell others about it whether or not they have actually used the program. Promotion may also increase customer awareness of the amount of energy consumed by refrigerators and freezers, especially older units.

Another outcome is the commitment or agreement to have a refrigerator removed when the customer places a call to the call center or visits the website. As we shall see, it's not unusual for customers to change their minds and dispose of their refrigerator(s) in some other way.

Other short-term outcomes are the convenient removal from the home and the receipt of the incentive. The household is likely to feel good about the removal of the unit and their efficiency behaviors may be reinforced for their participation. In this optimal case, the unit is no longer consuming energy, a less efficient unit is removed, and there is one less unit that may appear in the used appliance market that could return to service.

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

### 1.2.4 *Intermediate-term Outcomes*

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

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<sup>2</sup> Retailer detailers, also sometimes called "circuit riders," visit large retailers that sell appliances explaining the various SCE appliance programs to the sales staff. One of their responsibilities is to discuss the ARP with the sales staff.

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

#### 1.2.5 Long-term Outcomes

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

#### 1.2.6 External Factors

External factors are those forces at work outside the program that can influence program results. There are a number of examples of how such factors have influenced this program in recent years. For example, the price of CFCs, which the recyclers resell in the market, is declining as the demand for CFCs decline in response to the phase-out of these materials. Countering this trend are the prices of copper and steel. Copper prices increased in 2007, decreased in 2008, and are now increasing. Similarly, scrap steel prices had increased in response to demand in Asia and elsewhere, declined, and are now increasing. Changes in recycling technology may influence the market as well. For example, the giant shredders in use at some scrap metal companies are fully capable of shredding multiple refrigerators at once, reducing them to small pieces, and destroying the toxic gases from plastics and other items due to the high heat generated by the friction within the shredder. According to a representative from a scrap processing firm, the shredder passes emissions tests. There are now smaller units in the market specifically designed for de-manufacturing refrigerators and sorting materials. If the volumes are high enough, these units become economical for programs such as SCE's.

As noted previously there have been changes in the used refrigerator market during the last ten years. The competition for used units may have changed as well. New appliance dealers have changed their patterns of behavior and contracted with firms to recycle used units they have collected. The recycling firms disassemble the units that have little value. These recycling firms contract with used dealers to sell the desirable used units. The way in which firms handle out-of-box units may tend to displace the demand for some used units. The availability of credit at large appliance dealers may make low-end new units reasonably competitive with units re-entering the market. We have previously noted that changes in state regulations have led to changes in the market. Changes in refrigeration technology may reduce or increase the life span of refrigerators and/or cause a further reduction in the consumption of units.

Finally, the emergence of the cap and trade system to deal with green house gases may change the economics of refrigerator recycling. Because the refrigerants are potent green house gasses, there are likely to be opportunities to use credits to broaden the program and support other efficiency efforts.

### 1.3 2006-08 Process Review of ARP

The 2006-08 process evaluation is structured as a follow-up study to the 2004-05 program and earlier evaluations. It is intended to be forward looking, providing insight and

guidance for continuously improving program process and marketing. The purpose of the study is to:

1. Confirm and verify actions taken to address the recommendations from the 2004-05 study.
2. Verify and trend key findings from the 2004-05 study onward.
3. Assess changes in the elapsed time from the request for an appliance removal to actual removal for the period from 2004 to 2008 for appropriate time intervals.
4. Examine the cancellation rates for the period 2004 to 2008 of appropriate time intervals to see if they have changed during this period.
5. Assess changes to the logistics system, incentives, and any changes in elapsed time between sign-up and removal as factors in changes in the cancellation rates.
6. Examine the pick-up, management, and disposal practices for refrigerators and freezers collected by new appliance dealers when a new refrigerator or freezer is delivered to a household. Also, assess the volumes and characteristics of these refrigerators.
7. Review pilots or programs conducted by other utilities that involve collaboration with new appliance dealers in the refrigerator recycling program.
8. Examine changes in the customer disposal practices between 2004-05 and 2006-08.
9. Describe the used appliance market and document changes to the market since 2005.

**1.4 Status of the 2004-05 Evaluation Recommendations**

The 2004-05 evaluation of the Residential ARP (RARP) included a number of chapters discussing process and market related issues. Key findings and recommendations are listed below. One of the purposes of this evaluation was to assess the extent to which these recommendations were addressed either by specifically implementing them, implementing an alternative, or rejecting the recommendation for good reason. Table 1 shows the recommendations and the status of the 2004-05 recommendations.

**Table 1 2004-05 Evaluation Recommendations and Their Current Status**

2004-05 Evaluation Recommendations	Recommendation Status
1. Additional funding should be provided for the RARP.	Substantial additional funding was made available in 2008. The year-over-year increase in the number of units between 2007 and 2008 was 50 percent, from 60,315 to 90,242.
2. ARP increase its awareness activities.	SCE added direct mailings and the SCE marketing group selected ARP for attention in the summer marketing campaigns which included media events and radio advertisements
3. Awareness activities should be geographically targeted to avoid surges in demand for services.	SCE’s direct mailings were geographically targeted to avoid surges in demand for services.
4. The utilities use more messages to inform	SCE promoted a “green” theme,

2004-05 Evaluation Recommendations	Recommendation Status
people of the advantages/benefits of recycling.	provided an estimate of annual cost savings (\$292 for removal of a second refrigerator, \$195 for a replacement), pointed out to customers that recycling offers the potential to reduce harm from materials leaching into the environment, pointed out the reduction of CO <sub>2</sub> from reduced energy use, encouraged telling friends and family, and piloted a referral bounty.
5. ARP experiment with bill inserts and bill messages to determine their relative effectiveness.	SCE did use bill inserts but did not run experiments to determine their effectiveness compared to bill messages or bill flyers. Program resources and funds were not available to conduct such experiments.
6. Attempts be made to reduce the cancellation rate (approximately 20 percent) for customers who initially sign-up.	SCE reduced the cancellation rate from 21 to 17 percent. This reduction can be at least partially attributed to the shortened response time between establishing an appointment and the actual pick-up.
7. Customers be informed about the value of recycling in the appointment confirmation letter.	This was not pursued. The significant reduction in elapsed time from appointment to pick-up meant that letters could arrive after the pick-up. Customers were reminded of their pick up time via a brief auto dialer phone message the day before their pick up date. A handout to explain the value of recycling is being explored for logistic drivers to distribute at time of pick up.
8. Because the cancellation rate and elapsed time to pick-up are correlated, the utilities should explore with the recycling firms improved logistics as one possible way to reduce the cancellation rate.	SCE developed a completely new logistics system that includes real time communication with drivers and instantaneous uploads of data. The average elapsed time from appointment to pick-up decreased from 15 days in 2004-05 to five days in 2008.
9. The utilities should be extremely cautious in engaging new appliance dealers as partners in the recycling program because of the likelihood of a low net-to-gross ratio resulting from the number of nonworking	The program began exploring the retail appliance option with a national retailer. As part of this evaluation, a national retailer cooperated to help SCE understand the number of used

2004-05 Evaluation Recommendations	Recommendation Status
refrigerators and freezers collected by the new appliance dealers and the age of the working appliances that makes them of minimal value and unlikely to be sold into the used market.	appliances that they retrieve when they sell and deliver a new appliance. A pilot being conducted in another jurisdiction was also examined in detail.
10. The two million estimated non-primary refrigerators and freezers be a high priority target because of their age, their potential for malfunctioning causing excessive energy use, and their potential for release of refrigerant into the atmosphere.	Based on an analysis of secondary data, SCE targeted empty nesters and Asian households through direct mailings.
11. In the short run and in the absence of better market intelligence, marketing efforts should highlight the energy and environmental consequences of keeping a non-primary refrigerator or freezer or giving the unit to a relative, friend, or neighbor.	SCE advertising highlights the cost of keeping a second unit in the home. As noted in number four above, the environment and other issues were highlighted as well. The importance of not giving the unit to a relative or a friend was also mentioned in at least one of the mailers. Finally, SCE developed a referral pilot in an attempt to use word of mouth to encourage customers to promote the program.
12. The utilities continue the program as is but increase marketing designed to attract non-primary refrigerators.	See item 10
13. A study, which includes in-depth interviews or focus groups and a survey of households with non-primary refrigerators and freezers, be completed. The study should also examine whether mentioning that "X" number of neighbors in their zip code also participated in the program might increase participation.	This study was originally planned but then changed. A secondary analysis of RASS and HEES (energy audit participants) data was completed. The purpose of the analysis was to find actionable criteria that could be used to target households with non-primary units.
14. In remote areas with low volumes, ARP should investigate the use of a local contractor to do pick-ups and take units to a local holding facility.	The new logistics system partially addresses the problem and mitigated the additional costs of hiring additional contractors
15. Because persons signing up on the Internet appear to be more likely to drop out, they should receive an e-mail or telephone call with a message on the answering machine thanking them and explaining the benefits.	If these web sign-up customers provided an e-mail address they received an e-mail message and a telephone call.
16. ARP should focus on the units that are	This theme was addressed in at least

2004-05 Evaluation Recommendations	Recommendation Status
given to friends, neighbors, and relatives (an estimated 172,000 refrigerators in 2005).	one mailer.
17. ARP consider partnering with charities, allowing them to retrieve working refrigerators and freezers.	This was considered but it was determined that the ARP process did not mesh well with the operations of charities.
18. ARP should not engage new appliance dealers to capture used units.	SCE began exploring how this might be done.
19. The recycling contractors need to collect the same information about refrigerators and store it in a consistent manner.	The new tracking and logistics system resulted in consistent collection of data. This evaluation identifies some refinements that are needed to the specific pieces of data being collected.
20. The random survey of households conducted at the end of a customer call scheduling a pick-up could be a valuable tool but needs to be substantially improved or dropped if it is not improved.	This was not done because changes in the logistic system were being implemented. This may be pursued at a later date.
21. Standardized data should be collected for customers who cancel their orders. Specific information about the data that is needed is contained in the main report.	SCE has been tracking customers who cancel their orders. A survey of randomly selected customers who cancelled their orders was conducted as part of this evaluation.

As noted above, SCE has responded by making numerous changes to its program. In some instances it has followed the recommendations and in others it has developed alternative responses that address the basic issues indicated by the evaluation. For example, changes, such as the use of real-time tracking software, have been made to pick-up procedures. The changes appear to have reduced the wait time and the cancellation rate. In yet another example, empty nesters and Asian households have been targeted to increase the capture of non-primary refrigerators.

## 2. Process Evaluation Methodology and Sample Design

The process evaluation included eight basic tasks.

1. Interview program staff, other relevant SCE internal staff, contractors and their subcontractors.
2. Analyze the participant data collected by the contractors.
3. Implement a participant, cancellation, and disposer survey.
4. Complete an analysis of marketing effectiveness, program awareness, and program satisfaction.
5. Complete an analysis of pick-up times, cancellation rates, and the characteristics of customers who cancel.
6. Complete an analysis of market share among disposers of refrigerators based on the disposer survey.
7. Complete an appliance dealer survey and update the analysis of the used refrigerator market to assess whether intervention is warranted and if program assumptions about the market are correct.
8. Collect data and analyze the potential for collaborating with new appliance retailers.

### 2.1 Staff Interviews

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

1. Identify in detail the program changes that occurred since 2004-05.
2. Obtain the staff's assessment of those changes.
3. Gather suggestions for additional changes.
4. Understand what program and customer data are available for secondary analysis.
5. Discuss alternative approaches to collecting refrigerators.
6. Discuss other issues as they may arise.

Before the interviews, Innovologie constructed an interview guide that was provided to the SCE evaluation project manager for review and approval. Interview guides can be seen in appendices. Innovologie staff worked with the SCE project evaluation manager to schedule individual appointments with those to be interviewed. Interviews with the following individuals took place:

1. SCE program manager
2. SCE marketing personnel
3. SCE marketing contractor personnel
4. SCE GIS manager
5. Other SCE staff and contractors as identified
6. Representatives of ARCA, JACO, and Enerpath (real-time systems contractor)

The interviews took place in November 2008. The length of the interviews varied from 30 minutes to two and a half hours. The interviews were conducted in a conversational style. The interview guide was used to make sure all topics were covered. With permission from the respondents, the interviews were recorded for purposes of verifying field notes.

**2.2 Participation data**

The analysis of the participation data focused on the following issues:

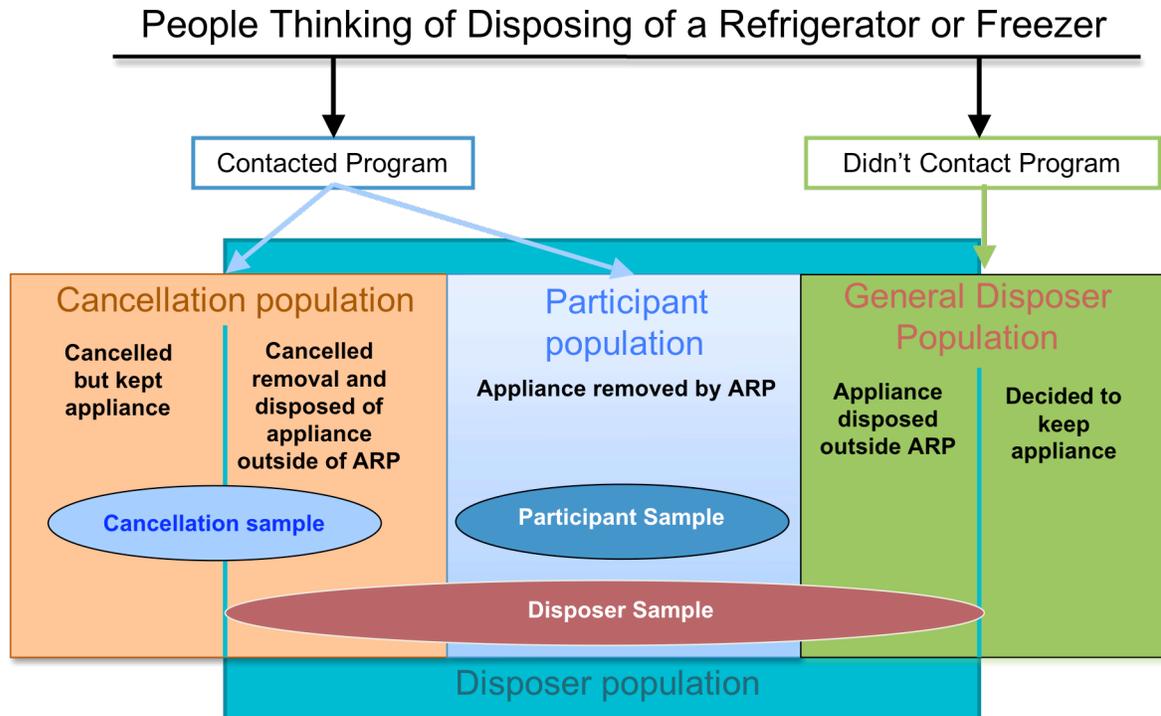
1. The number of units removed
2. The size and type of units
3. The amperage of the units
4. The elapsed time from the order to the pick-up
5. The number of orders that were cancelled

There were three sets of participation data. Data was obtained from ARCA and JACO for the period from January 2006 to approximately July 2007. In June and July of 2007, there was a transition from the JACO and ARCA data tracking systems to the Enerpath system. The use of the Enerpath tracking system started at the beginning of June. During the transition period, the orders were taken by the Enerpath system and JACO and ARCA used their systems to close out orders that had been received and fulfilled.

The data were obtained from the contractors. They were then organized into separate ACCESS databases. This was necessary because the contents and organization of the files varied. The analyses were then completed for each of the three sets of data.

**2.3 The Participant, Cancellation, and Disposer Surveys**

As part of the evaluation, three telephone surveys; a participant, a cancellation, and a disposer survey were conducted. Figure 2 may help to understand the different samples. A participant made arrangements with the program to remove a refrigerator or freezer that was picked-up by the contractor and for which the participant received an incentive payment. The cancellation survey targeted participants who made arrangements by



**Figure 2 Survey Populations and Sample**

telephone or through the Internet to have a refrigerator removed and then cancelled or did not meet the appointment and did not reschedule the removal. They may have kept the unit or disposed of the unit by giving it away, selling it, having the dealer take it or some other method of disposal. Disposers were households screened from a random sample of the general population of SCE customers that had had at least one refrigerator or freezer removed by any method, including the program, from their household between July 2005 and June 2009.

### *2.3.1 Participant Survey*

For the 2006-08 evaluation, Innovologie completed a participant survey that assessed awareness of the program, how customers heard about the program, reasons for participation, options for disposal alternatives that customers would have considered in the absence of the program, and satisfaction with various aspects of the program as well as satisfaction overall. This survey mirrored the 2004-05 participant survey.

Innovologie drafted a survey instrument and provided it to the evaluation project manager for review and approval. Once approved, Innovologie worked with On-line Communications (the survey contractor) to implement the survey. Innovologie tested the survey for quality assurance purposes and listened in on the first night of calls. Slight adjustments were made to the survey before it was given to the rest of the population.

Innovologie provided On-line Communications with a random sample frame of participant households. On-line Communications made six attempts to reach a household before replacing the sample point. Calls were placed between 8:00 AM and 8:00 PM PDT. A sample of 454 households was completed. This resulted in a sample of 391 households with at least one refrigerator removed and 77 households with at least one freezer removed. There were a total of four hundred five refrigerators and 80 freezers removed. This size sample assures a 95 percent confidence interval with  $\pm$  five percent accuracy for a binomial variable that is predicted to have a fifty-fifty split. The interviews took place in June and July 2009 and lasted an average of 11.17 minutes per respondent.

### *2.3.2 Cancellation survey*

The Innovologie team conducted a survey of customers who cancelled their participation in 2008. The survey focused on:

1. The characteristics of the customers that cancelled
2. How customers that cancelled their pick-up disposed of their refrigerators and freezers
3. Why they chose to dispose of the unit in the way they did
4. Customers' reasons for canceling
5. Whether those who signed up on the Internet may have been less committed than those who called on the telephone

The procedures used to produce the survey are nearly identical to those described in 2.3.1

Innovologie provided On-line Communications with a random sample frame of households that had cancelled a pick-up. The survey had a built in screener that was used to determine if the respondent had signed up for the program and cancelled the order. On-line Communications made six attempts to reach a household before replacing the sample point. Households were called between 8:00 AM and 8:00 PM PDT. A sample of 400 households was completed. This size sample assures a 95 percent confidence interval with  $\pm$  five percent accuracy for a binomial variable that is predicted to have a fifty-fifty

split. The interviews took place in May and June 2009 and lasted an average of 10.88 minutes per respondent.

### 2.3.3 *Disposer Survey*

In 2009, Innovologie repeated the disposer portion of the 2004-05 acquirer and disposer survey and analysis. Of particular interest were the changes in the percentage of people who disposed of a refrigerator and/or freezer (whether through the program or by some other means) (i.e., “disposers”), who were aware of the program. There was also interest in changes in the ways in which refrigerators and freezers are being disposed. Additional questions were added to augment understanding of how customers made the decision of how to dispose of their unit. The goal was to more fully understand the reasons behind the disposal option that people chose.

Innovologie worked with SCE to draw a random sample frame of 10,000 residential customers. The incidence of customers disposing of a refrigerator in the last four years is about 20 percent. A total of 400 surveys were completed. The survey took an average of 10.04 minutes.

The customers were screened to determine if they had disposed of a refrigerator by any means during the period. Customers who disposed of a refrigerator or freezer within a four-year time frame were asked to complete the survey.

### 2.3.4 *Disposition of the samples*

Table 2 shows the disposition of the samples. The two key rows in this table are row one, “completions” and row five “contacted and eligible.” The contacted and eligible represent households with which we spoke and were able to complete the screening questions. The completion rate then is the “completed percent eligible.” The completion rates were 88 percent, 58 percent and 40 percent for the participant, cancellation, and disposer surveys respectively. The cancellation and disposer surveys had fairly high initial refusal or break-off rates.

## 2.4 **Analysis of the Survey Data**

For the survey data, Innovologie used analytical methods and routines that we have successfully used in conducting process evaluations over the last 30 years. On-Line Communications provided the survey data in SPSS format and a listing of open-ended responses in text format. The data was analyzed using SPSS. Standard frequency and tabular analysis methods normally associated with survey analysis were employed.

## 2.5 **Profile the SCE Home Energy Efficiency Survey (HEES) of Participants with Second Refrigerators and Freezers**

Since 2000, SCE has been offering customers a Home Energy Efficiency Survey through mail-in, on-site, on-line or in-home options. In recent years, as many as 30,000 customers have completed the surveys. The surveys contain information about the building, appliances, demographics, and other information. Among the questions is one about having more than one refrigerator and/or freezer.

**Table 2 Disposition of Sample for the Participant, Cancellation, and Disposer Surveys**

	Participant Survey			Cancellation Survey			Disposer Survey		
	Count	Percent of eligible contacts	Percent of all contacts	Count	Percent of eligible contacts	Percent of all contacts	Dispose Count	Percent of eligible contacts	Percent of all contacts
Completions	454	88	41	400	58	15	400	40	7
Terminated	1	0	0	0	0	0		0	0
Initial refusal or break-off	25	5	2	215	31	8	250	25	4
Language barrier	38	7	3	72	10	3	357	35	6
Contacted and eligible Subtotal	518	99	47	687	99	25	1007	99	17
Six or more attempts	281		25	754		28	1434		25
Non-working Number	124		11	392		14	926		16
Non-residential/business	23		2	91		3	205		4
Wrong number	59		5	179		7	254		4
Other telephone problem	44		4	51		2	156		3
Privacy manager	27		2	41		2	135		2
No-such Person	19		2	43		2			0
Subtotal	577		52	1551		57	3110		54
Screened Ineligible	10		1	494			1657		
Grand total	1105		100	2732		100	5774		100
Average length	11.17			10.88			10.04		

The purpose of the original task was to:

- Explore the utility of these data for understanding who the holders of second refrigerators are.
- Segment customers with non-primary refrigerators.
- Assess whether the characteristics of customers with second refrigerators have changed through time.
- Explore ways to leverage the information for targeted mailing campaigns.

The task was redefined so that Innovologie:

1. Obtained the HEES data.
2. Completed an analysis of the HEES data for the most recent two years. The analysis identified the characteristics of customers holding a non-primary refrigerator or freezer.
3. Assessed these findings for purposes of identifying target audiences with second refrigerators.

## 2.6 Analysis of Potential for Collaboration with Retailers

In the 2004-05 study it was observed that new appliance retailers potentially represented an opportunity to capture used refrigerators. Collaboration with these retailers and their logistics services that deliver new refrigerators represented a possible opportunity to capture older refrigerators and increase convenience for customers while at the same time reducing costs. It was estimated that approximately 25 percent of refrigerators that change hands in a given year go to a new appliance dealer. Typically these refrigerators are disposed of by selling them to recyclers who then separate the refrigerators into various streams.

SCE was interested in examining what has happened in other programs that have tried this both in California and elsewhere. In addition, SCE wanted to understand the current practices of retailers regarding the removal of refrigerators and freezers from households. In the end this task was scaled back to do the following:

1. Understand how a major retailer manages appliance removal from households.
2. Establish a baseline for a major retailer in the absence of an incentive program.
3. Observe a pilot program to understand how other programs offering incentives work with retailers to remove appliances.

In order to do this, Innovologie:

1. Completed an interview with a major retailer and a recycler to understand how major retailers dispose of used appliances.
2. Reviewed delivery orders and collected information from them to understand how many refrigerators are being removed from households.
3. Examined the results from a pilot program in which an organization other than SCE collaborated with a retailer to remove second refrigerators.

## 2.7 Revisiting the Used Market

In the 2004-05 study, Innovologie conducted a small survey contacting about 50 used appliance dealers. The sample for that survey was from the California State Licensing

Board and the Yellow Pages. This was an attempt to obtain the best possible sample from available listings of used appliance dealers or firms thought to be dealing in used appliances. During that study it was observed that many used appliance dealers were using craigslist and the Penny Saver to market used appliances and that many of these firms did not appear in the sample frame.

Because the used market appears to be in decline, the study was repeated for 2006-08. The sampling strategy was broadened to include firms that appeared to be dealers who were advertising using craigslist and the Penny Saver. The goal was to get the broadest possible representation of used dealers. Appliance dealers proved to be difficult to identify, difficult to contact, and resistant to providing information. The resulting sample was less than what was desired.



### 3. Appliance Recycling Program Use

This chapter describes the 2006-08 program outcomes. This includes:

1. Participation numbers for 2006-08 program and changes in participation since the 2004-05 program
2. Characteristics of the appliances that were removed
3. Demographic characteristics of the participants

These findings are based on the 2004-09 participant data while the demographic data come from the 2006-08 participant survey data.

#### 3.1 Units Disposed of Through the Appliance Recycling Program

In 2004 and 2005 the ARP collected and de-manufactured 120,335 units from 112,894 orders in the SCE territory. From 2006 to 2008 the program collected and de-manufactured 219,609 units from 208,342 orders. Roughly the same number of units was collected in 2005 and 2006 but there was a 13 percent decline in 2007 (Table 3). In 2008 there was nearly a 50 percent increase in the number of units collected over the previous year. The changes are largely a function of the availability of funding.

**Table 3 Total Orders and Units Collected From 2004-08 by Program Year**

	2004	2005	2006	2007	2008
Orders	47,730	65,164	64,611	57,255	86,476
Units collected	50,899	69,436	69,052	60,315	90,242

##### 3.1.1 What Was Ordered and Collected

Participants in the program are eligible to have two units collected per year. As seen in Table 4, participants in the SCE territory have consistently ordered one unit to be picked up between 93 and 96 percent of the time in each of the last five years. The number of two unit orders was up slightly in 2006 and the number of single unit orders was the highest in 2008.

**Table 4 Percent of Pick-ups by How Many Units Picked Up**

Pick-ups	2004	2005	2006	2007	2008
1 unit	94.3	94.4	93.1	94.7	95.6
2 unit	5.7	5.6	6.9	5.3	4.4
Total	100.0	100.0	100.0	100.0	100.0
N Orders	47,730	65,164	64,611	57,255	86,476

##### 3.1.2 Appliance Type

ARP allows customers to turn in working refrigerators between 10-27 cubic feet and working standalone freezers. For 2004 and 2005, more than 145,500 refrigerators and nearly 21,000 freezers were removed. From 2006 through 2008, more than 191,000 refrigerators and 28,000 freezers were removed. In each of the years, between 86 and 89 percent of the units that were removed were refrigerators (Table 5).

**Table 5 Total Units Collected from 2004 to 2008 by Program Year**

Units	2004	2004 percent	2005	2005 percent	2006	2006 percent	2007	2007 percent	2008	2008 percent
Refrigerators	45,273	89	60,183	87	59,359	86	52,353	87	79,756	88
Freezers	5,626	11	9,253	13	9,594	14	7,962	13	10,486	12
Unknown	0		0		99		0		0	
Total	50,899		69,436		69,052		60,315		90,242	

Table 6 presents a breakout by household of the combinations of appliances that were removed between 2006 and 2008. Based on the overall total, 84 percent of households turned in just one refrigerator, and 11 percent one freezer. Three percent of households turned in two refrigerators; two percent turned in a refrigerator and a freezer and a very small percent turned in two freezers (367 total households).

Looking at the three-year trend, there has been a slight increase in one-unit refrigerator orders and a slight decline in freezer orders and multi-unit orders.

**Table 6 Types of Units Picked Up by Household per Year (percent)**

	2006	2007	2008	Total
Picked up one refrigerator	81.5	83.3	85.4	83.6
Picked up one freezer	11.7	11.4	10.2	11.0
Picked up two refrigerators	3.8	3.0	2.6	3.1
Picked up two freezers	0.2	0.2	0.1	0.2
Picked up one refrigerator and one freezer	2.7	2.2	1.6	2.1
Picked up one refrigerator and an unknown	0.1	0.0	0.0	0.0
Picked up one freezer and an unknown	0.0	0.0	0.0	0.0
Total	100.0	100.1*	99.9*	100.0
N	64,611	57,255	86,476	208,342

\* Total deviates from 100 due to rounding

### 3.2 Characteristics of Units Removed

Program contractors record the type, age, size, and amperage of each unit that they remove. The following tables show the distributions of these characteristics for the units removed in 2006, 2007, and 2008.

Top freezer refrigerators (Table 7) were consistently the largest percentage of units removed (about 55 percent). The yearly percentage of these units declined by two percent between 2006 and 2008. Side-by-side units were the next largest percentage removed. The removal of these units increased from 24 percent to 28 percent between 2006 and 2008. Upright freezers accounted for nine to 10 percent of units. Other styles accounted for a total of seven to eight percent of units.

**Table 7 Styles of Units Picked Up by Year (percent)**

Type	2006	2007	2008	Total
Top freezer	57.8	53.3	55.2	55.5
Side-by-side	23.9	28.8	28.4	27.1
Bottom Freezer	1.8	2.3	2.6	2.3
Single door refrigerator	2.7	2.4	2.2	2.4
Upright freezer	9.9	10.1	9.2	9.7
Chest freezer	3.9	3.1	2.4	3.1
Total	100.0	100.0	100.0	100.1*
N	68,428	60,160	90,242	218,830

\* Total deviates from 100 due to rounding

The greatest percentages of units were more than 15 years old (Table 7). However, the percent of units more than 15 years being removed declined by about 20 percent between 2006 and 2008. This is significant. The percentage of younger units in all three categories increased between 2006 and 2008. In other words, the program is picking up younger units. This is a possible explanation of the slight increase in the percentage of side-by-side units noted in the previous paragraph. Over the years, the market share of side-by-side units increased their market share and they are now reaching replacement age.

**Table 8 Age of Units Picked Up by Year (percent)**

Age	2006	2007	2008	Total
Less than 10	8.5	10.6	13.1	10.9
10 to 12	23.6	30.6	29.0	27.8
13 to 15	16.9	25.9	27.8	23.9
Greater than 15	51.1	32.9	30.1	37.5
Total	100.1	100.0	100.0	100.1
N	69,052	60,274	90,225	219,551

\* Total deviates from 100 due to rounding

Table 9 shows that the percentage of units in the 20 to 24 cubic foot category increased between 2006 and 2008. There was a decline in the percentage of units between 15 and 19 cubic feet. Both of these findings are consistent with the increased percentage of side-by-side units noted previously. There was slight decline in the percentage of units greater than 24 cubic feet.

**Table 9 Sizes (cubic feet) of Units Picked Up by Year (percent)**

Size	2006	2007	2008	Total
Less than 10	0.0	1.6	1.7	1.1
10 to 14	6.6	7.8	7.5	7.3
15 to 19	50.7	47.7	45.3	47.6
20 to 24	31.5	32.5	36.5	33.8
Greater than 24	10.8	10.4	9.1	10.0
No data	0.3	0.0	0.0	0.1
Total	99.9*	100.0	100.1	99.9*
N	69,052	60,327	90,225	219,604

\* Total deviates from 100 due to rounding

Relatively complete data for defrost type were available for 2007 and 2008. As (Table 10) shows frost-free units were by far the most common, 89 percent in 2007 and 93 percent in 2008. It appears that the number of manual units declined between 2007 and 2008. This is consistent with the decline in the number of manual units in the population.

**Table 10 Defrost Type by year**

Defrost Type	2007	2008
Frost free	89	93
Manual	10	6
Partial frost free	0	0
Other	0	0
Total	99*	99*
N	59,919	90,254

\* Total deviates from 100 due to rounding

The highest percentage of units had an amperage of 6 to 9.9 amperes, with an increase in this category from 63 to 73 percent between 2006 and 2008 (Table 9). The percentage of units at 10 amperes or greater also increased. This suggests the movement toward removing larger sizes and styles offset some of the reduction in savings from a decline in the number of older units removed. Through the 1990s until 1997 the average size new unit that was shipped was between 20 and 21 cubic feet. In the most recent years the average size of the units shipped has been about 22 cubic feet or more.<sup>3</sup>

**Table 11 Amperage of Units Picked Up by Year (percent)**

Amps	2006	2007	2008	Total
Less than 3	1.4	1.2	1.1	1.2
3 to 5.9	31.0	23.0	16.7	22.7
6 to 9.9	62.8	69.9	72.7	69.0
10 or greater	4.3	5.2	8.7	6.4
Not known	0.4	0.7	0.7	0.6
Total	99.9*	100.0	99.9*	99.9*
N	61,251	53,906	86,244	201,401

\* Total deviates from 100 due to rounding

### 3.3 The Participants

Based on the participant survey, participant demographics can be described. This provides some insight into who is using the program. The characteristics to be examined are:

1. Home ownership
2. Size of home
3. Years in a home
4. Number of residents in the household
5. Number of children in the household
6. Whether the home has been recently remodeled
7. Total income of the household

<sup>3</sup> US Department of Energy, *New Opportunities Multiply Savings: Energy Star Refrigerator Market Profile*, Washington, DC: US Department of Energy, December 2009, p. 6.

Seventy-six percent of all participants were homeowners (Table 12). A slightly higher percentage of owners turned in freezers than turned in refrigerators.

**Table 12 Participants Were Primarily Homeowners**

Own/Rent	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
Own	75	78	71	76	343
Rent	18	10	14	16	74
Refused	7	13	14	8	37
Total	100	101*	100	100	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

Overall the median square footage of households participating in the ARP program is 1,977 square feet. The most common size of participants' homes is in the range of 1,000 to 2,000 square feet (Table 13). Only a small percentage of participants had homes of more than 4,000 square feet. Households that turned in freezers had slightly larger homes than those that turned in refrigerators. Not surprisingly, approximately 22 percent of respondents did not know the square footage of their home.

**Table 13 Square Footage of Participant Homes**

Home (square feet)	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
Less than 500	1	0	0	1	5
500 to just under 1,000	8	0	0	7	31
1000 to just under 2,000	42	48	50	43	195
2000 to just under 4,000	23	32	14	24	109
4,000 and up	3	2	7	3	14
Did not know or refused	22	19	29	22	100
Total	99*	101*	100	100	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

Overall, 42 percent of participant households had one or two residents (Table 14). Household size was about the same for those who turned in refrigerators and freezers.

**Table 14 Numbers of Residents in Participant Homes**

Residents in home	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
1	8	8	0	8	37
2	33	33	50	34	154
3 to 5	46	48	36	46	209
6 or more	8	6	7	8	35
Refused	4	5	7	4	19
Total	99*	100	100	100	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

Overall about 34 percent of participant households had from one to three residents that were less than 18 years of age (Table 15). Generally, energy efficiency programs tend to capture older residents because they are more likely to be available during the operating

hours of the program. Based on this data and the data from Table 14, it appears that about 20 percent of participant households with more than two persons were comprised entirely of adults. Households that turned in freezers were less likely than those that turned in refrigerators to have residents less than 18 years of age. Generally we interpret these data to mean that participant households (62 percent) were adult households, many of which were likely empty nesters. In general, energy efficiency programs tend to recruit older householder who for various reasons may be more likely to be home during daytime hours. There may be some of that going on here.

**Table 15 Percentage of Participants with Residents Under 18 years of Age**

Residents under 18	Refrigerator	Freezer	Refrigerator & Freezer	Total	N
0	60	68	77	62	268
1 to 3	36	25	15	34	147
4 or more	3	3	8	3	15
Refused	1	3	0	1	5
Total	100	99*	100	100	435
N	362	60	13	435	

\* Total deviates from 100 due to rounding

Length of residence did not seem to be a factor in whether residents disposed of a unit. Based on the overall total, there were slightly more households in place less than five years (28 percent) or 21 or more years (25 percent) than those in place between 6 and 20 years. This was true for those who turned in refrigerators and even more true for those who turned in one of each kind of unit. However, those who had a freezer removed were more likely to have been in place 11 or more years (Table 16).

**Table 16 Participants’ Length of Residence in Their Current Location by Pick-up Type**

Years in Home	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
0 to 5	28	21	36	28	125
6 to 10	22	11	14	20	91
11 to 20	21	24	7	21	94
21 or more	23	33	43	25	114
Refused	6	11	0	7	30
Total	100	100	100	100*	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

Among all participants, 34 percent had remodeled their home in the last five years (Table 17). There was essentially no difference in whether the household had remodeled for those who turned in refrigerators and freezers.

**Table 17 Percent of Participants Remodeling Their Home in the Last Five Years by Pick-up Type**

Remodeled Home	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
No	58	59	43	57	260
Yes	34	32	43	34	153
Refused	9	10	14	9	41
Total	101*	101*	100	100	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

After removing the households that did not report their household income and based on the overall total, the most common household income category for those who participated was \$25,000 to just under \$50,000 (Table 18). A slightly higher percentage of households that turned in a refrigerator had incomes above \$100,000 (13+6 = 19 percent) compared to those who turned in a freezer (5+2 = 7 percent total).

Respondents were asked how many refrigerators and freezers they had in their households at the time of the survey. This question was asked after the program unit(s) was/were removed by the program. Sixty-five percent of participants reported a single refrigerator (Table 19). The average number of refrigerators subsequent to removal was 1.39. As we shall see, roughly 75 percent of these households were getting rid of a unit that they were replacing.

**Table 18 Income Distributions of Participants**

Annual Household Income	Refrigerator	Freezer	Refrigerator and Freezer	Total	N
Less than 25,000	9	6	14	9	40
25,000 to just under 50,000	16	21	14	17	75
50,000 to just under 75,000	13	21	14	14	65
75,000 to just under 100,000	11	14	7	12	53
100,000 to just under 150,000	13	5	7	11	52
More than 150,000	6	2	14	6	26
Refused	32	32	29	31	143
Total	100	101*	100	100	454
N	377	63	14	454	

\* Total deviates from 100 due to rounding

Thirty-one percent of participants reported having one freezer (Table 19). Only three percent of these households reported having more than one freezer. Thus, while many households had just one remaining unit, many households that participated in the program still had more than one unit.<sup>4</sup> These numbers are very similar to the numbers for single-family households.

<sup>4</sup> This question was asked about refrigerators in general. Thus, some households could be including bar refrigerators or wine coolers.

**Table 19 Numbers of Units in Participant Households Once the Old Unit Was Removed**

Number of units	Participant Percent Refrigerators	Participant Percent Freezers
0	1	66
1	65	31
2	30	2
3	4	1
4 or more	<1	0
Total	100	100
N	454	454
Average	1.39	0.38

## 4. Holders of Non-primary Refrigerators

The purpose of this analysis is to learn more about households with multiple refrigerators and then based on household characteristics, develop a model to predict which households are most likely to have non-primary refrigerators. Non-primary refrigerators potentially represent an important source of energy savings opportunities for the ARP. By using information from the prediction model, SCE may be able to pinpoint households that likely have more than one refrigerator.

In order to estimate the number of non-primary refrigerators in the market, Innovologie used the Home Energy Efficiency Survey (HEES) data and the 2003 Residential Appliance Saturation Survey (RASS) data. The HEES data is limited to the 2007 and 2008 data that had good information about multiple refrigerators. Both sets of data are based on self-reports and are limited by the ability of the householder to accurately report information. For some variables there is substantial missing data. The HEES data are recent but represent households that had energy audits not the entire population. The RASS data covers the entire population and has reasonably good demographic information. However, RASS is now almost seven years old.

### 4.1 The HEES Analysis

In order to further understand the non-primary refrigerator market the Home Energy and Water Efficiency Survey (HEES) data were analyzed. By participating in HEES, customers obtain information to help them become familiar with ways to control and reduce energy and water usage. Customers fill out either a mail-in, on-line, phone survey or in-home survey. The survey is available in multiple languages. The survey is correlated with billing records and the respondents receive an analysis of their home energy use with recommendations based on a whole-house systems approach.

For this evaluation, data were obtained for the 2007 and 2008 annual HEES surveys in the SCE territory. The combined total of respondents was 70,462. It is important to remember that these results are for residents who elected to have a home energy survey. Some of these residents participate because they are concerned about high bills and are encouraged by the utility. Others are people who may be looking for ways to reduce energy costs or who are predisposed to improving the energy and water efficiency of their homes. Some may be seeking reinforcement that their homes are energy efficient. The point is that these residents are self-selected and may differ from the overall population. Even so, an analysis of this data is instructive.

#### 4.1.1 Refrigerators in HEES Households

During the two-year period, 66 percent of those surveyed had only one refrigerator, 29 percent had two units, and five percent had three or more units.

The HEES Survey contains detailed characteristics for up to three refrigerators in a given household. These characteristics include size, age, and style. This survey is quite informative because it has a broader range of refrigerator size categories than some of the other surveys. It includes a mini category which is two cubic feet or less, a 3 to 10 foot cubic foot category, and a category for 28 cubic feet and greater. While units of less than 10 cubic feet and 28 cubic feet or greater were not eligible for the program in 2007 and 2008, these data help us understand what characteristics of household refrigerators are when people say that they have multiple refrigerators (2+) in their households.

Table 20 presents the size distribution for the first, second and third refrigerators. As one might expect, there are very few first refrigerators (two percent) that are less than 10 cubic feet. Eighty-nine (36+53) percent of first units are between 17 and 27 cubic feet. Seventeen (7+10) percent of second units are 10 cubic feet or less (seven percent are two cubic feet or less. Fifty-four (21+33) percent of third units are less than 10 cubic feet. Sixty-six (21+33+12) percent of third units are sixteen cubic feet or less. In other words, third units are much smaller than second and first units. From the standpoint of ARP, the 17 percent of second units and slightly more than half of third units would not qualify the program.

**Table 20 HEES Data Results for The Size of Refrigerators**

Refrigerator Size (cubic feet)	First Unit	Second Unit	Third Unit
Mini (2 or less)	1	7	21
Very small (3-10)	1	10	33
Small (11-16)	5	12	12
Medium (17-20)	36	39	16
Large (21-27)	53	30	14
Extra large (28 or more)	5	2	4
Total	100*	100	100
N	59,132	21,273	3,318

\* Total deviates from 100 due to rounding

Table 21 shows the age of refrigerators by first, second or third unit. The primary finding is that the majority of first (9+42+28 = 79 percent), second (6+34+32 = 72 percent) and third units (11+46+24 = 71 percent) are 10 years or less. This table shows that for the most part the percentage of units more than 15 years old ranges from eight to 11 percent. Remembering that these data may not be fully representative of the larger population, the data suggest that second and third units are much newer than is generally believed. The table also shows that first units are newer than second units but that third units are the newest. This may reflect the high percentage of third units in the mini category and the relatively recent promotion of mini coolers for beverages and outdoor use.

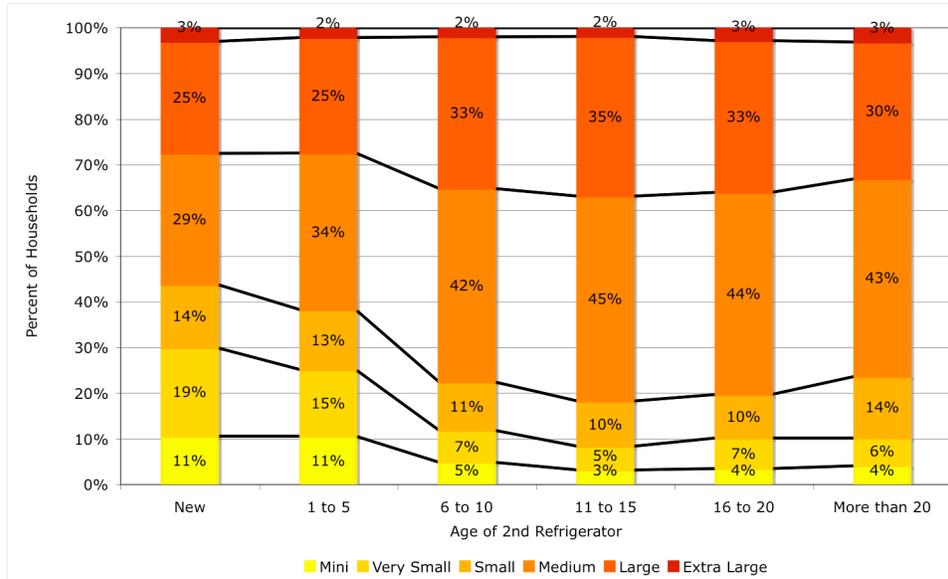
**Table 21 HEES Data Results for The Age of Refrigerators**

Refrigerator Age	First Unit	Second Unit	Third Unit
New	9	6	11
1-5 years	42	34	46
6-10 years	28	32	24
11-15 years	12	17	12
16-20 years	8	7	5
More than 20 years	2	4	3
Total	101*	100	101*
N	61,610	21,451	3,350

\* Total deviates from 100 due to rounding

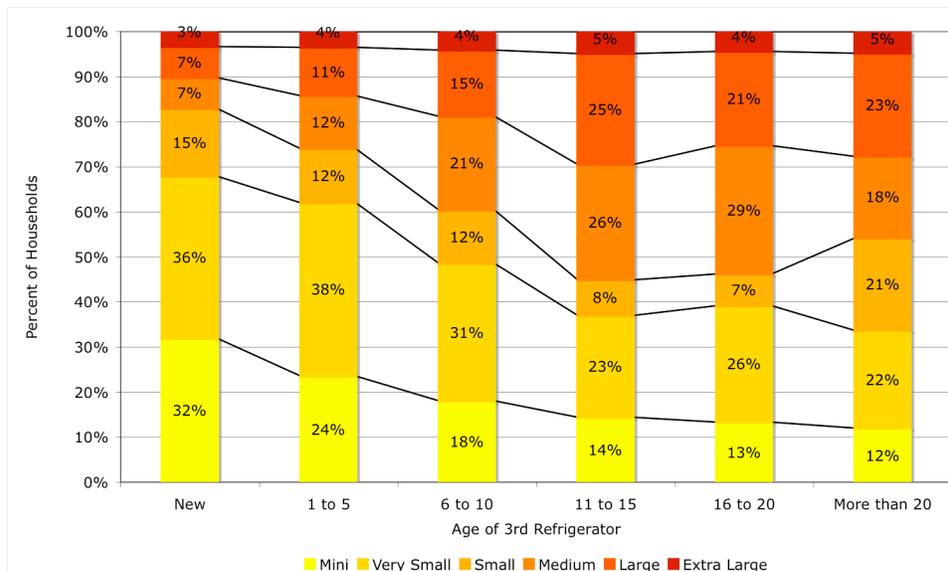
That can be ascertained by examining the second and third units by size and age. Figure 3 shows the percentage of second units by age and the size of the units. The percentages of mini (yellow), very small (golden), and small (light orange) units decline with age of the unit. These units account for about 44 percent of the new units declining to about 18 percent of the units in the 11 to 15 age group and then increasing to about 24 percent of the units in the over 20 age group. The medium and large size units increase from about

54 percent of new units to 80 percent and then decline to about 73 percent of the units in the over 20 age group. The extra large units (bright red) are a fairly consistent small percentage.



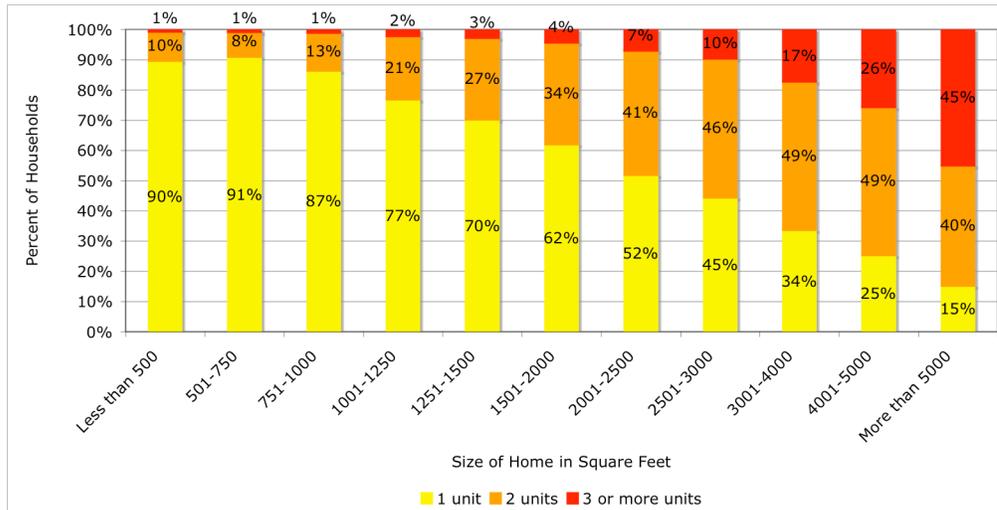
**Figure 3 Percent of second units by size and age.**

Figure 4 is the same graph as above but for third units. Once again we see the same pattern. The percentage of mini to smaller units decreases with age while the percentage of medium and large units increases with age. Our take away from this data is that many households that have second and third units have purchased smaller units in recent years. The high percentage of third units that are relatively young minis suggests that a good percentage of people are purchasing minis for wine or beer storage or perhaps as an outside unit. The minis and the very small units are not eligible for the program.



**Figure 4 Percent of third refrigerators by size and age**

The number of first, second and third units was also examined by the square footage of the dwelling. As Figure 5 shows, there is a strong relationship between having second or third unit and the size of the dwelling. More than forty percent of households with a footprint greater than 2,000 square feet have a second unit. When the footprint reaches 3,000 square feet the percentage is nearly 50 percent of households. The result is that at 3,000 square feet more than 66 percent of the households have a second or third unit and for dwellings above 5,000 square feet the percentage is above 85 percent.



**Figure 5 Percent of nth unit in household by square footage of the household**

A majority, 55 percent of first units, were side-by-side refrigerators, 37 percent were top-bottom, and eight percent were single door refrigerators (Table 22). A plurality of second units were top-bottom units. Third units are primarily single door units (67 percent) which is consistent with them being minis and very small refrigerators.

**Table 22 HEES Data Results for The Type of Refrigerators**

Refrigerator Type	First Unit	Second Unit	Third Unit
Single door	8	27	67
Top bottom	37	46	19
Side by side	55	28	14
Total	100	101*	100
N	59,171	21,267	3,249

\* Total deviates from 100 due to rounding

There is also information about defrost type. Ninety-four percent of first units have automatic defrost (Table 23). A slightly smaller but still large proportion of second units are also automatic defrost (83 percent). About a quarter of third units are manual defrost. Again, this would be consistent with smaller mini units.

**Table 23 HEES Data Results for The Defrost Type of Refrigerators**

Refrigerator Defrost Type	First Unit	Second Unit	Third Unit
Manual	4	13	27
Partial automatic	3	4	7
Automatic	94	83	67
Total	101*	100	101*
N	66,197	23,009	3,474

\* Total deviates from 100 due to rounding

Finally, we looked at whether units were Energy Star units. Thirty-nine percent of households first units were Energy Star (Table 24). The percent decreased to 28 percent for second refrigerators with a further decrease to 25 percent for third refrigerators.

**Table 24 HEES Data Results for Energy Star Refrigerators**

Energy Star	First Unit	Second Unit	Third Unit
No	61	72	75
Yes	39	28	25
Total	100	100	100
N	70,462	36,402	5,936

Again remembering that HEES data do not represent the general population, these data suggest that second and third units are relatively young, that is, less than ten years. Second, and especially third units, are much smaller than first units with the majority of third units being the mini or very small units. The percentage of 2<sup>nd</sup> and 3<sup>rd</sup> units in a dwelling rises rapidly from 10 to about 50 percent as the size of the dwelling increases from 1,000 square feet to 2,500 square feet and continues to rise beyond 2,500 to more than 5,000 square feet although not so rapidly. Twenty-five hundred square feet is the point where the percentage of households with 2<sup>nd</sup> and 3<sup>rd</sup> refrigerators is greater than the percentage with a single refrigerator. Twenty-five hundred square foot households and above might be a good break point for targeting second refrigerators.

Using the HEES data, a series of rates were calculated for the SCE service territory under certain assumptions about second and third refrigerators. These included:

- The number of second and third units in households
- The number of second and third units in households that would be too small (10 cubic feet or under)
- The number of second and third units in households that would be eligible for ARP according to the 2006-08 size criteria (11 to 27 cubic feet)
- The number of second and third units in households that would be eligible for ARP according to the 2009-12 program size criteria (11 to 34 cubic feet)
- The number of second and third units in households that would be eligible for ARP according to the 2004-06 ARP size criteria (11 to 27 cubic feet) that are more than 10 years old
- The number of second and third units in households that would be eligible for ARP according to the 2009-12 ARP size criteria (11 to 34 cubic feet) that are more than 10 years old

- The number of second and third units in households that would be eligible for ARP according to the 2004-06 ARP size criteria (11 to 27 cubic feet) that are more than 15 years old
- The number of second and third units in households that would be eligible for ARP according to the 2009-12 ARP size criteria (11 to 34 cubic feet) that are more than 15 years old

These rates allow us to project the number of second and third refrigerators that might be available for removal by the program under these criteria (Table 25). Two sets of rates are reported. One set of rates is the unweighted HEES data and is the HEES data without any adjustments. This is the data that has been reported to this point in the analysis. Owners were overrepresented in the HEES data and renters underrepresented. Column 3 in this table is the rate weighted to reflect owners and renters in the population. The data could also have been weighted for income, household composition, and other factors that might make the HEES data more representative of the population but was not done because the most recent data with which this could have been done was six or seven years old and the same categories were not available.

The weighted rates were calculated because owners are over represented among HEES participants. The final column is the estimated number of refrigerators on the assumption that there are approximately 4.3 million households in the SCE service territory. It is important to understand these data have been adjusted in an attempt to reflect the overall population. They are of the right magnitude and are useful for planning purposes but should not be used in impact estimation.

**Table 25 Estimated Rates for Second and Third Refrigerators in the SCE Service Territory by Selected Criteria**

	Rate Refrigerators per thousand households Unweighted HEES data	Rate HEES Data Weighted to Reflect the Homeownership	Estimated number of second and third refrigerators in the SCE service territory
Second and third units per thousand households	340	304	1,307,200
Second and third units that are 10 cubic feet or less per thousand households	75	67	288,100
Second and third units that are greater than 10 cubic feet per thousand households	268	236	1,014,800
Second and third units that are greater than 10 but less than 28 cubic feet per thousand households	261	231	984,700
Second and third units that are	81	70	301,000

greater than 10 cubic feet and 11 or more years of age per thousand households			
Second and third units that are greater than 10 but less than 28 cubic feet and 11 or more years of age per thousand households	78	68	292,400
Second and third units that are greater than 10 cubic feet and more than 15 years of age per thousand households	31	27	116,100
Second and third units that are greater than 10 but less than 28 cubic feet per thousand households and greater than 15 years of age	30	26	111,800

These data imply that there are roughly 1.3 million second or third refrigerator refrigerators in the SCE service territory. If units of ten cubic feet or less are removed, then there are between 1 and 1.1 million second or third refrigerators using the 2004-06 size criteria or the 2009 to 2012 size criteria. Considering only second and third refrigerators that are more than 10 years old, then there are roughly 300,000 units in the SCE territory. If only those more than 15 years are considered then there are between 110,000 and 120,000 units.



## 5. Program Marketing and the Response

In this section we discuss program awareness and how customers reported that they became aware of the program. In order to do this we discuss five topics:

1. Program marketing activities
2. Program awareness among the general population who disposed of a refrigerator
3. The likelihood of future participation once disposers in the general population are aware of the program
4. How ARP customers became aware of the program
5. How customer characteristics affect program awareness.

### 5.1 SCE ARP Marketing Activities

In the 2006-08 program years, SCE conducted a broad spectrum of marketing activities that used multiple marketing channels and varied content to which there was good response.

#### 5.1.1 Marketing Channels

SCE markets ARP through a number of channels. These include but are not limited to:

- Customer Connections — This is a bifold that is included with the customer's bill. Each issue contains a number of stories and information. The stories focus on safety, energy saving opportunities, human interest, rates, and other themes. Typically, there is a story about ARP twice a year. About once a year ARP is mentioned along with other energy conservation programs in a more general article. All residential customers receive the Customer Connections.
- Drop mailers — These are multicolor items that were mailed to the customer in an oversize envelope (typically 6 inch by 9 inch). Some contain a letter and an item such as a pad of to do lists with a magnet or just a magnet intended for the refrigerator. The items that are included are themed, for example, on the right side of the to do list was a check item reminder to recycle the refrigerator. Other mailings contain a letter signed by a company official and a brochure. The message in the letter and the messages in the brochure reinforce each other but used different language. The brochures are typically a bi-fold that present multiple reasons for participating in ARP. Themes include the cost of ownership of a tertiary refrigerator, saving natural resources, preventing use of an old refrigerator, and refer a friend.
- Direct mail — SCE sent direct mail pieces to a select group of customers who were targeted because of the high likelihood that they would have a second refrigerator.
- General radio — These are radio advertisements supporting ARP that are placed with radio stations.
- Hispanic radio — These are radio advertisements placed on Hispanic radio stations.
- On-line webpage — SCE has a page on its website that describes the program and how to apply. The web page emphasizes the cost savings to the customer,

the incentive, and the fact that the refrigerator is dismantled in an environmentally responsible way. The page is two clicks from SCE's home page. At the time this report was completed, typing "SCE refrigerator" or "SCE refrigerator recycling" in Google produces the results of a search in which the SCE program is the first item. Typing "California Refrigerator Recycling" results in a search that produces the SCE web page as the fifth item.

- Other channels — The program is promoted on most occasions when SCE has a booth or participates in a community or other type of event. A number of the local government programs have also promoted the program. For example, Palm Desert, which has promoted the program heavily, has among the highest number of removals per zip of any zip code in the SCE Service territory, although not the highest removal rate per thousand households.

Table 26 shows how these resources were deployed in 2007 and 2008. The data for 2007 are not fully complete. The data for 2008 are substantially complete. An important thing to remember is that SCE runs a summer campaign from the beginning of July through the end of September. This corresponds to summer peak demand and the period when households are particularly active doing household projects and purchasing new appliances.

For some media, total rating points are provided. Total rating points represent the percentage of the audience reached summed over the number of times the audience is reached. Thus, if an advertisement reaches 5 percent of the audience each time and is run 10 times the total rating points are 50. TRP is a coarse measurement of how the target audience was approached and how the advertising budget was spent.

### *5.1.2 Message Content*

The message content that SCE has conveyed has changed substantially since 2004 and 2005 when the message was largely focused on the cash incentive (\$35) and the free pick-up, with some focus on the electrical savings benefits of removing the old refrigerator from service.

The messages changed substantially during the 2006-08 period. The following are some of the messages that have consistently appeared in the mail collateral.

#### *5.1.2.1 Energy cost savings statements*

- An old refrigerator uses 50 percent more energy than a newer model
- An older model uses twice as much energy as a newer model
- Getting rid of an old refrigerator can save enough energy to light a home for a month and a half
- Save \$260 (in 2007 or \$292 in 2008) when you remove a refrigerator or freezer
- Save \$170 (in 2007 or \$195 in 2008) when you replace an old refrigerator with a new and remove the old
- That old refrigerator increases your electric bill
- That old refrigerator wastes money / is bad for your finances
- Getting rid of an old refrigerator is good for your finances

#### *5.1.2.2 Environmental statements*

- Do something good for the environment / benefit the environment
- The environment thanks you and so do we

- It is bad for the environment to keep and use that old refrigerator

**Table 26 SCE Marketing for ARP**

	Customer Connection	Drop Mailer	Direct Mail	Number of Direct Mail Items	General Radio	Total Rating Points (TRP)	Hispanic Radio	Total Rating Points (TRP)	On-line Exposures
4/1/07	X								
5/26/07		X							
6/1/07		X							
7/1/07	X								
7/1/07		X							
7/13/07		X							
9/1/07	X								
9/1/07	X								
10/30/07		X							
2/1/08	X								
3/27/08		X							
5/30/08		X							
6/08-10/08		X							
7/14/08					X	85	X	120	X 10,000,000
7/18/08		X							
7/21/08			X	258,000					
7/21/08					X	85	X	120	X 10,000,000
7/25/08			X	291,000					
7/28/08					X	85	X	120	X 10,000,000
8/1/08	X								
8/4/08									X 10,000,000
8/4/08			X	283,000					
8/11/08					X	85	X	120	X 10,000,000
8/18/08			X	267,000					
8/18/08					X	85	X	120	X 10,000,000
8/25/08									X 10,000,000
9/1/08					X	85		120	X 10,000,000
9/8/08					X	85		120	X 10,000,000

- Wasting energy depletes natural resources
- Get the energy guzzler out of your home
- A rarely used spare wasting all of those resources
- Do green, get green, go green
- Reduce carbon dioxide / reduce 60 pounds of carbon dioxide a cause of global warming
- A healthier environment for generations to come

#### 5.1.2.3 Recycling statements

- Recycle so it doesn't end up back in use
- Refrigerator properly disposed so it doesn't harm the environment

#### 5.1.2.4 Program Incentive Statements

- Free pick-up
- Get \$35 (\$50 in 2008) cash/rebate/incentive for your old refrigerator
- Get \$50 incentive for your old freezer
- Get \$20 for referring family or friends
- Get \$50 when you purchase a new Energy Star refrigerator

#### 5.1.2.5 Other Statements

- Make a smart choice. Don't give the old refrigerator to a family or friend. That will increase their bills and harm the environment
- The monster in your garage
- Put it on your to do list

The statements reflect both benefits and consequences. The statements were intermixed between the letters and the brochure and most were repeated in some form twice or even three times within a mailing or mail drop.

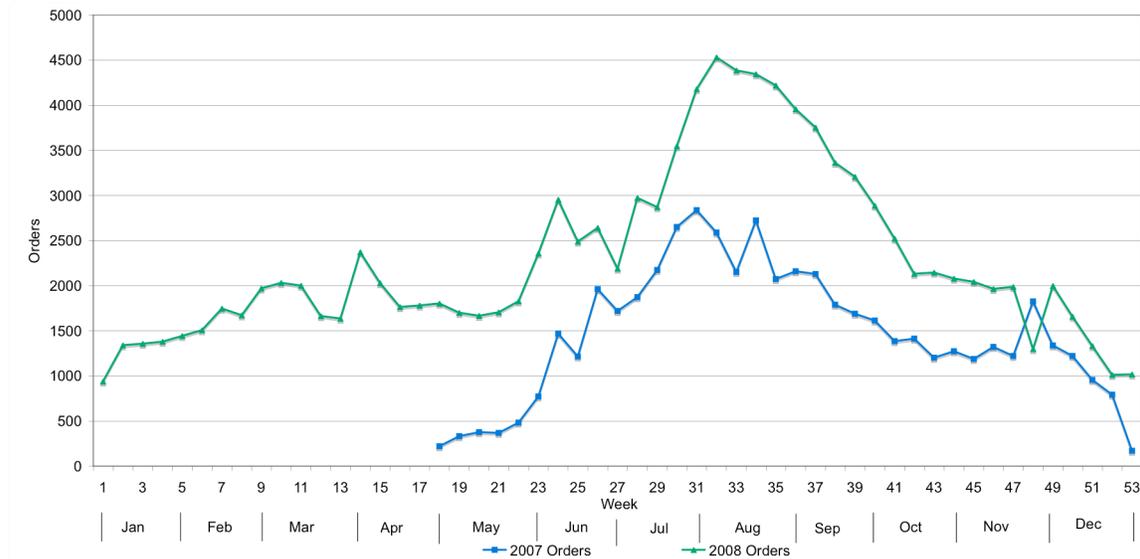
#### 5.1.3 Public Response to the Messages

Figure 6 shows the customer response to the marketing efforts. The data series are the date of customer orders taken from the Enerpath tracking system. These are customer orders and not removals. Customer orders would be expected to follow shortly after the advertising. As we already know, many orders are cancelled.

The blue line is the 2007 data and the green line is the 2008. The weeks and months of the year are shown on the horizontal axis and the number of orders is shown on the vertical axis. The Enerpath tracking system was rolled out in May and June of 2007 and all orders were being taken through this system starting in July 2007. Thus, the May and June data in 2007 are partial data.

The shapes of the two curves are essentially the same. The peak in July is clearly visible in both years. The decline after the advertising stopped for the summer campaign is also quite evident beginning around the middle of August. A slight drop for the Fourth of July week is visible in both data series. There is also a very noticeable drop in the 2008 data that represents Thanksgiving with a sharp increase in the following week. The sharp increase is also visible in the 2007 data. The tailing off at the end of the year as the holidays approach is also visible in both series. Finally, the two series highlight the very different level of activity in 2007 and 2008. There is a difference of approximately 2,700

orders between the peak weeks in 2007 and 2008 and a difference of 400 to 500 orders in off-peak weeks.



**Figure 6 ARP Removal Orders from July 2007 to December 2008**

You can get some idea of the response to advertising. In 2007 there was a drop mailing at the beginning of July and another in the middle of the month. There was an increase of about a thousand orders in the first weeks of July. In 2008, there were drop mailings in late March and again the last day in May. There were subsequent increases of about 1,200 orders in April and about 1200 orders in June. Between July 14, 2008 and August 1, 2008 there was a Customer Connection released, one drop mailer, two direct mailings, as well a radio advertisements. There was a run-up of approximately 1,600 orders between July 14, 2008 and the end of the first week in August 2008. Clearly, the drop mailers, the direct mailings, and the advertisements were having their effect.

**5.2 Program Awareness**

One of the concerns that surfaced in the 2004-05 evaluation was that many people that disposed of refrigerators were not aware of the program. As part of the 2004-05 evaluation, 465 customers in the SCE service territories, who disposed of a refrigerator or freezer over the previous four years, were surveyed. These represent the general population of customers who disposed of a refrigerator by any method including the use of the RARP. They were asked if they were aware of RARP. For the 2006-08 evaluation, the sample of 400 households in the general disposer population that disposed of a refrigerator or freezer between 2005 and 2009 were asked the same question.

In the 2006-08 evaluation, 70 percent of disposers were aware of the ARP program. In the 2004-05 disposer survey, 58 percent of the disposer households were aware of the RARP program (Table 27). In other words, the percentage of awareness of the ARP program increased. This implies that market efforts increased the level of awareness.

**Table 27 Awareness of RARP and ARP Among Disposers (percent)**

Disposer Awareness of Program	2006	2009
Yes	58	70
No	39	28
Don't know	2	2
Total	101*	100
N	465	400

\* Total deviates from 100 due to rounding

Within the 2006-08 disposer survey, 28 percent of the participants said that they used ARP. Eighty-five percent of the disposers who had participated in ARP indicated that they would be very likely to participate in the future; 12 percent said they would be somewhat likely to participate; and three percent said they were not at all likely to participate. In other words, most ARP disposers were certain that they would participate again.

The 72 percent of respondents in the 2006-08 disposer survey who disposed of their refrigerator by a means other than ARP were sorted by whether they were previously aware of the program or not. Sixty-two percent of ARP aware disposers, who did not use ARP, said they were very likely to participate in the future and only three percent said they were not at all likely to participate (Table 28). ARP disposers who were unaware of ARP were read a description of the program. Among the respondents who were read the description, 49 percent stated that they were very likely and 32 percent said that they were somewhat likely to participate in the future. Eighteen percent of these customers said they were unlikely to use the program in the future. In summary, 85 percent of those who used the program were likely to repeat. About 62 percent of those who did not use the program but were aware would be likely to use the program in the future. About half of those who did not use the program and had to be read a description would participate in the future.

**Table 28 Percent of Future Participation Versus Prior Awareness of the Program Among Disposers in the 2006-08 survey**

Future RARP Use	Not Aware	Aware	DK	Total
Not at all likely	18	3	0	8
Somewhat likely	32	30	25	30
Very Likely	49	62	75	58
Don't know	1	5	0	4
Total	100	100	100	100
N Total	79	145	4	228

### 5.3 Participant Awareness

The 2006-08 ARP respondents and the 2004-05 ARP participants were asked how they first heard of the program. The responses can be seen in Table 29.

Awareness methods showed little variation across program years, except for a small decline in media sources. Forty-nine percent of participants said that they learned about the program through SCE compared to 48 percent from the previous survey. However,

within the utility category the percent that learned about the program from a letter or brochure doubled and the percentage that learned through a bill insert declined by about seven percent. This would be consistent with the changes in marketing. However, the number of participants increased by about a third so that the absolute number of respondents who used information from the SCE bill actually increased between 2004-05 and 2006-08, although the percentage was smaller. Both the relative and absolute number of respondents who became aware because of the letter increased. It can be inferred that the letter or brochure from SCE drove the increase. The increase in the response to the program could not have occurred without increased availability of funding to provide incentives, but SCE's marketing department also chose to increase its focus on ARP during the Summer Campaign in 2008 and that is clearly reflected in these numbers.

**Table 29 Percent of Participants Who Heard of ARP/RARP Through Various Communication Channels**

Awareness	2004-05		2006-08	
	Category Percent	Sub-category Percent	Category Percent	Sub-category Percent
Utility:	48		49	
Information that came with a SCE bill		38		31
Information that came in a letter or brochure from SCE		5		10
Utility representative		1		1
Other SCE		0		1
Website		4		7
Referral from friend/neighbor	16		17	
Appliance store	10		12	
Media:	17		11	
Newspaper/Penny Saver		5		4
Radio		6		2
TV		5		5
Truck Ad		0		1
News story		1		0
Past experience	0		0	
Other	2		2	
Don't know	8		9	
Total	101*		100	
N	512		454	

\* Total deviates from 100 due to rounding

Customers reported that the second most likely way in which they learned about ARP was by word-of-mouth. About 17 percent of customers reported that they got the information from friends and relatives. Media sources were mentioned third most often. In general about four to five percent of people reported that they learned about the program from television and newspapers, which is similar to findings for the previous program period. However, whereas five percent of respondents learned of the 2004-05 program from the radio, only 1.5 percent mentioned learning about the 2006-08 program by radio. Customers also reported that they learned about the program through appliance dealers. SCE has a contractor who "rides the circuit" of appliance stores promoting Energy Star

appliances and ARP. Nearly 12 percent of 2006-08 respondents stated that they heard about the program through this channel, up from the 10 percent of 2004-05 participants.

#### 5.4 Awareness and Customer Characteristics

We were also interested in finding out if there were differences in awareness by customer or transaction characteristics such as whether the customer recycled a refrigerator or freezer or if the refrigerator was a primary or secondary unit.

Based on the totals for the 2006-08 ARP data (Table 30), the utility is the most important source for hearing about the program (49 percent of the total). Referrals from a friend or neighbor are the second most important source (17 percent of the total).

There are some differences by appliance type in terms of how customers heard about the program. Those disposing of a freezer (60 percent) were more likely than those disposing of a refrigerator (47 percent) to find out about the program through utility channels.

**Table 30 Percent of Customers Who Heard of ARP by Appliance Type (Participant Survey)**

How Heard About Program	Refrigerator Only	Freezer Only	Total
Utility	47.3	60.2	49.2
Referral from friend/neighbor	18.3	9.5	17.0
Appliance Store	12.5	6.3	11.6
Media	11.2	8.0	10.7
Other	2.4	3.2	2.5
Don't know	8.5	12.7	9.1
Total	100.2*	99.9*	100.1*
N	377	63	440

\* Total deviates from 100 due to rounding

Table 31 shows the same distributions but by whether the participant was disposing of a main or secondary or spare refrigerator. Based on the overall total, the utility was the most important source of information (47.6 percent of the total) and a friend and neighbor was the second most important source (18.2 percent of the total). Those getting rid of a spare (54 percent) use the utility channel more often by than those getting rid of a main unit (44 percent).

**Table 31 Percent of Customers Who Heard of ARP by Refrigerator Use**

How Heard About Program	Main	Secondary/ Spare	Total
Appliance store	14.3	8.3	12.3
Utility	44.2	54.1	47.6
Media	13.2	6.8	11.0
Referral from friend/neighbor	18.6	17.3	18.2
Other	1.9	3.0	2.3
Don't know	7.8	10.5	8.7
Total	100.0	100.0	100.1*
N	258	133	391

\* Total deviates from 100 due to rounding

From a marketing standpoint, using utility channels is the obvious choice and using a method to create “buzz” among friends and neighbors about the program is a good second choice. However, if you particularly want to capture freezers and secondary or spare units, the recycling message is best emphasized in the utility channels.

## 5.5 What Motivates Customers to Participate in Appliance Recycling Programs

In this section we examine why customers participated or did not participate in the ARP and related factors that influenced the decision. Customers do have options: the program, giving a unit away, selling a unit, having a used appliance dealer take the unit, or hauling the unit away oneself. Participants’ motivations for using the program is addressed based on data from the participant survey. Then the reasons for the choices of disposers who did not use the program are examined based on the disposer survey.

### 5.5.1 What Motivated Customers to Participate in the Program

In the ARP participant survey, customers were asked their main reason for participation and if there was another reason. Ninety-seven percent of the respondents gave a first reason and 36 percent offered a second. The first and second reasons are combined and summarized in Table 32 along with similar data for the 2004-05 study.

In the 2006-08 ARP program, participants mentioned (55 percent) the \$50 incentive most frequently as a motivating factor for using the program. This is an increase compared with 46 percent in the 2004-05 study. When asked if the incentive was essential to their participation, approximately 71 percent of the respondents said that they would have participated in the ARP without the incentive compared to 81 percent in 2004-05.

Convenience and free pick-up was the next most frequently mentioned motivating factor. Along with “the convenience” and “the free pick-up service,” responses such as “the easiest way,” “don’t have to take it anywhere,” and “others don’t take it” were also included in this category. Approximately 44 percent of the respondents listed a response in the convenience category. This is a significant decrease from the 2004-05 study, where 66 percent were in this category.

It is also worthy of note that the percentage indicating environmental factors as a motivator declined from 22 percent to 17 percent.

The ‘other’ category in Table 32 included “not being aware of other options,” “savings on electric bill,” “utility sponsorship of the program,” “recommendations from a friend, neighbor or retailer,” “no other options,” and “other unspecified reasons.” The percentage of respondents saying the savings on the electric bill increased by four percent.

Thus, between 2004-05 and 2006-08 convenience and incentive switched places in terms of the most common motivator and the concern about the environment declined a bit while interest in energy savings increased. There are at least three reasons why this switch may have occurred. The incentive increased by \$15. The increased participation in 2009 may have tapped market segments that included more people interested in participating because of the incentive. The 2008-09 recession that was on everyone’s mind may have made the incentive and the electric savings more attractive.

**Table 32 Customers' Motivational Reasons for Participating in the ARP**

Reason for Disposal	2004-05		2006-08	
	Category Percent*	Sub-category Percent*	Category Percent*	Sub-category Percent*
Incentive payment (\$35 in 2004-06 and \$50 in 2007-08)	46		55	
Convenient/Free pick-up	65		44	
Easy way/convenient		44		31
Free pick-up service/Others don't pick up		21		13
Environmentally safe disposal/Recycled/Good for Environment	22		17	
Other	11		19	
Never heard of any others/only one I know of		3		6
Savings on electric bill		0		4
Utility sponsorship of the program		2		3
Recommendation of retailer/dealer		1		2
Recommendation of a friend/relative		1		2
Other		4		2
Don't know/ Refused	5		4	
Total	149		139	
N of the responses	512		454	

\* Respondents could provide multiple responses resulting in total percentages in each survey greater than 100.

Factors that might relate to motivation for participating in the ARP were also examined. For example, a hypothesis is that customers with more modest incomes might find the incentive more important than customers with higher incomes. A second hypothesis might be that high-income households might value convenience more than lower income households.

Table 33 shows the percent of respondents and their motivations for participating by the respondent's income levels. Households with incomes between \$75K and \$100K most frequently cited the incentive as a motivator, while those with household incomes under \$75K cited the incentive least often. Those with household incomes above \$100K fell in between. Convenience was most important for those with incomes between \$25K and \$75K. Those with household incomes between \$100K and \$150K cited the environment more often than did households in other income categories. In terms of our hypotheses, higher income households are more tuned to the incentive and lower middle-income households are more tuned to convenience.

**Table 33 Customers' Motivational Reasons (First and Second Reasons Combined) by Income Level**

Reason for Participation	Percent of Respondents*						Refused	Total
	Under \$25K	\$25K to <\$50K	\$50K to <\$75K	\$75K to <\$100K	\$100K to <\$150K	≥\$150K		
Incentive	43	55	52	72	63	62	50	55
Convenience	33	60	51	42	33	46	32	41
Environment	8	11	17	9	33	12	18	16
Other	33	12	20	21	13	23	21	20
DK/Refused	5	7	5	2	0	0	4	4
Total	122	145	145	146	142	143	125	136
N	40	75	65	53	52	26	143	454

\* Respondents could provide multiple responses resulting in total percentages in each income range greater than 100.

Similarly, the motivations of people who had a main or secondary/spare refrigerator to participate were also examined. While the incentive was a motivator for both groups, those with a secondary or spare unit reported being motivated by the incentive more often than did those with a main unit. Those with a main unit were more likely to be motivated by convenience or the environment.

**Table 34 Customers' Motivational Reasons by Whether They Recycled a Main or Secondary/Spare**

	Percent of Respondents*		
	Main	Secondary/Spare	Total
Incentive	52	65	57
Convenience	46	41	44
Environment	21	14	19
Other	18	17	18
DK/Refused	2	6	4
Total	141	145	142
N	258	133	391

\* Respondents could provide multiple responses resulting in total percentages in each column greater than 100.

### 5.5.2 Why Nonparticipants Don't Participate

The disposer survey provides some insight into what motivates customers in the general population to dispose of their refrigerator or freezer by a method other than ARP.

Among those who *did not use ARP* but disposed of a unit or units, potential reuse of the unit was the most common reason for not participating (41 percent). Reuse included giving the unit away to a friend or relative in the future (21 percent), retaining the unit for future use (16 percent) or potentially selling the unit (4 percent). Lack of awareness is second most common reason for not participating (29 percent). Another 27 percent disposed of the unit through the dealer from whom they bought a unit. Seventeen percent reported convenience issues and 11 percent said their unit was not working. The remaining responses can be seen in Table 35.

There are at least three important findings that arise from this table. More than 40 percent of the respondents reported giving away, selling, or keeping the old unit which means that these units remain in service. Lack of awareness was a key reason for not disposing of the unit. Finally, only 11 percent of these units were reported to not be working. Potentially, most of these units could have remained in service.

**Table 35 Reasons for Not Participating in ARP for Those Who Disposed of Refrigerators**

Why didn't you use this recycling program before?	Category Percent*	Sub-category Percent
Reuse	41	
Planned to give unit away to friend/relative in the future		21
Wanted to retain secondary unit for future use		16
Planned to sell unit as used in the future		4
Have not heard of the program until now	29	
Dealer/Retailer picked up/disposed of the old one	27	
Convenience	17	
Inconvenient (Misc.)		12
Wait time is too long		3
Cannot be home as required when unit is picked up		2
Unit was not working	11	
ARP program issues	5	
Incentive is too low		4
Signed up/but no one ever came to pick it up		1
We rent/landlord decides	1	
Other	3	
Don't know	10	
Refused	2	
Total	147	
N	135	

\* Respondents could provide multiple responses resulting in a total for all responses greater than 100 percent.

**5.6 Penetration of the Market**

By using the data from the general disposer survey, the degree to which the program is penetrating the appliance transfer market can be assessed. The information for the 2006-08 program comes primarily from the 2006-08 disposer survey. Some data from the 2004-05 study is also presented demonstrating how program effects have changed.

Respondents to the disposers survey in the general population were asked if they had disposed of a refrigerator in the last four years. Respondents who said that they had disposed of a refrigerator were asked how they did that. It was made clear to respondents that disposing of a refrigerator included any type of transfer.<sup>5</sup> Table 36 shows how

<sup>5</sup> Unit transfers refer to an appliance unit changing hands. Someone may sell a unit, give it away, or give it to an appliance dealer. Ultimately there are three possible outcomes: a unit is placed or remains in service, it is kept but not used (i.e., it is effectively stored), or a unit leaves the grid and is destroyed. If the unit is reused, it is generally given away, sold directly to another household, or finds its way to a used appliance dealer who resells it. If the unit is de-manufactured, it is generally disposed of through a utility program such as ARP, a new appliance dealer who takes the unit and sells it to a used dealer who disposes of it, or is disposed through community waste systems. There are relatively few units that are effectively stored.

respondents said they disposed of refrigerators in our 2009 disposer survey. The responses are divided by whether the respondent claimed that the refrigerator was working or not. Columns three, five, and seven provide the percent for the working and nonworking units and the total percent. Columns two, four, and six provide the

**Table 36 How households that transferred refrigerators disposed of them during 2006-08 program.**

How did you get rid of this refrigerator?	Percent Working	Working Percent Subtotals	Percent Nonworking	Nonworking Percent Subtotals	Percent Total	Category Totals
<b>ARP</b>		<b>30.9</b>		<b>8.5</b>		<b>28.0</b>
ARP	30.9		8.5		27.5	
<b>Gave Away</b>		<b>26.0</b>		<b>1.7</b>		<b>22.5</b>
Gave it away	26.0		1.7		22.3	
<b>Sold it</b>		<b>5.7</b>		<b>1.7</b>		<b>6.1</b>
Sold it to a friend, acquaintance or relative	2.7		0		2.3	
Sold it via garage sale, estate sale, or newspaper ad	2.4		1.7		2.3	
Sold it to a used refrigerator / freezer dealer	0.6		0		0.5	
<b>Dealer took it</b>		<b>24.5</b>		<b>35.6</b>		<b>26.2</b>
Dealer I bought a new one from took it away	22.7		33.9		24.4	
Traded it for a replacement unit	1.8		1.7		1.8	
<b>Threw it out or recycled it</b>		<b>9.5</b>		<b>49.3</b>		<b>14</b>
Hired someone to pick it up (for junking or dumping)	3.0		16.9		5.1	
Took it to a recycler or scrap dealer	5.0		6.8		5.3	
Took it to the landfill / City removal	1.5		25.4		5.1	
<b>Unknown</b>		<b>3.6</b>		<b>3.4</b>		<b>3.8</b>
Other	.6		1.7		.8	
Don't know	3.0		1.7		2.8	
Total	100.2*		100.0		100.2*	100
Survey N	330		59		389	

\* Total deviates from 100 due to rounding

subcategory breakdowns. In terms of the overall total, the most common method of transfer was the ARP (28 percent). This was followed by dealers (26.2 percent), those who gave the units away (22.5 percent), those who used some sort of community recycling mechanism (14 percent), and those who sold the unit (6.1 percent).

Respondents said that approximately 15 percent of the units were not working when they were removed. There are clear differences in how units were disposed depending on their operational status. Nonworking units went to the trash (49.3 percent) or dealers (35.6 percent). The owners of 8.5 percent of nonworking units claimed that the units went to the ARP program but ARP does not accept nonworking units. Either these responses are in error, the units were partially working, or the program inadvertently accepted some nonworking units.

Figure 8 represents best estimates of the paths units take. This figure combines data from the 2006-8 and the 2004-05 evaluation studies. The first row describes the general type of transfer. The cells in the second and third row provide more specific information about paths that a refrigerator can take. The boxes in the first row contain four levels of data: the percent of units in the SCE territory following that path in 2009 (green); the percent of units in the SCE territory following that path in 2006 (blue); the percent of units in the three California Investor-Owned Utilities (IOU) service territories following that path in 2006, (blue); and a red arrow that indicates whether there was an increase or decrease for SCE between the two studies. The boxes in the second row contain seven levels of data. Along with the four levels shown in row one, these boxes also contain the percent of working units following the path. Finally, the third row contains one box, used appliance dealers, which shows the estimated percent of units that are sold directly to this source by customers and an estimate for the total number of units processed.

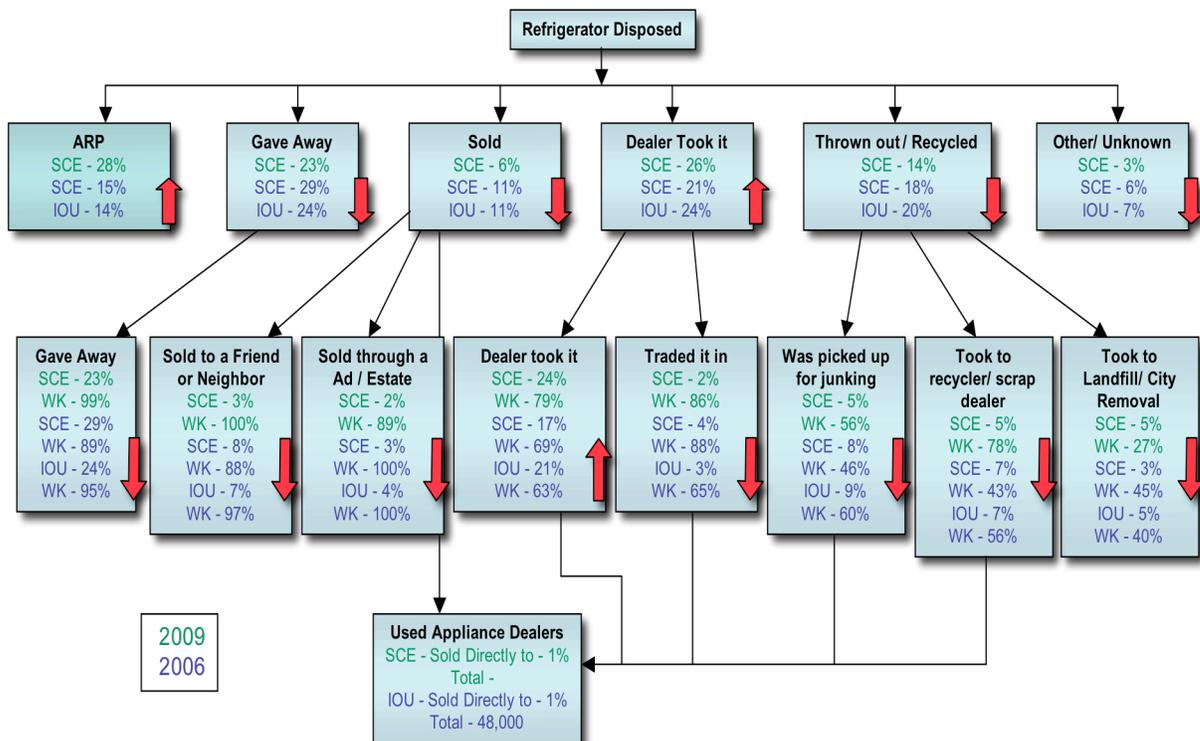


Figure 8 Changing Patterns of Refrigerator Disposal

The key findings shown in Figure 8 are that the percentage of units captured by ARP between the 2004-05 and the 2006-08 study has almost doubled from 15 to 28 percent. In other words, ARP significantly increased its market share. Secondly, the percentage of transfers occurring through dealers has increased by about a fifth from 21 percent to 26 percent. Dealers are taking more used refrigerators.

The number of units being given away to friends and neighbors has declined by about 20 percent and the number of units being sold has dropped by about 60 percent. This is significant because units that are sold or given away are likely to remain in service. The percentage that is being junked, taken by a recycler, or taken to the landfill has also declined. Because nonworking units are not taken by the program, it would appear that the declines in the number of units being taken to the trash/recycling are probably going to new appliance dealers. It is likely that the increase in units being taken by the program are coming from households that would have given them away or sold them. The results are in line with what the 2004-05 evaluation recommended that the IOUs attempt to do.

**5.7 The Effects Of ARP**

One way to assess the impact of the ARP is to examine what would have happened to refrigerator and freezers taken by the program if the program were not in place. Ultimately, we want to know what percentage of the refrigerators in the program would have remained in service if the program were not available.

A first question is what would have ARP participants done if they had not used ARP. In the ARP participant survey, respondents were asked the most likely alternative they considered for disposal of their appliance (Table 37). The majority (44 percent) said that they would have likely given their unit to charity or a private party. Twelve percent would have sold it to a private party or appliance dealer. Thirteen percent would have had the dealer from whom they purchased a new appliance take the old one. Twenty-three percent of customers would have been likely to haul or have someone haul their unit to the dump or recycling site.

ARP participants’ responses for how they would have disposed of their appliance in the absence of the program have changed very little from the 2004-05 study. There was a slight increase in the percentage that would have had the dealer take it. An analysis that was conducted to see if there were any differences in the responses of those who disposed of refrigerators and those who disposed of freezers found no differences.

**Table 37 Percent of the Most Likely Alternate Option Given by Participants for 2004-05 and 2006-08 Studies**

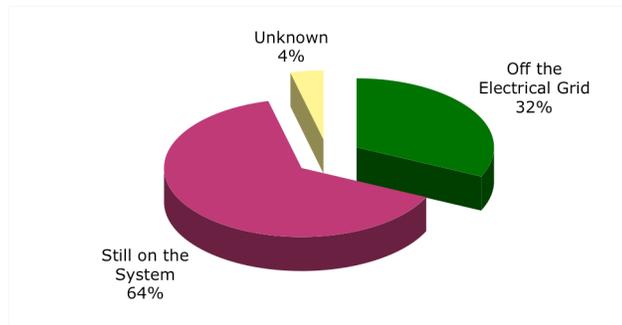
First Alternative Removal Option	2004-05		2006-08	
	Category Percent	Sub-category Percent	Category Percent	Sub-category Percent
Give away or sell it	46		44	44
Give it away to a charity organization		31		28
Give it away to a private party, such as a friend or neighbor		15		16
Sell	11		12	12
Sell it to a private party, either by running an ad or to someone you know		10		11
Sell it to an appliance dealer		1		1

First Alternative Removal Option	2004-05		2006-08	
	Category Percent	Sub-category Percent	Category Percent	Sub-category Percent
Keep it	5		6	6
Have it removed by the dealer you got your new or replacement unit from	9		13	13
Take or have taken to dump/recycler	26		23	
Haul it to the dump yourself		7		7
Haul it to a recycling center yourself		8		7
Hire someone else haul it away for junking or dumping		7		6
Community trash/recycle pick-up or company trash/recycle pick-up		4		3
Don't know	2		4	
Total	99*		102*	
N Total	736		454	

\* Total deviates from 100 due to rounding

A second question is how many ARP units would have remained in service if the ARP program had not been available. Units belonging to ARP participants who kept their unit, gave it away, or sold it were likely to have remained in service. Units of customers who hauled it or had someone else haul it to the dump, used a recycling company, or used a community trash program were likely to have been removed from service. From another analysis, approximately 87 percent of the working units taken by appliance dealers are recycled or find their way to the dump. Because these units comprise 13 percent of the total, we assume two percent of these units remain in service (0.13 X 0.13). If from Table 37, we sum the six percent who would keep their unit, the 44 percent who would give it away, the 12 percent who would sell the unit, and the two percent that remain with dealers, then 64 percent of disposed appliances would remain in service and the remainder, excluding the unknown appliances (32 percent), would not be in use or would be de-manufactured (Figure 9)

Moving on, the question is how many units were removed from service with ARP in place. Using the general population disposal data from Table 36, we can see that the number of units removed from service consisted of the 30.9 percent from ARP, 21.3 percent of the units going to new dealers (24.5 X 0.87), and the 10 percent of the units that were taken to the dump for a total of 62.2 percent (Figure 10). If we assume that the unknowns are also removed from service, then 33 percent of appliances would have remained in service. The



**Figure 9 Percent of ARP Units that Would Have Remained in Service Based on Customers' Stated Disposal Intentions**

percentage remaining in service is dramatically lower than the 2004-05 study where close to 50 percent of the units would have remained in service. The difference is the increased percentage of units taken by ARP in 2006-08 along with the small increase in numbers taken by the appliance dealers.

The final question is what would have happened if ARP had not been in place and the 30.9 percent of units attributed to ARP were disposed of in the manner in which the ARP participants indicated that they would have disposed of the units? Put simply, the 30.9 percent of the ARP units are to be redistributed across the remaining categories based on what the ARP participants said they would do with them. Table 38 column A shows the actual distribution for the disposal of the units in 2008. Table 38 column B is from Table 37 and shows how the ARP participants said that they would have disposed of the units without the program. Column C shows how the 30.9 percent of the ARP units in column A (first cell) would be redistributed if they were disposed based on how the respondents said that they would dispose of the units. Column C is the product of the RARP value in column A (30.9 percent) and the percentage in each relevant row in column B. Column D is the sum of columns A and C and represents how units would have been disposed assuming ARP participants accurately represented how they would have disposed of the units. Column E spells out the likely result.

**Table 38 What Would Have Happened in the Absence of the Program**

Disposal Method	(A) Actual 2008 distribution of working units (percent)	(B) How ARP participants say they would have disposed of units (percent)	(C) Percent of ARP units redistributed Column B X ARP Value (31 percent) in Column A	(D) What would have happened in the absence of the program Column A + Column C (percent)	(E) Likely Result
RARP	30.9	0	0	-	De-manufactured
Gave away to private party/charity	26.0	44	13.6	39.6	Still in use
Sold to friend/neighbor or through ad	5.7	12	3.7	9.4	Still in use
New dealer took when delivering replacement	24.5	13	4.0	28.5	87 percent de-manufactured
Took or had someone take to dump/recycler	9.5	23	7.1	16.6	De-manufactured
Kept it		6	1.9	1.9	Still in use
Unknown	3.6	4	1.2	4.8	Unknown
Total	100.2*	102*			
N Total	330	454			

\* Total deviates from 100 due to rounding

We can calculate the percentage of units that would remain in service without ARP. Thirty-nine percent of units would have been given away and would still be in use, 9.4 percent of units would have been sold, 28.5 percent of the units would have been collected by dealers and of those 3.7 percent would remain in service, and two percent of participants would have kept their units. Essentially, 54.7 percent of the units would have remained in service (Figure 11). A further point is that if the program were not there, there is no market mechanism to capture those refrigerators.

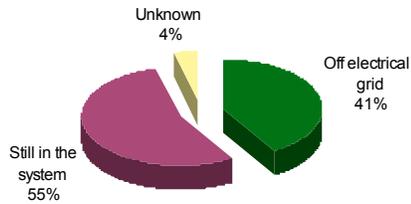


Figure 11 Service Status without ARP

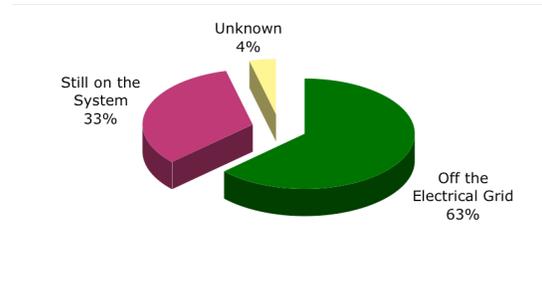


Figure 10 Service Status with ARP

## 6. Program Satisfaction

The ARP participant survey included customer satisfaction questions about the specific processes and the overall program. In order to look for changes between program years, these questions were nearly identical to the questions asked in the 2004-05 ARP evaluation's participant survey.

Customers were asked specific yes or no questions about various aspects of the ARP process. The questions and the responses (Table 39 to Table 43) to them are organized into five categories: information, scheduling by telephone, scheduling online, pick-up, and the incentive. The 2006-08 study included several questions that were not asked in the earlier study and those have been marked 'NA' for 2004-05.

### 6.1 Customer Satisfaction with Information

As with the earlier study, some gaps existed in the information that customers received. Customers were asked whether they learned what they needed to know before signing up for the program and whether they understood that the refrigerators were to be recycled. In the first case, five percent of respondents said they had not received all the information they needed. This is an improvement from the previous study (5 percent). The percentage of participants who knew that the unit would be recycled was 68 percent, a modest increase (seven percent) in understanding this from the 2004-05 study.

One of the themes that is new in SCE's marketing since 2004-05 is the annual cost of operating a unit. Respondents were asked if they knew that keeping and running an older unit could cost up to \$300 per year for electricity. About 31 percent of the participants said that they did not know that. This may help to explain why bill savings was not more of a factor in motivating users to participate in the program. We also asked if customers were aware that the refrigerant in the older refrigerators could be harmful to the environment. About 18 percent said that they didn't know this.

**Table 39 Percent of Responses to Specific RARP Satisfaction Questions**

Process Satisfaction Yes/No Questions	2004-05				2006-08			
	Yes	No	Don't Know	N	Yes	No	Don't Know	N
Information								
Did you learn everything you wanted to know about the program before participating?	85	13	2	512	90	5	6	454
Did you learn the unit that was picked up would be recycled?	61	30	10	471	68	26	6	454
When you first decided to dispose of your appliance, were you aware that keeping and using it could cost up to \$300 a year in electricity to run it?	NA	NA	NA		67	31	2	454
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?	NA	NA	NA		80	18	2	454

Customers were quite positive about the scheduling process. Ninety-four or more percent of the customers said that the representative was polite and courteous, the representative

was able to answer all their questions, and a convenient time for pick-up could be scheduled during the scheduling process (Table 40). Compared to the 2004-05 survey the percentages are down a point or two but this is within statistical error bands.

We also asked whether a second call was required. Nine percent said that a second call was required. This is the same percentage as 2004-05. It is likely that callbacks were due to the inability of the customer to provide information used to determine the eligibility of the refrigerator or indecision on the customer's part. This percentage does not seem unreasonable.

**Table 40 Percent Satisfaction with Scheduling by Telephone**

Process Satisfaction Yes/No Questions	2004-05				2006-08			
	Yes	No	Don't Know	N	Yes	No	Don't Know	N
Scheduling Phone								
Was the representative you spoke to on the telephone polite and courteous?	96	0	3	320	94	1	5	320
Did the representative answer all your questions?	97	0	3	320	95	1	4	320
Were you able to schedule a pick-up appointment for a convenient date and time?	97	2	1	320	95	3	2	320
Did you have to call more than once?	9	88	3	320	9	88	3	320

Customers in the 2006-08 study were also asked specific questions about signing up online. Generally the responses were quite positive (Table 41). Eighty-seven percent of customers stated that the website was easily found. This is down somewhat (10 percent) from 2004-05 but this appears to be a function of more people saying don't know in 2006-08. The percentage saying that that the website answered their questions (96 percent) and that they were able to schedule a pick-up for a convenient date and time was up one and two points, to 96 percent and 99 percent respectively, from 2004-05. Ninety-three percent of the respondents said that they received a confirmation that the sign-up had been successful. None of the 2006-08 respondents indicated that they did not receive a confirmation but about seven percent said that they didn't know.

**Table 41 Percent Satisfaction with On-line Scheduling**

Process Satisfaction Yes/No Questions	2004-05				2006-08			
	Yes	No	Don't know	N	Yes	No	Don't know	N
Scheduling Online								
Was it easy to find the sign-up screen on the website?	97	3	0	62	87	5	8	75
Did the website answer all your questions about the ARP?	95	3	2	62	96	3	1	75
Were you able to schedule a pick-up appointment for a convenient date and time?	97	3	0	62	99	1	0	75
Did you receive confirmation that your sign-up had been successful?	96	0	3	62	93	0	7	75

With respect to pick-up (Table 42), 88 percent or more of the customers said the representative arrived on time, was polite and courteous, and appeared neat and

professional. This was slightly lower than the responses for the earlier study, but some of this is accounted for by respondents who said that they did not know. More than 82 percent of the customers reported that they received a call in advance of the pick-up. This is up by three percent from the previous survey. However, this can be accounted for by the differences in the “don’t know” responses. On a positive note the percentage of respondents who thought the time between scheduling and pick-up was too long decreased substantially from the earlier study (15 percent to 7 percent). This is significant because one of the things that was identified in the previous report was the need to reduce the amount of time between scheduling and pick-up. The amount of time was reduced from 15 days to an average of 5. This indicates that the program has been successful in that area and customers apparently perceived the differences.

**Table 42 Percent Satisfaction with the Pick-up Process**

Process Satisfaction Yes/No Questions	2004-05				2006-08			
	Yes	No	Don't Know	N	Yes	No	Don't Know	N
<b>Pick-up</b>								
Do you think the time between schedule and pick-up was too long?	15	85	0	249	7	93	0	332
Did they call in advance to confirm the appointment or let you know they were coming?	79	3	18	364	82	3	15	454
Did they arrive on time?	93	2	5	364	90	2	8	454
Was the representative polite and courteous?	98	1	1	364	95	0	5	454
Did the representative appear neat and professional?	95	2	3	364	88	2	10	454

By the time the ARP survey was completed, all customers should have received an incentive check. According to the survey, five percent of customers reported that they did not receive their incentive check. We did not seek to verify whether a check was sent or cashed by those who had not received a check. In other studies we have found that people have received the check but do not remember having received it. A \$50 check may not be memorable or may be handled by someone else in the household. Also customers were asked if they would have participated in the program without the incentive check. Seventy-one percent (Table 43) stated that they would have participated without the incentive check. This is down about 10 percent from the 2004-05 program years. As noted earlier, this may be a response to current economic conditions.

**Table 43 Percent Satisfaction with the Incentive**

Process Satisfaction Yes/No Questions	2004-05				2006-08			
	Yes	No	Don't Know	N	Yes	No	Don't Know	N
<b>Incentive</b>								
Did you receive an incentive check?	90	5	6	512	89	5	7	454
Do you think the time between the pick-up and receiving the check was too long?	9	91	1	279	12	80	9	454
Would you have participated in the program without the incentive check?	81	16	3	458	71	24	6	454
If the incentive check had been \$25, would you have participated in the program?	NA	NA	NA		39	44	16	122

It is also clear that respondents differentiate between receiving an incentive and receiving a smaller incentive. While 71 percent would have participated without the incentive, 44 percent said that they would not have participated if the incentive had been smaller. These two answers do not necessarily conflict. This may be a case where the respondents do not want to have the incentive lowered.

### 6.1.1 Customer Satisfaction

Finally, we attempted to gauge overall customer satisfaction with three questions addressing satisfaction with sign-up, satisfaction with pick-up, and satisfaction overall. On a one to five scale where five is completely satisfied and one is not at all satisfied, customers were asked how satisfied they were with the program sign-up and pick-up experience and the program overall.

As noted earlier, customers seemed to be highly satisfied with the specifics of the program. More than 86 percent of customers were “completely satisfied” with the sign-up experience (Table 44). This is up three percentage points from the previous survey. Ninety percent of the 2006-08 respondents were completely satisfied with the pick-up and removal process. This is down three percentage points. The percent of people completely satisfied with the service overall (84 percent) was the same in both surveys. Note that in every case when the “somewhat satisfied” and the “completely satisfied” are combined, overall satisfaction is at or above 94 percent. Normally, we would regress subpart satisfaction scores on overall satisfaction to assess what contributes to overall satisfaction but the satisfaction levels are so high that this procedure would not produce meaningful results.

**Table 44 Percent of Responses to Overall 2006-08 ARP Satisfaction Questions**

Satisfaction Questions	Not at all satisfied	Somewhat dissatisfied	Indifferent	Somewhat satisfied	Completely satisfied	Don't know	Percent Total	N Total
How satisfied were you with this sign-up experience?								
2006-08	0	1	2	9	86	2	100	454
2004-05	1	1	2	12	83	1	100	386
How satisfied were you with the actual pick-up and removal experience?								
2006-08	1	1	3	5	90	1	101*	454
2004-05	1	1	1	4	93	0	100	364
How satisfied were you with the service OVERALL?								
2006-08	1	1	4	10	84	0	100	454
2004-05	0	0	3	12	84	0	99*	512

\* Total deviates from 100 due to rounding

For the 2006-08 study, we decided to look more closely at satisfaction levels for customers who signed up online versus over the phone (Table 45). In 2006-08, customers who signed up over the phone were completely satisfied 88 percent of the time, while customers who signed up over the Internet were completely satisfied 80 percent of the time. In the 2004-05 study satisfaction with the Internet sign-up (87 percent) was higher than for the telephone sign-up (83 percent). In other words, in 2006-08 satisfaction with the Internet decreased and the satisfaction with the telephone sign-up increased. There is no readily apparent reason for this.

**Table 45 Percent Satisfaction of Customers who Signed-up Online Versus Over the Phone**

Sign up Method	Year	Not at all satisfied	Somewhat dissatisfied	Indifferent	Somewhat satisfied	Completely satisfied	Don't know	Total	N
Telephone	2006-08	0	1	2	8	88	2	99*	370
Telephone	2004-05	<1	1	3	12	83	<1	100	320
Online	2006-08	1	0	2	14	80	2	99*	84
Online	2004-05	2	0	0	11	87	0	100	62
Other	2006-08								
Other	2004-05	0	0	0	0	100	0	100	4
Don't know	2006-08								
Don't know	2004-05	0	0	0	0		0	100	21
Total	2006-08	1	2	9	86	2		100	454
Total	2004-05	1	1	3	12	84	<1	101*	407
N		2	2	11	47	344	1		407

\* Total deviates from 100 due to rounding

## 7. Changes to the Logistics System

The most dramatic change to the program was the introduction of an advanced logistics tracking system. In the 2004-05 program, the contractors had their own tracking databases. The contractors divided their respective portions of the service territory into pick-up areas. Based on population and experience, the contractors scheduled pick-up days for each area several weeks in advance. As calls were received, customers were offered a selection of pick-up days from which to choose. Areas with a history of high participation were allocated more pick-up days than areas with low volumes. Areas with very low volumes might be serviced at more irregular intervals or bi-monthly or monthly. The recycling firms either gave the drivers their pick-up orders for the next day and let the drivers do the routing or they used routing software and required the drivers to follow the routing.

Because the logistics portion of the work was largely done by hand using paper, schedules typically closed a day or two in advance of pick-up. The fixed scheduling pattern and the paperwork requirements drove the average time from call to pick-up.

A computer was used to track customers and their appointments. Pick-up orders were printed and the logistics and the tracking of units was done using paper forms. At the end of the day when drivers returned to the warehouse, they were required to submit their paperwork. Drivers were not given a new routing until all paperwork was completed. Data were input from the paper and the rebate was then tracked and paid by the contractor.

### 7.1 An Updated Logistics System

Realizing that the logistics systems and administrative processes could be streamlined and that shorter pick-up times might reduce the cancellation rates, the SCE program manager began looking for alternative logistics systems. Working with an outside contractor, the manager had a new database structure developed, added dynamic routing software much like those used by businesses who provide on-site customer services or package delivery, added two-way communication devices that were capable of inputting, receiving, and displaying data, and were capable of tracking and communicating geographic location.

Routing is optimized the afternoon of the day before the pick-up. The name, address, and telephone numbers are downloaded to a handheld PDA along with the routing. In route, the crews are encouraged to call ahead and inform customers of their arrival time. When the crew arrives to pick up a unit or units, they enter the information (size, type, style, etc.) for the appliance or appliances that are removed and/or a disposition code into the handheld unit. The disposition code indicates the successful pick-up of a working unit, an ineligible nonworking unit, a cancellation, or some other outcome. This is immediately transmitted and loaded into the central tracking database. Routes can also be adjusted if customers call and cancel while the truck is in route. Because the routing is dynamic, if someone near a route calls requesting a pick-up, the pick-up can be incorporated into the route on the same day if the truck has space.

When appointments are cancelled or they have space on their trucks, drivers can prospect for potential pick-ups from nearby households that are scheduled for future pick-ups that have indicated that they would be willing to have an earlier pick-up if they are home. Because of the geo-positioning capability, the central office knows the exact location of every truck while in route.

Finally, paper forms have been eliminated. Customers sign for the removal on the handheld device. Pictures of the unit(s) and/or pictures associated with any damage that may have occurred in the customer's home can be documented. The driver enters the appropriate data for the units that are retrieved. When the truck arrives at the recycling facility, the units are electronically checked in and their characteristics verified. The data needed for the incentive payment are produced and forwarded for payment.

The system has a number of advantages. It eliminates paper to computer data transfers that should help to improve the quality of data. It makes it easier for people to verify data at each step, which should also increase accuracy. It reduces time to pick-up.

We did observe some limitations. The categories for age data are too broad. It would be better to record age as best as can be determined. But, rather than recording age, it would be useful to record birth year. This would facilitate later analyses and comparisons. A scan of the unit barcode (if it has one) or a readable picture of the nameplate with model, serial number, refrigerant, and other information might be more useful than a picture of the unit. Such data would be useful for later verification and subsequent analysis.

## 7.2 The Effects of Changing Logistics on Pick-up Times

Table 46 displays the distribution of days between the call and the actual pick-up of the appliance. The four time periods represent four distinct periods of activity: the 2004 and 2005 program years, the period from January 2006 through the end of June 2007, the period from July to December 2007, and 2008. The 2004-05 period is the period for which the earlier evaluation was conducted. During this period, there was one contractor and there was not a lot of attention to logistics. January 2006 to June of 2007 was the run-up period to the new system. There were two contractors involved and greater attention was being paid to logistics. During the period from July to December 2007 the new system was being initiated and there were a number of issues that had to be overcome. During the year 2008, the system was fully operational and essentially working as intended.

**Table 46 Distribution of Days from Call to Pick-up for Four Different Time Periods (percent)**

Days from initial call to pick-up	2004 and 2005	January 2006 to June 2007	July to December 2007	2008
0 to 3	4.5 <sup>a</sup>	4.9	29.1	39.6
4 to 7	9.1	40.3	43.1	38.3
8 to 14	47.3	43.3	19.6	15.4
15 to 21	29.5	7.2	4.2	3.4
22 to 30	7.6	2.4	1.8	1.5
30+	1.9	1.9	2.3	1.7
Total	100.0	100.0	100.1*	99.9*
N	109,783	90,657	31,228	86,467
Average Days	15	10	7	5

\* Total deviates from 100 due to rounding

<sup>a</sup> This value is probably higher than it should be because missing values were assigned to zero. There is no way to correct the problem. The effect is very small. It would increase the average only slightly and the one percent would be distributed through the remaining categories

What the data show is a progressive improvement in average pick-up times. In 2004-05 the pick-up time was 15 days, this declined to 10 between January 2006 and June 2007. There was a further decline to an average of seven days between July and December

2007, and finally an average of five days during 2008. In 2008, nearly 40 percent of the units were retrieved within three days and 78 percent within seven days.

The information for 2004 and 2005 and January 2006 to June 2007 is primarily for the same contractor, so the decline is not a function of a difference in contractors. However, the decline could reflect the division of the service territory into two parts, one for each contractor, resulting in a more compact pick-up area. In turn, that could have influenced the number of retrieved units. The average monthly removals were roughly in the same range, about 4,300 to 4,500 units per month so the workload was about the same. Aside from the possible effect of pick-up area being compacted, the changes appear to be entirely logistics related.



## 8. Program Cancellations and The Cancellation Survey Analysis

One of the things that became clear from the evaluation of the 2004-05 program was that the cancellation rate for this program seemed quite high; approximately 20 percent of customers cancelled an order. Cancellations largely represent missed opportunities and many units that would be disposed can remain in or re-enter the market. Understanding the reasons for cancellations, tweaking different aspects of the program, and changing or refocusing the marketing message may reduce the number of cancellations. Also, a cancellation analysis can be an effective way to discover shortcomings in recycling programs.

Innovologie conducted a cancellation survey as part of its process review of SCE's 2006-08 ARP. A large number of cancellations occurred in the few month transition to the new logistics system. In order to avoid representing these initial problems, only customers who cancelled in 2008 were surveyed. The telephone survey was completed with 400 randomly chosen customers that cancelled their disposal order. The survey can be seen in the appendix.

In this chapter, we will first look at overall cancellation data across the three program years. Next, we will look at the cancellations survey, specifically:

1. Unit and customer characteristics
2. Reason for cancellation
3. Disposal method
4. Alternatives and preferences
5. Conclusions and recommendations

### 8.1 Program Cancellations

During the 2006-08 program years, there were nearly 50,000 canceled orders representing 52,000 units. Over the three-year period, cancellations averaged 19 percent of all orders. However, the cancellation rate declined from 21 percent in 2006 and 2007, to 17 percent in 2009 (Table 47).

**Table 47 Cancelled Orders and Units for 2006-08 ARP**

Program Units	2006	2007	2008	Total
Canceled Orders	16,901	14,919	17,493	49,313
Canceled Units	17,665	15,817	18,501	51,983
Total Inquires	81,512	72,174	103,969	257,655
Percent Canceled	21	21	17	19

The program data offered little information about the cancellations. In the previous study we had observed that those signing up via the Web were more likely to cancel than those who signed up by the telephone. Over the three-year period (Table 48), customers who signed up over the Web cancelled more often (22 percent) than those who signed up over the telephone (19 percent). There was a decline in the cancellations for those who used the Web and the telephone to sign up but the decline in the Web cancellations was more precipitous than for the telephone and there was almost no difference in cancellations by the method of sign-up by 2008.

**Table 48 Percent of Cancellations by Sign-up Method**

Sign-up Method	2006	2007	2008	Total
Web Cancels	28	20	18	22
Phone Cancels	21	19	16	19

## 8.2 Characteristics of Units for Households that Cancelled and Participant Comparisons

In order to get some idea of how the units from cancelled orders might differ from orders that were completed, comparisons of the age, type, and size of refrigerators and freezers were made between the cancellation and participant surveys. For comparative purposes, we have also included the characteristics of participants who participated in the survey and from the participant data. This provides insight into how those who cancelled their order may differ from participants who remained in the program.

Customers who cancelled their participation were far likelier to have units less than 10 years of age (Table 49) than those whose units were picked-up. Fifty-two percent of households that cancelled had units that were less than 10 years (16 percent of which were less than 6 years of age) compared to 14 percent of all participants who completed disposal of their units through the program.

**Table 49 Approximate Age of Cancelled Units and Units Disposed of Through ARP (percent)**

Age	Cancel Survey	Participant Survey	2008 Participant data
Less than 10	51.8	13.6	13.1
11-15	21.0	53.0	56.8
Greater than 15	20.5	33.4	30.1
Don't know	6.8	0	0.0
Total	100.1	100.0	100.0
N	400	485	90,242

\* Total deviates from 100 due to rounding

The size of the units also appears to be associated with cancellations (Table 50). There were approximately 21 percent fewer medium and 19 percent fewer medium-large units cancelled than were disposed by participants. Large units were associated with 23.5 percent of cancelled orders but only seven percent of units disposed of through the program.

**Table 50 Approximate Sizes of Cancelled Units and Units Disposed of Through ARP (percent)**

Size	Cancel Survey	Participant Survey	2008 Participant data
Small (under 14 cubic feet)	12.5	11.2	9.2
Medium (15-18 cubic feet)	23.3	44.5	45.3
Medium-Large (19-22 cubic feet)	18.8	37.9	36.5
Large (23 cubic feet and larger)	23.5	7.0	9.1
Don't know	22.0	0.0	0.0
Total	100.1*	100.6*	100.1*
N	400	485	90,225

\* Total deviates from 100 due to rounding

There is some association between the style of unit and cancellation (Table 51), but it is not nearly as strong as for age and size. Households that cancelled were more likely to have side-by-side units than participant households and they were less likely to have freezers than participant households. About the same percentages of households had top freezer refrigerator units.

**Table 51 Types of Cancelled Units and Units Disposed of Through ARP (percent)**

Type	Cancel Survey	Participant Survey	2008 Participants
Side-by-side refrigerator	35.5	29.1	28.4
Top freezer refrigerator	50.0	48.9	55.2
Bottom freezer refrigerator	2.8	3.1	2.6
Single Door	0	0	2.2
Freezer	9.0	16.5	9.2
Other	1.0	2.5	2.4
Don't know	1.8	0.0	0.0
Total	100.1*	100.1*	100.0
N	400	485	90,242

\* Total deviates from 100 due to rounding

**8.3 Characteristics of Households that Cancel**

The demographics of households that signed up for the program and then cancelled were also examined. These included:

1. Home ownership
2. Size of home
3. Years in a home
4. Number of residents in the household
5. Number of children in the household
6. Whether the home has been recently remodeled
7. Total income of the household

Seventy percent of households that cancelled an order owned their own premises (Table 52). However, households that cancelled were more likely to be renters (27 percent) than households that remained in the program (16 percent). It is unclear why this was the case.

**Table 52 Participants Were Primarily Homeowners**

Own/Rent	Cancellation Percent	Participant Percent
Own	70	76
Rent	27	16
Refused	3	8
Total	100	100
N	400	454

Those who cancelled had homes with a median square footage of 1,905 square feet. This is slightly smaller than the median square footage of households participating in the ARP

(1,977 square feet). The most common size of participants who cancelled is in the range of 1,000 to 2,000 square feet, the same as participants. However, the percentage of residents that cancelled that had between 2,000 and 4,000 square feet exceeded the percentage of participant homes of that same size by about five percent (Table 53).

**Table 53 Square Footage of the Homes of Participants that Cancelled**

Home (square feet)	Cancellation Percent	Participant Percent
Less than 500	3	1
500 to just under 1,000	9	7
1,000 to just under 2,000	42	43
2,000 to just under 4,000	29	24
4,000 and up	3	3
Refused/Did not know	15	22
Total	100	100
N	400	454

Households that cancelled included more single residents (13 percent) than households that participated (8 percent), fewer households with two residents (29 percent compare to 34 percent), and more households with three to five residents, 51 percent compare to 46 percent (Table 54).

**Table 54 Number of Residents in Homes of Participants that Cancelled**

Residents in home	Cancellation Percent	Participant Percent
1	13	8
2	29	34
3 to 5	51	46
6 or more	6	8
Refused	2	4
Total	101*	100
N	400	454

\* Total deviates from 100 due to rounding

The households that cancelled had a higher percentage of residents under 18 (39 +3 = 42 percent) compared to participants (36 percent) (Table 55). This potentially could have had an effect on the decision to cancel. However, it does appear that about 15 percent of households with more than two persons that cancelled were comprised entirely of adults. This occurred in 20 percent of participant households. Generally we interpret these data to mean that participant households (62 percent) tended to be adult only households, many of which were likely empty nesters. The cancellation households were seven to eight percent more likely to include residents under 18.

**Table 55 Percentage of Respondents that Cancelled with Residents Under 18 years of Age**

Residents under 18	Cancellation Percent	Participant Percent
0	55	59
1 to 3	39	36
4 or more	3	0
Refused	1	1
DKNA	2	4
Total	100	100
N	400	454

Table 56 shows that for households that cancelled there is a negative linear relationship between the size of household and the age of the units. Households that have six or more residents (primarily households with children) have a greater chance of having had a unit that is less than 10 years of age, while households with one or two residents are more likely to have had older units.

**Table 56 Age of Units in Households that Cancelled Units Compared to Household Size**

Unit Age	Number of Residents Grouped (percent)					Total	N
	1	2	3 - 5	6 or more	NA		
Less than 6 years	9.6	13.9	18.2	8.3	50.0	15.8	63
6-10	26.9	30.4	38.9	62.5	16.7	36.0	144
11-15	23.1	20.9	21.2	16.7	16.7	21.0	84
16-20	23.1	13.0	9.4	4.2	0.0	11.8	47
Greater than 20	11.5	12.2	6.9	4.2	0.0	8.8	35
Don't know	5.8	9.6	5.4	4.2	16.7	6.8	27
Total	100.0	100.0	100.0	100.1*	100.1*	100.2*	400
N	52	115	203	24	6	400	

\* Total deviates from 100 due to rounding

Thirty-eight percent of households that cancelled had lived in their homes for five years or less compared to 27 percent of participant households. Conversely, seven percent more participants than those who cancelled had lived in their homes 21 years or more (Table 57). Clearly, canceling an order correlates negatively with longevity in the home. This may partially be explained by the fact that there were more renters, who might live in a home a shorter period of time, cancelled their orders.

**Table 57 Participants that Cancelled Length of Residence in Their Current Location**

Years in Home	Cancellation Percent	Participant Percent
0 to 5	38	27
6 to 10	20	20
11 to 20	22	21
21 or more	18	25
Refused	2	7
Total	100	100
N	400	454

Those who cancelled were less likely to have remodeled in the last five years (27 percent) compared to participants (34 percent) (Table 58). This would be consistent with their being renters and being in their homes a much shorter time.

**Table 58 Percent of Participants that Cancelled Remodeling Their Home in the Last Five Years**

Remodeled Home	Cancellation Percent	Participant Percent
No	70	57
Yes	27	34
Refused	3	9
Total	100	100
N	400	454

After removing the households that did not report their household income, the most common household income category for those who participated and those who cancelled from the program was \$25,000 to just under \$50,000 (Table 59). Those who cancelled had a slightly higher percent of households with incomes of less than \$25,000 and incomes greater than \$150,000. This might be because they tended to be renters.

**Table 59 Income Distributions of Participants that Cancelled**

Annual Household Income	Cancellation Percent	Cancellation Valid Percent	Participant Percent	Participant Valid Percent
Less than 25,000	16	21	9	13
25,000 to just under 50,000	16	20	16	24
50,000 to just under 75,000	15	19	14	21
75,000 to just under 100,000	13	17	12	17
100,000 to just under 150,000	10	12	12	17
More than 150,000	9	11	6	8
Refused	22	-	32	-
Total	100	100	100	100
N	400		454	

#### 8.4 Reasons for Cancellation

The data tracking system contains information about cancellations but it is mostly coded for administrative purposes and only offers partial insight into the reasons for cancellations. Cancellation survey respondents were asked why the refrigerator or freezer was not picked up as scheduled. A few respondents reported more than one reason resulting in a total of 416 reasons. Nearly a quarter of the respondents (24.5 percent) stated that they canceled because the appliance did not qualify for the program, most likely because it did not work (Table 60). The second most common reason was that the customer felt that somebody else could use the unit (22.4 percent) followed by customers deciding to keep the unit (12.5 percent). Another 10.8 percent of the customers reported

being unable to meet the scheduled time and 7.5 percent claimed that the recycling company did not appear as scheduled.

There were some additional reasons that amounted to fewer than five percent of the responses each. Some respondents reported that prior to the scheduled pick-up, unknown parties removed the unit. Some respondents reported a better offer. More than three percent reported that they wanted to have the unit removed sooner. We do not know the amount of time between the appointment and the scheduled pick-up for these units. Approximately five respondents (one percent) reported that they did not want the unit destroyed.

**Table 60 Reasons for Cancellation**

Reason for Cancellation	Percent
Appliance didn't qualify for the program	24.5
Decided somebody else could use the unit	22.4
Decided to keep it	12.5
Couldn't meet the scheduled pick-up time	10.8
Recycling company (ARCA/JACO) didn't show up as scheduled	7.5
Stolen/Unknown pick-up	4.1
Received a better offer	3.6
Wanted to get rid of it sooner than it could be picked up	3.4
Appliance dealer	1.4
Didn't want it destroyed	1.2
Program cancelled/problem	1.2
SCE picked up unit	0.7
Other reason	0.7
Don't know	6.0
Total	100.0
N	416

### 8.5 Disposal Method

An attempt was made to determine the ultimate disposition of the unit and whether or not the unit remained in service. According to the survey (Table 61), 26.8 percent of customers who cancelled ended up keeping their unit (Kept it and in use, 13.8 percent, and kept it not in use, 13.0 percent). About half of those units remain in use. Nearly 36.8 percent of customers reported that they gave their unit to someone else. Nine percent reported that the new appliance delivery crew took it, 6.8 percent took it to a waste management center, and 6.3 percent sold it. Another 6 percent of customers had their unit stolen or taken by someone that they did not know.

In order to make a conservative estimate of the units that were likely to remain in service, we assumed that units given away, sold, and stolen remained in service while others did not. Based on these assumptions, 62.9 percent of the cancelled units may continue being used. However, the units that were kept but not in use may be returned to use or given away and used. We are reasonably certain that some units taken by the appliance delivery crew may be resold as well. If units were returned to use or diverted, then another 22 percent of the units would remain in service. Some of the cancelled units may be used as replacement units for refrigerators that might be disposed. If this happens and the cancelled unit replaces a much older unit that is removed from service there might be a net savings for these units. Although many of the units that were cancelled are newer

units, if they do not replace a unit that is recycled, then they represent a continued or additional load.

**Table 61 Disposal Method for Cancelled Units**

Disposal Method	Percent
Likely to remain in service	
Gave it to someone else	36.8
Kept it in use	13.8
Sold it to someone else	6.3
Stolen/Unknown pick-up	6.0
Likely to be removed from service	
Kept it but not in use	13.0
The appliance delivery crew took the unit when they delivered the new unit	9.0
Took it to a waste management center	6.8
Had a hauler or community waste program remove it	5.3
Don't know	2.5
SCE Program	0.5
Disposed some other way	0.3
Total	100.0
N	400

Table 62 shows the actual disposition of the unit by its age. Giving the unit away was the most common disposal method regardless of age. With respect to units that were given away, the distribution is bimodal. Fifty-two percent of units less than six-years old were given away and the percentage declines to 28 percent when units reached age 20. Thirty-seven percent of the units over the age of 20 were given away. Younger units are given away more often than older units.

The percentage of units that were sold declines with age in a more or less linear fashion. This suggests that the respondents who cancelled their appointments recognized the value or attempted to gain value from the younger units. Of the 25 customers who sold units, the average price received was \$90; the median price was \$100; and the maximum price was \$200. If these households did not have to pay for the transport of the units and did not spend much on advertising, many of them received value greater than they would have realized through the program incentive.

About the same percentage respondents reported keeping units and keeping them in service (14 percent  $\pm$  three percent) regardless of age. Those who kept units but did not have them plugged in mostly reported that the units were between six and 20 years of age.

**Table 62 Ultimate Disposal Method And Age of Unit (percent)**

Disposal method	Approximate Age of Unit						Total	N
	<6	6-10	11-15	16-20	20+	Don't know		
Sold it to someone else	11.1	6.9	6.0	4.3	2.9	0.0	6.3	25
Gave it to someone else	52.4	34.0	32.1	27.7	37.1	44.4	36.8	147
The appliance delivery crew took the unit when they delivered new unit	4.8	8.3	10.7	6.4	20.0	7.4	9.0	36

Disposal method	Approximate Age of Unit						Total	N
	<6	6-10	11-15	16-20	20+	Don't know		
Had a hauler or community waste program remove it	1.6	6.9	4.8	8.5	5.7	0.0	5.3	21
Took it to a waste management center	4.8	7.6	4.8	12.8	5.7	3.7	6.8	27
Disposed some other way	0.0	0.0	1.2	0.0	0.0	0.0	0.3	1
Stolen/Unknown pick-up	3.2	5.6	7.1	8.5	0.0	14.8	6.0	24
SCE Program	1.6	0.7	0.0	0.0	0.0	0.0	0.5	2
Kept it in use	17.5	11.8	14.3	14.9	17.1	7.4	13.8	55
Kept it out of use	3.2	14.6	15.5	14.9	8.6	22.2	13.0	52
Don't know	0.0	3.5	3.6	2.1	2.9	0.0	2.5	10
Total	100.2*	99.9*	100.1*	100.1*	100.0	99.9*	100.3*	400
N	63	144	84	47	35	27	400	

\* Total deviates from 100 due to rounding

Table 63 shows to whom the units were given or sold. When units were given to someone the recipient was usually a family member, friend, or neighbor (73 percent) while 16 percent were given away to someone that the customer did not know. Just seven percent went to a charity. The majority of the units that were sold went to someone the customer did not know (52 percent), while most of the remainder (44 percent) went to someone the customer did know. None were sold to charities and one unit was sold to a dealer.

**Table 63 Recipients of Sold and Given Away Units**

Entity	Percent of Units Given Away	Percent of Units Sold
A family/neighbor/friend/co-worker	73	44
A dealer	2	4
Someone you did not know	16	52
A charity	7	0
Don't know	1	0
Total	99*	100
N	142	25

\* Total deviates from 100 due to rounding

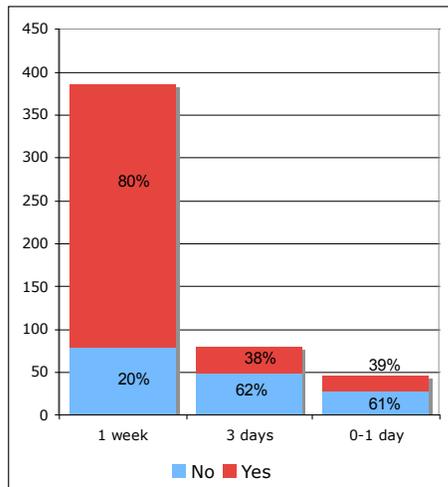
We also looked at units that were removed by appliance crews. There were 36 such units in our sample and 56 percent of those units (20 units) were removed by prearrangement with the store from which the new unit was purchased. Of these 20 removals only three were charged a removal fee. For the 16 units (44 percent of these units) that were removed without prearrangement, 69 percent were removed for free. The five households that had no prearrangement for removal paid the delivery crew from \$10 to \$60 for the removal with an average cost of \$33.

## 8.6 Alternatives and Preferences

Customers that participated in the cancellation survey were given some different program options to see what changes might have caused them to stay in the program. Customers were first asked if decreasing the time from sign-up to removal would have changed their minds. Figure 12 shows the results when asked about one week, three days, and one

day/same day. If customers said no to a week, they were then asked about three days, and then about same day pick-up. When the customer said yes, no further questions were asked about the timing of removal.

Of the roughly 380 respondents who answered the question, 80 percent said that if they could have received the pick-up within one week they would have not cancelled the disposal through the ARP. Reducing the time from one week to three days resulted in a gain of slightly more than a third of the remaining respondents (about 26), and offering same day or one day gained another one third of the remaining respondents (16). Having less time between the appointment and the pick-up may reduce cancellations, but reducing it beyond a week results in only small gains.

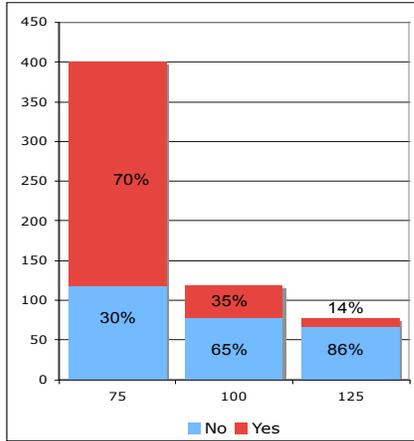


**Figure 12 Effects of Decreasing Pick-up Times**

The participants in the cancellation survey were asked what effect increasing the incentive above \$50 might have. Remember, only a small percentage of those who cancelled sold their unit and they sold them for an average of \$90. Customers were sequentially asked about higher incentives, \$75, \$100, and \$125. If the customer agreed to an incentive level the customer was not asked about any remaining incentive levels.

Figure 13 shows the results. Seventy percent of the respondents said that an increase of the incentive to \$75 would have caused them to change their mind about canceling. One third of the remaining respondents said that they would have been influenced if the incentive was increased to \$100. Increasing to \$125, however, would have only influenced a few additional respondents.

Respondents were asked if there were no cash incentives but other aspects of the program were unchanged, would they consider using SCE's ARP in the future. Ninety-two percent responded with a yes.



**Figure 13 Effect of Increasing the Incentive**

Respondents to the cancellation survey were also asked if at the time of signing up for the program they were aware of the added electricity costs associated with keeping old units and if they were aware of the environmental harm old units could have if disposed of improperly.

Table 64 shows the responses, along with a second question about whether they would have changed their mind if they had had the information before canceling. Forty-two percent of respondents were not aware that the electrical cost of operating old units was so high and about three quarters of them said that they would have changed their mind. As noted earlier, bill savings was not an important reason for participation but it may be important information for those who cancelled. Twenty-four percent of respondents were not aware of the potential environmental harm of disposing old units. That knowledge would have changed the minds of 89 percent of those who didn't know.

**Table 64 Awareness Electrical and Environmental Effects of Older Units Among Customers Who Cancelled (percent)**

	Aware of Electrical Cost	Change Decision	Aware of Environmental Harm	Change Decision
No	42	24	24	9
Yes	55	71	75	89
NA	2	2	0	1
DK	1	4	1	1
Total	100	101*	100	100
N	400	168	400	94

\* Total deviates from 100 due to rounding

Finally, customers were asked, ‘when choosing a disposal method, what is the most important thing and second most important thing.’ As seen in Table 65, environmentally safe removal was the most common first choice (41.8 percent) and convenience the most common second choice. Convenience was the next most common first choice and the environment was the next most common second choice. After environment and convenience, having someone be able to use the unit was the next most common response for both first and second choice, followed by obtaining money for the units.

**Table 65 Reasons for Disposal Method Choice**

Motivation	First Choice Percent	First Choice Category Percent	Second Choice	Second Choice Category Percent
Making sure it is disposed of in an environmentally safe ...	41.8	41.8	27.3	27.3
Convenience		28.3		32.8
Convenient and/or fast pick-up	14.5		15.0	
Having someone else remove it	7.0		10.0	
Not having to spend much time getting rid of it	6.8		7.8	
Have someone else be able to use it and get good from it	21.0	21.0	18.8	18.8
Obtaining money for the units		8.1		16.1
The incentive	4.3		9.3	
Getting money from selling the unit	3.8		6.8	
Cheaper Removal	0.0	0.0	0.5	0.5
Don't know	1.0	1.0	3.8	3.8
No response	0.0	0.0	1.0	1.0
Total	100.2*		100.3*	
N	400		400	

\* Total deviates from 100 due to rounding

## 9. The Potential for Removal of Units Through the Retailers

Over the years, managers of refrigerator recycling programs have discussed the possibility of working with retailers to retrieve old refrigerators thereby reducing the cost of refrigerator recycling programs and increasing convenience for customers by having a pick-up combined with a drop-off. There are a number of concerns about retailer programs not the least of which is that the net-to-gross for refrigerator recycling program could be negatively influenced:

- Customers that would have a unit removed by the retailer anyway would receive the incentive.
- The number of units being retrieved through retailers would remain approximately the same.
- The combined result would be to pay incentives to people who are already disposing of a refrigerator. In other words, free-ridership would increase for very little gain to the program. (net-to-gross issue)
- Further, most programs only remove working units and there are concerns about contracted logistics services having the discipline to identify working units. (net-to-gross issue)
- Retailers are not anxious to promote or promise an incentive if the incentive might not be granted because a unit is later found not to be working.
- With private contractors involved, there is the potential for tracking problems and the substitution of more valuable units with less valuable or nonworking units during the transfer process thus compromising the chain of custody.
- A retailer program does not address customers who are not purchasing a unit who have a second unit and might be willing to have it removed.

There are potentially significant benefits to working with appliance retailers:

- As noted above, convenience is a key reason customers participate in appliance recycling programs. In a retailer supported program, the drop-off and pick-up occur at the same time so customers only have to be home once.
- With a pick-up program there is a second round trip. The second round trip is not needed in a dealer-supported program. The outbound cost is covered by the delivery of the new appliance and the pick-up program covers the return trip.
- While the amount of labor might increase slightly on a delivery and pick-up, the overall labor costs would be reduced by about half.
- There would be reduced fuel costs, fleet costs, and emissions from the second trip
- One-on-one interactions with customers typically result in greater participation in programs. Well-trained retailer sales' staff could potentially increase the number of customers deciding to have the units removed.

As part of this evaluation, some initial steps were taken to lay the foundation for evaluating a retailer removal pilot. These steps included:

1. Interviewing a major retailer and learning how used units are retrieved by retailers from customers.

2. Establishing a baseline for a large retailer for the number of refrigerator transactions that involve a removal of a unit.
3. Learning how other programs that are piloting retailer options are doing business.

### 9.1 How Major Retailers Handle Used Refrigerators

A few larger national retailers and large regional retailers sell most of the refrigerators in the United States. According to EPA's most recent market profile for refrigerators, "In 2007, Sears and the home improvement sector (Home Depot and Lowe's) each accounted for 33 percent of sales, independent retailers for 22 percent, and mass merchants (Best Buy, Fry's, and other) for 11 percent."<sup>6</sup> The balance was sold through other channels. Put slightly differently, 77 percent of retail refrigerator sales are handled by a half dozen national and some regional retailers.

Perhaps 20 years ago, you could go to an appliance retailer and purchase a used refrigerator. Except for some independent retailers, that is no longer the case. The large retailers no longer carry used refrigerators with the exception of the occasional scratch and dent or out-of-box unit from the floor. Retailers do continue to remove old refrigerators (and other appliances) from customer households. These appliances are usually removed for free although there may sometimes be a charge. The retailer typically contracts with a recycler to dispose of the used units. According to the disposer survey data that was presented earlier, approximately 26 percent of refrigerators leave households through the new appliance dealer channel. This is up a bit from three years ago.

The general pattern now is for large retailers to use logistics services to handle appliance deliveries and remove old appliances. The dealer will contract with a logistics service and the logistics service will likely subcontract some of the volume to other logistics services. This allows the prime contractor to manage rapid changes in volume but maintain a steady and predictable volume.

One large retailer allowed us to view their operation. When the retailer sells a new appliance, the order is electronically sent to a distribution warehouse where a printed delivery order is generated. If a used appliance is to be picked up in conjunction with the delivery, the need for the pick-up is indicated on the driver's delivery order. The driver then delivers the new appliance and removes the old unit. Customers can arrange for or cancel a used appliance pick-up subsequent to the sale and before the delivery. As noted above, the logistics contractors will sometimes take it upon themselves to remove a unit at the request of a homeowner. This may be particularly true of valuable units.

In the case of this retailer, the used appliance is returned to the warehouse where it is immediately moved from the delivery truck to the recycler's trailer. When the trailer is full, the retailer calls the recycler who brings an empty trailer and removes the trailer with the used appliances. The trailer contains a mix of refrigerators, washers, dryers, dishwashers, and other appliances.

The recycler takes the trailer to their warehouse where the appliances are sorted. Refrigerators are sorted for those that are functional, white, of a size that is in demand, have economic value, and are less than ten years old. These refrigerators are set aside for resale to used appliance dealers or for shipment out of the country. The refrigerant is

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<sup>6</sup> US Department of Energy, *New Opportunities Multiply Savings: Energy Star Refrigerator Market Profile*, Washington, DC: US Department of Energy, December 2009.

drained from the remaining refrigerators (a requirement in California), components with hazardous materials removed (also a requirement), and then the refrigerators are sent to a scrap dealer or are de-manufactured. The scrap is sold into different markets. This is nearly identical to the procedure used by the utility recyclers.

Retailers told us that in their databases they do not track the number of refrigerators that they removed through their logistics system. They rely on the recycler to tell them how many appliances have been removed.

## 9.2 Units Removed by a Retailer — A Case Study

In order to assess the number of units removed by a retailer, the same large retailer allowed the evaluation team to review the delivery orders given to the drivers so that baseline information could be obtained about refrigerator deliveries and used refrigerator removals. The original intent was to review a year's worth of orders but it quickly became clear that the cost of obtaining such a large amount of data would be prohibitive. The modified data collection plan was to collect data for a random sample of eight days between May 9, 2009 and August 23, 2009. The data collection period was determined by the paper orders that had not been transferred to long-term storage. This period tends to coincide with the period during which refrigerator sales are at their peak during the year. In addition, 112 days of data were collected for two stores to see how individual stores might vary from the overall norm.

This distribution center dispatched 887 refrigerators to a total of 871 customers on the eight sample days. There were 14 orders that had two refrigerators delivered and one that included three refrigerators.

The orders came from more than 70 retail locations and on-line orders. The largest number of refrigerators sold from any one retail location was 39. Some locations sold one unit. Three stores sold 30-39 units. Another six locations sold between 20 and 29 units, 31 locations sold 10 to 19 units, and remaining stores sold the balance of the units.

The orders included instructions to remove refrigerators at 286 (33 percent) of the 871 sites. However, 111 (8 percent) of these orders were cancelled before the removal took place so that refrigerators were removed at 175 sites (20 percent). There were 12 orders where it was not possible to determine if the item being removed was a refrigerator or some other appliance (1 percent).

For the two retail outlets from which complete data was gathered, there were a total of 556 refrigerators removed based on 555 orders. A total of 174 (32 percent) showed that a refrigerator was to be removed but 71 orders were cancelled (13 percent) and no removals were scheduled at 369 sites (65 percent). Thus, the retailer removed 103 refrigerators (19 percent of the sites). There were 12 orders that were ambiguous with respect to whether a refrigerator was to be removed.

These data demonstrate two things. When purchasing a new refrigerator, roughly a third of customers initially arrange to have the refrigerator removed by the retailer. Before the delivery occurs 40 percent of the customers arranging a removal (13 percent of the deliveries) decide not to have the unit removed.

This can be compared with the results of the disposer survey where we have the number of customers who purchased a new refrigerator (243) and the number (77) who said that they disposed of a unit through a new appliance dealer (32 percent).

So, now we can account for the difference in the percentage of units removed between the retailer percentage (about 20 percent) where we counted orders and the new appliance dealer percentage from the disposer survey (about 32 percent). The base of the percentage of retailer deliveries includes households that did not have a refrigerator and were purchasing a new unit for the first time. The retailer data are also from a national chain and do not include independent retailers who survive on service and may promote appliance removal as a service. These two factors are likely to reduce the base number thereby increasing the percentage of removals.

Finally, it is notable that retailers have a cancellation rate that is about double (an average of 33 percent) the cancellation rate for the appliance recycling program (about 17 percent). In other words, people change their minds about having a unit removed more often when dealing with the dealer than when dealing with the appliance recycling program. People who have the dealer remove the unit clearly have second thoughts. As we observed earlier with respect to program cancellations, this may be because they begin to think of other ways to dispose of the unit. Appliance recycling participants may already have gone through the thought process about disposing of the unit, taking the behavioral step of calling the program, and may be influenced to maintain their decision by the incentive.

We should note that retailers were not providing an incentive to customers for removing their unit. They were providing a service that was convenient. The removals were occurring without a lot of promotion of the environmental benefits or the bill savings benefits. The important point to take away from this discussion is that dealers capture only a modest fraction of the total units and therefore there are opportunities to increase the number of units removed through dealers. Dealers are having a larger percentage of removals cancelled than the program. These removals are likely to return to service and to be removals that the program would like to capture.

### 9.3 A Method for Managing Removals Through Retailers

As part of another evaluation, Innovologie collected data from a non-SCE pilot where a utility contracted with a retailer to pick-up units for recycling. In that non-SCE pilot, the retailer informs the customer that a working used refrigerator can be removed and the customer can receive the incentive payment.

There is evidence from the SCE disposer survey that having the retailer tell the customer influences the customer to participate in the program. Disposers who purchased a new refrigerator were asked if the retailer told them about the SCE refrigerator recycling program. Table 66 compares how these two groups disposed of their old refrigerators. When the dealer presents the program to the respondent it appears that the percent that used ARP increases by 15 percent. However, most of the increase comes from households that would have disposed of the unit through the retailer anyway. If as we asserted, that only the newer units taken by retailers remain in the market, then the net improvement for the program may only be two or three percent.

In the non-SCE pilot, the customer or the sales representative working with the customer calls the recycling call line, provides basic customer information, and is given an order number. The order number is entered into the tracking system. The customer is responsible for writing the order number on the adhesive label. The customer does not receive an incentive without a valid order number associated with the customer's particulars.

**Table 66 How Respondents Who Purchased a New Refrigerator Disposed of Their Old Refrigerator Compared with Whether the Dealer Told about the Program (From the SCE Disposer Survey)**

	Percent Who Heard about the Program from the Dealer	Percent Who Did Not Hear about the Program From the Dealer
Disposed through the ARP	33	18
Disposed through the retailer	50	63
Disposed by other means	17	19
Total	100	100
N	54	59

The retailer's logistics driver receives a pick-up order that indicates that he is to remove a program-related unit from the household. The driver then knows that he will have a unit on his truck that is a program unit. When the refrigerator reaches the distribution center it is separated from non-program units and combined with other program units for shipment to the recycling center. When the unit reaches the recycling center it is checked into the system so that the customer receives the incentive and the recycler receives credit for the incentive.

The sticker serves several purposes. It associates the unit with a specific customer. This allows the proper customer to receive the incentive. It prevents inadvertent or deliberate substitution of units. It assures that the right number of units is recorded for recycling.

Participants in this pilot program purchased new units from this retailer at a rate that was almost double the retailer's national sales rate. We do not know whether this was a function of the program, reflects the retailer's penetration of the local market, some other factor, or a combination of factors.

For the pilot, 71 percent of the purchasers who used the program had the delivery crew remove the old appliance. We do know that more than 70 percent of those who purchased from this retailer indicated that the retailer mentioned the program to the customer as opposed to the customer asking the retail sales person about the program.

Ninety-one percent of those who used the pilot program said that they remembered receiving the label. No one indicated that they had any problems obtaining the order number. Eight percent obtained the order number within two days of the refrigerator purchase.

Not quite 20 percent of the respondents indicated that the dealer presentation of the recycling program influenced them to purchase a new unit and 18 percent said that the dealer presentation of the recycling program influenced them to purchase from that specific retailer.

While there are a number of issues that still need to be resolved concerning retailer participation and its effect on the net-to-gross ratio, the data we do have would seem to suggest that:

1. A retailer pick-up option can be made to work.
2. There is evidence that a program for retailer pick-up, piloted in another organization's service territory, may have increased recycling program participation although that evidence is not conclusive. It appears that the increase was substantial but in the absence of a disposer survey in the pilot program area it is not possible to estimate the effects.
3. There is evidence that the pilot program influenced the purchase of a new appliance (and obviously a more efficient one) and that having the program available benefited the retailer.
4. Finally, there is evidence from the SCE disposer survey and the utility pilot program that having the retailer promote the program increases the use of the program.

## 10. Program Effects on Used Appliance Dealers

### 10.1 Introduction

This chapter discusses the used refrigerator market and whether the market is large enough to warrant a direct program intervention and to confirm program assumptions. A similar study was conducted in 2006. In the interim there appears to have been a reduction in the number of used refrigerators and freezers being sold by used appliance dealers. The results of the two studies indicate that more and more, firms that had been selling used units are getting out of the business and that fewer used refrigerators are available for resale in the market. Even though a diligent attempt was made to identify and contact the used appliance dealers there the number who actually participated in the full-length survey was limited. Care should be taken about generalizing beyond the survey respondents.

### 10.2 Dealer Sampling Methods

To identify and find used appliance dealers, four data sources were used: craigslist, the Penny Saver, the AT&T Big Yellow Pages, and BEAR data. Craigslist, the Penny Saver, and AT&T Big Yellow were searched to identify refrigerator and freezer used appliance dealers (Table 67). The 2004-05 study had shown that the dealers were frequently advertising on craigslist and in the Penny Saver.

The BEAR database contains 17,000 records. Slightly more than 4,400 potential used appliance dealers that had been licensed at some point are located within the SCE service territory. This was pared to 879 possible dealers by eliminating canceled and delinquent licenses. These cases were then crosschecked for names of firms against the other three sources, craigslist, Penny Saver, and AT&T Big Yellow. All firms from these three data sources were included in the sample but any duplicates were eliminated. This left us with 227 firms from the three data sources. An additional sample of 40 BEAR firms was then added to bring the total in-sample group to 267.

**Table 67 Sample Data Sources**

Data Source	Number
Penny Saver	121
AT&T Big Yellow	87
Craigslist	19
BEAR	40
Total	267

### 10.3 Dealer Methods

A letter containing an Internet link to an on-line survey was sent to each firm on the list. Respondents were offered a \$25 gift certificate if they completed the survey. A week later, follow-up calls were made to the people to whom a letter had been sent and who had not responded by completing the Internet Survey. At least 5 callback attempts were made.

### 10.4 Results of Contacts with Used Appliance Dealers

Table 68 displays the results of contacts with potential used appliance dealers. We actually spoke with or received surveys from 198 dealers. Contact was not made with 69

firms because of language barriers, not having a telephone number, having a bad telephone number, or refusal to speak with us.

Thirty-nine percent of contacts did not sell used refrigerators. Among those who sell used refrigerators, 21 percent did not complete the long survey in time for reporting, six percent refused, and there was a language barrier for three percent. Four percent (11 contacts) completed the long survey and received a \$25 gift card to Wal-Mart or Home Depot. Only two of the 11 completed the survey after receiving our initial mailing and the other nine had to be called, faxed, and sent a second letter. A total of 35 letters were mailed after talking on the phone to potential respondents and 16 others requested that the letter be faxed. An additional, 37 received the letter again via e-mail.

**Table 68 Result of Contact**

Sells Used Refrigerators?	Result of Contact	N	Percent
No	Not a used refrigerator dealer	103	39
Yes	Did not complete long survey	57	21
Yes	Refused long survey	17	6
Yes	Completed long survey	11	4
Yes	Language Barrier	9	3
Don't Know	Language Barrier	5	2
Don't Know	Refused Contact	1	0
Don't Know	No Phone	36	14
Don't Know	Dropped after 5 callbacks	17	6
Don't Know	Bad Phone Number	10	4
Total		266	99*

\* Total deviates from 100 due to rounding

### 10.5 Short Survey Results

Among the 103 (or 39 percent) that do not sell used refrigerators, 34 percent only repair used refrigerators or freezers, 18 percent scrap and recycle them, 4 percent do not deal in residential refrigeration or they are heating, ventilation, and air conditioning (HVAC) firms only. Three percent can't obtain any used ones for resale, sell only new refrigerators, or are in another line of work entirely. Two percent only deal in scratch-and-dents and one percent lease refrigerators only (See Table 69).

**Table 69 Market status of firms not selling used refrigerators**

Market Status	N	Percent
Repair only	34	33
Scrap only	18	17
Nonresidential	4	4
HVAC Only	4	4
Can't get any used ones	3	3
Don't do anything with appliances - other line of work	3	3
Sell new refrigerators only	3	3
Scratch-n-Dent only	2	2
Lease refrigerators only	1	1
Other unknown reasons	31	30
Total	103	100

Repair-only firms tend to be small appliance servicing businesses and appliance repair contractor "handy-men." Firms that only scrap used refrigerators are recyclers. These

firms are both small metal recyclers and larger wholesale recyclers that deal directly in the materials markets for copper and steal. The “nonresidential” firms are probably commercial refrigeration dealers and service operations. HVAC only firms are both large and small HVAC contractors that probably don’t deal in household appliances at all.

Fifteen of the 57 firms that indicated that they sell used refrigerators did not complete the long survey but agreed to give us limited information and provided information about how many used refrigerators they sell in a year and what their current inventories were (See Table 70). Only two of these firms who are not in our long survey sell any volume of used refrigerators and all indicate low inventories. These data go the issue of how few units are returning to the market through used dealers. The dealers who responded to our survey sold more units than did these dealers (see below).

**Table 70 Number of Used Refrigerators Sold and Current Inventory of Non-survey Respondents**

Firm Name	Number of used refrigerators sold per year	Current Inventory
Appliance Dealer #1	360	
Appliance Dealer #2	180	
Appliance Dealer #3	12	
Appliance Dealer #4	3	1
Appliance Dealer #5	2	2
Appliance Dealer #6	2	
Appliance Dealer #7	1	low
Appliance Dealer #8		low
Appliance Dealer #9		low
Appliance Dealer #10		10
Appliance Dealer #11		10
Appliance Dealer #12		5
Appliance Dealer #13		1
Appliance Dealer #14		1
Appliance Dealer #15		0
Appliance Dealer #16		0

**10.6 Anecdotal Cases**

The following are some excerpts from phone conversations with used appliance dealers that DO sell used refrigerators but did not complete the long survey.

- One appliance dealer said that he is having more and more trouble finding used appliances. The program is taking them all away for demolition and recycling. He is worried about where he will get used units in the future. Several of his competitors have gone out of business recently for lack of used appliances. He said that he could sell more if he could get them. He described trying to get all the refrigerators at auction at a military base barracks that is being remodeled. He said that there used to be five or six used appliance dealers in his town but now there are only two or three. The program is taking perfectly good refrigerators and crushing and scraping them.

- Another dealer said that he didn't have much in stock right now, but typically he has about 20 used refrigerators ranging in price from \$175 to \$400. The antique ones are even more expensive.
- Another dealer sells a wide variety of used appliances and that's all they do. They are fixed-up, cleaned, and repaired and come with a 60 day warranty.
- Yet another dealer said that 80 percent of his business is in home repair. He will not buy anything over 10 years old. "I only have one used refrigerator right now and have trouble getting any used fridges." He refused the survey because he is starting a different business and does not see any future in the used refrigerator market because the program is gobbling them up and really old ones are not worth fixing.
- A dealer was really angry that SCE has taken away all his business and how new refrigerators only last a few years and cost \$1,000. "How is this saving customers money, when I could give them a fixed up old one for \$100 that would last a long time?" The respondent also commented that "poor people can't afford to buy new fridges and the program is taking away all the used ones that I could be providing to poor people."
- "We don't need the program and we don't want to do the survey."
- "I never get any used ones anymore. I don't currently have any in stock."
- A dealer has used refrigerators right now but no freezers. He said that they read the letter but that they really are not interested in doing the survey. They have a wide selection of used refrigerators starting at \$199.
- A dealer said that he does sell used refrigerators to low-income people but it is a lot harder to get used refrigerators because of the SCE program. He doesn't want to give information about the used refrigerator market to the program because he is competing with it.

The following are some excerpts from phone conversations with firms that DO NOT sell used refrigerators.

- "Used ones are not worth doing anymore because people want them delivered after they are repaired and fixed up and it costs me \$50 in gas to do that for a \$150 refrigerator (at best) and then they expect you to come out when it breaks again. It's just not worth being in the used refrigerator business."
- "I used to sell used refrigerators but I may only get one a year now and I am out of that business." This dealer restores and sells antique plastic stoves from the 1950s.
- "We only sell scratch and dents and the cheapest refrigerator is \$359 and cheapest freezer is \$259."
- This dealer only deals in 10-20 scratch-and-dents a month that come right back from a customer's home.

These comments reflect the declining market and the declining availability of used refrigerators. While several of these dealers blame the program for this state of affairs, there have been other changes to the market, as we have previously noted, including the large appliance dealers who send units to recyclers who screen and sell them. There are still sources for used refrigerators. Whether these market participants are willing to pay the required price and expend the energy to obtain them is not clear. The program is probably having an effect but it is not the only factor.

### 10.7 Long Survey Results

We again remind the reader that care needs to be taken in extending the results beyond this sample. Table 71 displays the number of used refrigerators and freezers sold per year by those completing the long survey. On average, 13 used refrigerators and one freezer sold per month with an average number of 175 used refrigerators and freezers per year per dealer. The median number is 126 per year per dealer. This is down considerably from the 2006 survey, in which the average was 468 used refrigerators sold per year for firms selling at least 48 per year. Dealers said they need to acquire an average of 164 per year in order to sell this many. We believe the number is down because we did not tap any dealers dealing in very large quantities, as was the case in the earlier survey.

**Table 71 Number of Used Refrigerators Sold**

Firm Name	Number of used refrigerators sold per month	Number of used freezers sold per month	Number of freezer and refrigerators sold per year	In order to sell this many used refrigerators and freezers, number of refrigerators and freezers (whether working or not) acquired in 2008
Appliance dealer #1	40	5	540	650
Appliance dealer #2	40	1	492	600
Appliance dealer #3	15	2	204	216
Appliance dealer #4	12	2	168	150
Appliance dealer #5	11	0	132	75
Appliance dealer #6	10	0	120	32
Appliance dealer #7	6	1	84	150
Appliance dealer #8	3	2	60	50
Appliance dealer #9	4	0	48	0
Appliance dealer #10	3	1	48	40
Appliance dealer #11	2	0	24	10
Sum	146	14	1,920	1,973
Average	13.27	1.27	174.55	179.36

Ten of the eleven dealers offer both pick-ups and drop-offs and one only allowed drop-offs.

**Table 72 Pick-ups and Drop-offs**

Yes, we both pick up and drop off	Yes, collect them from customer homes, but no drop-offs	No, we do not pick-up at customer homes or accept customer drop-offs
91 percent	9 percent	0 percent

All dealers said that the customer finds them through word-of-mouth and 73 percent advertise in the Yellow Pages (Table 73). Forty-five percent use the Internet and craigslist, while 36 percent obtain referrals from community waste haulers and advertise in

Penny Saver (more than one response was accepted). Twenty-seven percent advertise in the newspaper and work with new appliance dealers to find used units. None pay for TV or radio ads. Word-of-mouth has increased from 18 to 100 percent and the use of the Yellow Pages is up somewhat (from 61 to 73 percent). The use of the Internet has increased from seven to 45 percent.

**Table 73 How Customers Find Out About Dealer Services**

How customers find out about dealer services	2009 Percent	2006 Percent
Word-of-mouth	100	18
Yellow pages	73	61
The internet	45	7
Craigslist	45	Not surveyed
Other	45	Not surveyed
Referrals from community waste managers/waste haulers	36	0
Penny Saver	36	Not surveyed
Newspaper	27	25*
New appliance dealers	27	0
TV	0	0
Radio	0	0

\* Includes Penny Saver; multiple responses permitted

All dealers report being contacted by customers over the phone, 82 percent see customers coming into their store and 27 percent report being contacted through the Internet. Both in-store visits and the use of the Internet have increased from 2006 levels (Table 74).

**Table 74 Customer Initiated Contacts with Dealers (percent)**

Year	By telephone	Through the Internet	Come to our store	Other means
2009	100	27	82	18
2006	75	7	39	

When customers drop off units, 55 percent of dealers pay for used refrigerators, 45 percent obtain them for their recycle value, and 18 percent of dealers get paid to take them. On average, units are acquired for \$34 per unit and sold for \$61 per unit (Table 75).

**Table 75 What Happens with Customer Drop-offs**

You pay owner (percent)	Owner pays you (percent)	Get the unit for recycle value (percent)	\$ Per unit acquired	\$ Per unit sold
55	18	45	\$34.00	\$60.71

When dealers pick-up appliances from households, 40 percent of dealers pay for the units, 20 percent get paid to take them, and 30 percent take them for the recycle value. On average the dealer pays \$41.25 for units and gets paid \$41.00 to take units during a customer pick-up (Table 76). These data are similar to 2006 study results. There is

anywhere from one to five days of elapsed time between the customer request for a pick-up and the actual pick-up; the average is two days.

**Table 76 What Happens with Customer Pick-ups**

You pay owner (percent)	Owner pays you (percent)	Get the unit for recycle value (percent)	\$ Per unit dealer has to pay	\$ Per unit dealer gets paid
40	20	30	\$41.25	\$41.00

When doing pick-ups, none of the dealers accept all of the units, 50 percent accept working ones, 20 percent nonworking ones, and 10 percent only accept out-of-box units (Table 77).

**Table 77 Types of Units That Are Accepted During Pick-ups (percent)**

All	Accept only newer units	Extra large units greater than 25 cubic feet	Large units 15 to 24 cubic feet	Medium units 10 to 14 cubic feet	Small units less than 10 cubic feet	Working units	Non working units	Other, unspecified
0	10	0	0	0	0	50	20	40

Three out of 11 dealers (27 percent) obtain used refrigerators or freezers from new appliance dealers and 73 percent do not. On average, a dealer obtains used units from 2.67 new appliance dealers and has a contract with an average of one new dealer. One of the three used appliance dealers picks used appliances from a new dealer and another has the new dealer deliver them. In both cases the used dealer pays the new dealer for the used refrigerators. One dealer obtains the used ones for their recycle value. The used dealer pays an average of \$30 per used refrigerator and sells them for an average of \$72.50. One used dealer reported being required to take all units from the new dealer, but another dealer reported only having to take certain units. In the latter case, the used dealer only accepts newer or working units.

Five dealers have arrangements with communities to handle used refrigerators and freezers and six do not have such arrangements. On average, dealers have arrangements in four communities and formal contracts with an average 0.5 communities. In four of the five community cases, the refrigerators are picked up from customer homes and in three of five communities the community delivers the refrigerators to the used appliance dealer. One dealer pays the community, one community pays the dealer to take the units, and one dealer reports getting the units from communities for the recycle value. Three of the five dealers are required to take all units from the community and one is only required to take working units. One dealer reported that the ones left behind are recycled as scrap.

Half of the used appliance dealers buy or sell used refrigerators from multifamily operators (condos/apartments) and the rest do not. On average, dealers work with 3.4 multi-family operators. Eighty percent of dealers remove one or two refrigerators at a time and 20

percent remove and sell large quantities all at once. None of the dealers help stage removals for multi-family operators.

Thirty-seven percent of all used refrigerators obtained by dealers are less than 10 years old (Table 78). Twenty-seven percent are from 10 to 14 years old, 20 percent are 15 to 19 years old, and 16 percent are 20 years or older. It appears that these dealers are acquiring older units. In 2006, 84 percent of used units were less than 10 years old. These newer units were just 37 percent of used acquisitions in 2009. The average size of all units acquired is 18.5 cubic feet and the average price at which they sell is \$153.90. In 2006, the average price obtained for a 10-year-old 18 cubic foot unit was \$183 upon resale.

**Table 78 Age Categories of Used Refrigerators (percent)**

	Less than 10 years	10 to 14 years	15 to 19 years	20 years and older
2009 Survey	37	27	20	16
2006 Survey	84	7	5	2

Sixty percent of used appliance dealers are able to sell all the units they obtain and 40 percent are not. Eighty percent say that they could sell more and 20 percent say that they could not sell any more if they could obtain more units. The number saying they could sell more units is more than twice that from 2006. In that year, only 46 percent said they could sell more. This is probably a good indicator of a thinning and constricted supply of used refrigerators in the Southern California market. Dealers believe that they could sell an average of 10.6 more units per month. They reported the ability to sell anywhere from 5 to 20 more used refrigerators per month.

One hundred percent of used appliance dealers repair used refrigerators and freezers. Thirty-seven percent clean machines, 24 percent repair defrost controls, 12 percent repair door seals and check refrigerant charge levels, four percent paint them, and 16 percent perform other miscellaneous repairs. As Table 79 indicates, far more dealers performed these types of repairs in 2006.

**Table 79 Types of Refrigerator Repairs Performed by Dealers (percent)**

Year	Clean the machine	Paint the outside of the machine	Repair door seals	Repair defrost controls	Check refrigerant charge level	Other Misc. Repairs
2009	37	4	12	24	12	16
2006	86	43	54	64	61	4

Ninety percent of used appliance dealers salvage parts from inoperable machines and use them for repairs on other machines. This is up from 57 percent in 2006. Ninety percent salvage shelves and handles, 80 percent controls, 30 percent coils, 20 percent compressors, 10 percent condensers, and 60 percent salvage various other parts. The percent of dealers that salvage controls and physical parts such as shelves and handles has increased markedly from 2006 to 2009, but other repairs such as compressors, coils, and condensers have declined somewhat (Table 80).

**Table 80 Parts Salvaged from Inoperable Units for Use in Other Units (percent)**

Year	Controls	Compressors	Coils	Condensers	Physical parts such as shelves and handles	Other
2009	80	20	30	10	90	60
2006	4	32	36	36	36	

Only one dealer (9 percent) removes CFCs and sends the refrigerants to a hazardous waste center. All dealers obtain used refrigerators and freezers through direct pick-ups from homes, 80 percent from drop-offs at their facility, 60 percent from selling refrigerators, 40 percent from other used appliance dealers or suppliers, and 30 percent from curbside scavenging and appliance auctions. Twenty-percent of the total used refrigerator unit volume comes to dealers via contracts with new appliance dealers, communities, and multifamily operations. In total, 46 percent of units come to dealers from the selling of a new unit, 35 percent from other used dealers, 31 percent from auctions, 23 percent through contracts with new dealers and direct pick-ups from customer homes, and 16 percent from drop-offs. Only five percent come to used dealers via communities and four percent from curbside scavenging and multi-family operators. The percents total more than 100 percent because the data is un-weighted for firms indicating zero for a given acquisition method. In other words, zero values are not averaged in (Table 81).

In comparison to the 2006 survey, the number of dealers obtaining used refrigerators by selling a refrigerator has dropped from 60 percent to 21 percent in 2009. Similarly, direct pick-ups have dropped from 100 percent down to 54 percent, and acquisitions from other dealers have been halved from 40 to 21 percent. Also, acquisition via drop-offs has fallen from 80 to 39 percent. Lastly, acquisitions through communities and curbside scavenging

have both fallen to near zero. However, contracts with new appliance dealers have shown a demonstrable rise (from 20 to 61 percent) as a method of acquiring used refrigerators and freezers.

**Table 81 Where and How Used Refrigerators Come To Used Appliance Dealers (un-weighted)**

	From selling a refrigerator/ freezer	Through contracts with new appliance dealers such as Sears, Best Buy, Howards, Fry's, etc.	From other used dealers or suppliers	Direct pick-up from people's homes	Drop-offs at your facility	Through communities	Curb pick-up/ scavenger units without contracts	From multifamily (apartment) operations	Utility recycling programs	Appliance auction	Other
Percent of Dealers 2009	60	20	40	100	80	20	30	20	0	30	30
Percent of Dealers 2006	21	61	21	54	39	0	4	25	4	21	
Percent of total acquired units 2009	46	23	35	23	16	5	4	4	0	31	21

Seventy percent of dealers sell units they obtain in the store, take them to recyclers, and salvage parts. Thirty-percent sell them to multi-family operators. Twenty-percent sell them to other dealers, take them to community waste management sites, and sell them to brokers. Only one dealer de-manufactures the units. In total, 56 percent of all units are sold in the store, 29 percent recycled, 24 percent salvaged for parts, 23 percent sold to brokers, 21 percent sold to other dealers, 13 percent taken to community waste management sites, and 10 percent are sold to multi-family operators (Table 82).

Fewer, but still a majority (70 percent) of dealers are selling used refrigerators in the store compared to 96 percent in 2006. There has been an increase in dealers that salvage parts and send them to recyclers. This practice has increased from 7 to 70 percent of dealers. Recycling of old units has also increased from 46 percent of dealers in 2006 to 70 percent in 2009.

**Table 82 What Used Appliance Dealers Do with Used Refrigerators and Freezers (un-weighted)**

	Sell them through a store or stores	Sell them to other dealers	Take them to a recycler	Take them to community waste management site	Sell them to brokers/ overseas brokers	Sell them to operators of multifamily units	De-manufacture them	Salvage parts and send them off to recycle	Other
Percent of Dealers 2009	70	20	70	20	20	30	10	70	40
Percent of Dealers 2006	96	11	46	0	0	21	7	7	
Percent of total acquired units 2009	56	21	29	13	23	10	20	24	21

Half of the used appliance dealers are aware of the SCE ARP. Thirty-percent believe the program is influencing their business and 70 percent feel that the program is not impacting their business. Two dealers commented on how the program is influencing their business. One stated that the program is causing him to lose business. The other individual stated that, “there are a few people trying to beat the system (program) by buying an older appliance than they currently have, then turning in the older appliance and keeping what they originally had.”

Three dealers suggested ways to interact with the program:

- “Recycle all appliances that are not energy efficient.”
- “I am unaware of details of the program. Yes, I am more than willing to cooperate. [I could] possibly cooperate by not reselling units that have reached a certain age or do not meet certain criteria according to program specifications.”
- “Yes, I would like to have pick-ups and the \$50.00 for refrigerators that I can donate.”

Ten of the dealers have just one business location and one has two locations. Dealers, on average get 24 percent of their business from used refrigerators and freezers. This ranges from a high of 60 percent for one firm and nothing for another.

Four survey respondents were business owners and the remaining respondents were managers, repairmen, and clerical office staff.



## 11. Findings, Conclusions and Recommendations

### 11.1 Introduction

The ARP is available to eligible customers on a first come first served basis in the SCE service territory.

In 2006-08, the program targeted residential customers to prevent future use through retention or transfer of inefficient but functioning (meaning still cooling) 10 to 27 cubic foot refrigerators and/or freezers. The primary goal of the program is to use monetary incentives and free pick-up to induce customers to have the appliances removed from their premises. Additional goals are to educate customers about the energy efficiency and energy savings benefits of recycling older refrigerators and freezers and the non-energy benefits from recycling in an environmentally friendly manner.

### 11.2 Key Goals of the Evaluation

The goals of the evaluation were to:

1. Confirm and verify actions taken to address the recommendations from the 2004-05 study.
2. Verify and trend key findings from the 2004-05 study onward.
3. Assess changes in the elapsed time from the request for an appliance removal to actual removal for the period from 2004 to 2008 for appropriate time intervals.
4. Examine the cancellation rates for the period 2004 to 2008 for appropriate time intervals to see if they have changed during this period.
5. Assess changes to the logistics system, incentives, and any changes in elapsed time between sign-up and removal as factors in changes in the cancellation rates.
6. Examine the pick-up, management, and disposal practices for refrigerators and freezers collected by new appliance dealers when a new refrigerator or freezer is delivered to a household. Also assess the volumes and characteristics of these refrigerators.
7. Review pilots or programs conducted by other utilities that involve collaboration with new appliance dealers in the refrigerator recycling program.
8. Examine changes in the customer disposal practices between 2004-05 and 2006-08.
9. Describe the used appliance market and document changes to the market since 2005.

### 11.3 Key Activities of the Evaluation

The major activities of this evaluation were as follows:

1. Interview program staff, other relevant SCE internal staff, contractors, and their subcontractors.
2. Implement a cancellation survey and complete an analysis of pick-up times, cancellation rates, and the cancellation survey.
3. Implement a disposer survey and complete an analysis of market share among disposers of refrigerators based on a disposer survey.
4. Implement a participant survey and complete an analysis of marketing effectiveness, program awareness, and program satisfaction.

5. Collect data and analyze the potential for collaborating with new appliance retailers.
6. Complete an appliance dealer survey and update the analysis of the used refrigerator market.

#### 11.4 Detailed Findings

The following summarize the key findings from this study.

##### 11.4.1 *Appliance Recycling Program Use*

- The program removed 69,052 units in 2006 (86 percent were refrigerators), 60,315 units in 2007 (87 percent were refrigerators), and 90,242 units in 2008 (88 percent were refrigerators). The 50 percent increase in 2008 was largely a function of the availability of funding.
- Thirty-eight percent of all units were more than 15 years old, 52 percent were 10 to 15 years old and 11 percent were less than 10 years.
- Forty-eight percent of the collected units were between 15 and 19 cubic feet and 34 percent were between 20 and 24 cubic feet. The percentage of units in the 20 to 24 cubic feet category increased between 2006 and 2008 (from 32 to 37 percent), while there was a decline in the percentage of units between 15 and 19 cubic feet (51 to 45 percent). This is in line with national trends.
- The highest percentage of units had amperages of 6 to 9.9 amperes (69 percent). This is due to larger units being collected. The percentage for this category increased from 63 to 73 percent from 2006 to 2008. This in line with national trends.

##### 11.4.2 *Characteristics of Households*

- Seventy six percent of participants owned their home.
- The median square footage of households participating in the ARP was 1,977 square feet. The most common size of participants' homes was in the range of 1,000 to 2,000 square feet (43 percent).
- About 42 percent of participant households had one or two residents.
- The largest percent of participants had lived in their homes for less than five years. The next highest percentage had lived in their homes for 21 years or more.
- About 34 percent of the participants had remodeled their home in the last five years.
- The most common household income category for those who participated was \$25,000 to just under \$50,000 (24 percent).
- The average number of refrigerators in a participant household subsequent to the removal was 1.39 and the average number of freezers was 0.38.

##### 11.4.3 *How the Program Is Marketed*

- SCE changed its marketing strategy so that it is now using multiple channels and multiple messages.
- Forty-nine percent of participants heard of the program through the utility (31 percent came from a bill insert), 17 percent were referred to it by a friend/neighbor, 12 percent from an appliance store, and 11 percent from media.
- There is evidence that drop mailings resulted in a response of about 1,200 new appointments per mailing.

- In the 2004-05 survey disposers in the general population, 58 percent of the disposer households were aware of the program. In the 2009 study, 70 percent of disposers in the general population were aware of the ARP program. In other words, awareness increased primarily due to enhanced marketing.
- Among those who did not use ARP but disposed of a unit, lack of awareness was the biggest reason for not participating (29 percent), followed by disposing of the unit through the dealer from whom they bought a unit (27 percent), giving the unit away to a friend or relative in the future (21 percent), wanting to retain the unit for future use (16 percent), inconvenience (12 percent), and the unit was not working (11 percent).
- Comparing refrigerator disposers to freezer disposers, refrigerator disposers were more likely to have heard about the program from the appliance stores (13 percent compared to 6 percent) and referrals from friends/neighbors (18 percent compared to 10 percent). Freezer disposers were more likely to have heard from the utility (60 percent compared to 47 percent).
- Customers who had heard about ARP were most likely to have heard about it from the utility but customers who disposed of a main refrigerator (44 percent) were less likely to have heard about it from the utility than those who disposed of a secondary or a spare (54 percent). Those who disposed of main were more likely to have heard about the program from an appliance store (14 percent) than those who disposed of a secondary or spare (8 percent).
- Among disposers in the general population, 97 percent of the disposers who had participated in ARP indicated that they would be very likely (87 percent) or somewhat likely (12 percent) to participate in the future. Eighty-two percent of disposers who were previously unaware said they would be very likely (49 percent) or somewhat likely (32 percent) to participate in the future. Sixty-two percent of disposers in the general population who knew about the program but did not dispose of unit through the program said they were very likely to participate in the future and 30 percent said they were somewhat likely to participate.

#### 11.4.4 *Motivation to Participate*

- Program participants mentioned the \$50 incentive most frequently as the primary motivating factor (55 percent), followed by convenience (44 percent), and the environment (17 percent). In the 2004-05 study the corresponding percentages were 46 percent for the incentive, 65 percent for convenience, and 22 percent for the environment. The incentive has become more important. This may be because of the economy or because of the increased penetration of the program into the market. Only four percent of the respondents cited the importance of the savings on the electric bill even though on an annual basis the savings are typically six times as large as the incentive.
- When asked if the incentive was essential to their participation, approximately 71 percent of the respondents said that they would have participated in the ARP without the incentive compared to 81 percent in 2004-05.
- The incentive appeared to be a bigger motivator for ARP disposers of spare compared to main refrigerators (62 percent compared to 52 percent) and convenience and the environment were more important for disposers of main refrigerators.

#### 11.4.5 *Having a Second or Third Refrigerator*

- A secondary analysis of the HEES data suggests that second and third units are relatively young, that is, less than ten years old. Second, and especially third units, are much smaller than first units with the majority of third units being the mini or very small units. This suggests second and third units are not just older refrigerators left over from earlier refrigerator transactions but may be deliberate purchases. This may explain why it is difficult to get households to give up second and third units.
- The HEES analysis also shows that 2500 square feet is the point where the percentage of 2nd and 3rd refrigerator households is greater than the percentage of single refrigerator households. Twenty-five hundred square foot households and above might be a good break point for targeting second refrigerators.

#### 11.4.6 *How Refrigerators are Disposed and the Penetration of the Program among Disposers*

- The percentage of units captured by ARP between the 2006 study and the 2009 study has almost doubled (15 percent to 28 percent).
- From 2006 to 2009, the number of transfers being taken by dealers has increased by about a fifth from 21 percent to 26 percent.
- From 2006 to 2009, the number of units being given away to friends and neighbors has declined by about 20 percent (29 percent to 23 percent) and the number of units being sold has dropped by about 60 percent (11 percent to 6 percent). This is significant because units that are sold or given away are likely to remain in service.
- From 2006 to 2009, the number of units being junked, taken by a recycler, or taken to the landfill has declined from 18 percent to 14 percent.
- In the absence of the program 44 percent of ARP participants would have given the unit away, 23 percent would have taken it to dump/recycler, 13 percent would have had the dealer remove it, 12 percent would have sold it, and six percent would have kept it.
- In the absence of the program approximately 64 percent of the units removed through the ARP would have remained in service, 32 percent would have been de-manufactured, and four percent are unknown.
- With the ARP, approximately 63 percent of disposed units are removed from service, while without it only 42 percent of units would be removed from service.

#### 11.4.7 *Program Satisfaction*

- In general, program satisfaction did not vary a great deal from the previous study. This is because satisfaction levels were already quite high. There were some changes as noted below.
- In terms of the overall service, 84 percent of 2006-2008 ARP participants were completely satisfied and 94 percent were somewhat satisfied or completely satisfied with the service.
- The overall satisfaction with the ARP sign-up experience increased between the 2004-05 survey and the 2006-08 survey with completely satisfied customers increasing from 83 percent to 86 percent.
- Customers who signed up over the telephone were more satisfied than customers who signed up online (88 percent of completely satisfied customers versus 83 percent of completely satisfied customers). This is a reversal from 2004-05 when the on-line customers were more satisfied.

- Ninety percent of customers were completely satisfied with the pick-up experience. Satisfaction with the overall pick-up experience declined slightly from 93 to 90 percent between the two program periods.
- In terms of information gaps, 31 percent people who disposed of a refrigerator but did not use the program were unaware that keeping and using an old unit could cost up to \$300 a year, 18 percent were unaware of environmental effects of refrigerant, and 26 percent were unaware of the recycling process in the program.
- Ninety percent of ARP customers said they learned everything they wanted to know about the program before participating.
- At least 94 percent of the customers who signed up by telephone said that during the scheduling process the representative was polite and courteous, the representative was able to answer all their questions, and a convenient time for pick-up could be scheduled.
- Ninety-nine percent of customers who signed up online stated that they were able to schedule a pick-up appointment for a convenient date and time, 96 percent stated that the website answered all the questions that they had, 93 percent said they received a confirmation e-mail, but only 87 percent said the website was easy to find.
- With respect to pick-up, 88 to 95 percent of the customers said the representative arrived on time, was polite and courteous, and appeared neat and professional.
- Eighty-two percent of customers remember receiving a call one to two days in advance of pick-up.
- Seven percent thought that the time between schedule and pick-up was too long.
- Five percent of respondents said they did not receive an incentive check.
- Twelve percent said that the time between pick-up and receiving the check was too long.
- Over all, the incentive appears to be the right amount.

#### 11.4.8 *Changes to the Logistics System*

- The change to Enerpath has significantly decreased the time from scheduling to pick-up.
- The average pick-up time was 15 days for the 2004-05 program, and less than 14 percent were picked up in under a week.
- From January 2006 to June 2007, the pick-up time was reduced to 10 days, and approximately 45 percent were picked up within 1 week.
- With the Enerpath system, the average pick-up time was reduced to seven days in the last two quarters of 2007 and five days in 2008.
- In 2008, 78 percent of units were removed within a week after scheduling and 40 percent were removed within three days.
- The Enerpath system has features that serve to enhance the overall quality of the data collected.
- The Enerpath system does need some fine-tuning, in particular, the number of categories for the age variable need to be enhanced and it might be easier to do trend analysis in the future if “birth year” rather than age were captured. It might be beneficial to scan or take a picture of the nameplate rather than a picture of the unit. However, there may be difficulties with getting a usable image and many older units do not have barcodes.

#### 11.4.9 Program Cancellations and The Cancellation Survey

- During the 2006-08 program years, there were nearly 50,000 canceled orders representing 52,000 units.
- Over the three-year period, cancellations averaged 19 percent of all orders. However, the cancellation rate declined from 21 percent in 2006 and 2007 to 17 percent in 2008.
- Customers who signed up over the Web cancelled slightly more often (22 percent) than those who signed up over the telephone (19 percent).
- Customers who cancelled their unit were far likelier to have units less than 10 years of age. Fifty-two percent of cancelled units were less than 10 years (16 percent of which were less than six years of age) compared to 14 percent of all units disposed of through the program.
- There were 21 percent fewer medium sized units cancelled than were disposed of by participants. Large units made up 23.5 percent of all cancellations, but only seven percent of all units disposed of through the program.
- Cancellation survey respondents stated that the biggest reason for cancellation was that the appliance didn't qualify for the program (25 percent), followed by their deciding somebody else could use the unit (22 percent), they decided to keep it (13 percent), they couldn't meet the scheduled time (11 percent), and the recycling company didn't show up (8 percent).
- Thirty-seven percent of respondents who cancelled reported that they gave their unit to someone else, 14 percent kept the unit in use, and six percent each were either sold or stolen. Therefore it is likely that at least 63 percent of units cancelled remained in service.
- Approximately 37 percent of the cancelled units were kept but not used or removed so that they likely were removed from service (primarily through appliance dealers who took nine percent, the waste management centers that took 12 percent, and 13 percent were kept in storage).
- If the pick-up time was reduced to within a week for cancellations, 80 percent said they would not have cancelled. Reducing it further only produced small gains.
- If the incentive had been increased to \$75, 70 percent of respondents would not have cancelled. Increasing it to \$100 and \$125 only slightly increased participation.
- An important finding is that forty-two percent of respondents that cancelled were not aware of the electrical costs of old units. Awareness would have changed the decision for 71 percent of unaware respondents.
- Twenty-four percent of respondents that cancelled were not aware of the environmental harm of old units. Awareness would have changed the decision for 89 percent of these respondents.
- A combined total of forty-nine percent of the respondents that cancelled did not know one or the other of these pieces of information and three-quarters of them, or thirty eight percent of those who cancelled, said that if they had known the missing piece or pieces of information that they would not have cancelled. Again, this information might influence a substantial number of people who decide to cancel.

#### 11.4.10 Potential for Removal of Units Through Retailers

- Approximately 26 percent of refrigerators leave households through the new appliance dealer channel without a program and without an incentive other than convenience and free removal.
- On eight sample days, a large distribution center dispatched 887 refrigerators to a total of 871 customers. The orders included instructions to remove refrigerators at 286 (33 percent) of the 871 sites. However, 111 (eight percent) of these orders were cancelled before the removal took place so that refrigerators were removed at 175 sites (20 percent).
- Therefore, when purchasing a new refrigerator, roughly a third of customers initially arrange to have the refrigerator removed by the retailer. Before the delivery occurs between 25 and 40 percent of these customers (8 to 13 percent of the deliveries) decide not to have the unit removed.

#### 11.4.11 Program Effects on Used Appliance Dealers

- The used refrigerator market was examined to determine whether the market is large enough to warrant a direct program intervention and to confirm program assumptions. After a diligent effort, the used appliance dealer sample turned out to be small because of the challenges of locating used appliance dealers, recruiting them, and then encouraging them to participate. The following findings are useful as a general portrait of what is happening among used appliances dealers.
- The average number of refrigerators and freezers sold per year among dealers who responded to our survey was 175 and ranged from 24 to 540. The average number of refrigerators and freezers acquired per year was 179.
- Ninety-one percent of respondents accepted both pick-ups and drop-offs, and nine percent only allowed drop-offs.
- Seventy-three percent of respondents advertise in the yellow pages, 45 percent use the Internet and craigslist, 36 percent use the Penny Saver and get referrals from community waste managers, and 27 percent advertise in newspapers and get referrals from new appliance dealers.
- When a unit is dropped off, 55 percent of dealers pay the customer for the used refrigerator, 18 percent charge the customer, and 45 percent obtain units for the recycle value. On average units are acquired for \$34 per unit and sold for \$61 per unit.
- When a unit is picked up, 40 percent of dealers pay the customer for the used refrigerators, 20 percent charge the customer, and 30 percent obtain units for the recycle value.
- When doing pick-ups, none of the dealers accept all the units, 50 percent accept working ones, 20 percent nonworking ones, and 10 percent only accept out-of-box units.
- Three out of 11 dealers (27 percent) obtain used refrigerators or freezers from new appliance dealers and 73 percent do not. The used dealer pays an average of \$30 per used refrigerator and sells them for an average of \$72.50.
- Five dealers have arrangements with communities to handle used refrigerators and freezers and six do not have such arrangements.
- Half of the used appliance dealers buy or sell used refrigerators from multifamily operators (condos/apartments).

- Thirty-seven percent of all used refrigerators obtained by dealers are less than 10 years old. Twenty-seven percent are from 10 to 14 years old, 20 percent are 15 to 19 years old, and 16 percent are 20 years or older. In 2006, 84 percent of used units were less than 10 years old.
- Sixty percent of used appliance dealers are able to sell all the units they obtain and 80 percent say that they could sell more. Twenty percent say that they could not sell any more if they could obtain more units.
- Seventy percent of the dealers sell units through a store, 70 percent take them to a recycler, 70 percent salvage parts, 30 percent sell units to operators of multifamily units, 20 percent sell them to other dealers, 20 percent take them to community waste centers, 20 percent sell them to brokers, and 10 percent de-manufacture them.

### 11.5 Recommendations

The following are recommendations for the program.

#### 11.5.1 Program Overall

The program is making significant inroads into the refrigerator transfer market. **We recommend that the program be maintained at least at 2008 funding levels with additional funding to support the suggest pilots and additional research recommended below.**

#### 11.5.2 Program Design

**We strongly recommend that the program showcase the Enerpath System to other program managers.** It potentially represents a model that could be used to design a more general system for order taking, tracking, and rebate payments across all programs thereby providing a unified method for dealing with customers. A further advantage is that it would enable rapid exchange of data between programs and present opportunities for cross selling.

We found the data from Enerpath to be accurate, to the extent that we could evaluate, with few of the problems we have observed in the implementation of other refrigerator tracking systems. **We recommend that the number of categories for appliance age probably needs to be increased, especially above 15 years of age. We also recommend categorizing age in terms of birth year(s) facilitating comparisons across program years.**

With respect to working with new appliance dealers:

- About 32 percent of a new appliance dealer's customers who purchased a refrigerator scheduled a removal but in the end only 20 percent of the customers who purchased a new refrigerator actually had a removal. Appliance dealers have a cancellation problem that is greater than the program's cancellation problem.
- The data collected from one major distribution center suggests that as many as 80 percent of refrigerator sales actually leave preexisting units in place (100 – 20 percent removed). The actual percent is further reduced by units going into new housing or into housing without an existing unit. We were unable to determine those numbers from this sample. Even after accounting for this, there are a sizeable number of units that could be captured through dealers.

We examined another program that collaborates with new appliance dealers to remove refrigerators.

- That program uses a sticker system to mark units that are to be removed.
- There seem to be relatively few problems with the sticker.
- The program encourages retail sales personnel to promote the program. A very high percentage of the customers who chose this program indicated that they participated because of information from the sales associate.
- The issue of determining whether units are working or nonworking remains. The question is how to train the logistics teams or whether to train them at all.
- **A well-designed and monitored experiment to examine collaboration with new appliance dealers should provide additional insight and is strongly recommended. The experiments should focus on whether collaboration reduces costs while maintaining a reasonable net-to-gross ratio.**

Convenience is a major driver of participation but the importance of the direct incentive appears to have increased slightly from our 2006 findings. We think the difficult economy may have resulted in this change. **The incentive should be maintained although it does not need to be increased. We recommend promoting cost savings and the environmental benefits to increase the number of customers and reduce the number of cancellations.**

#### 11.5.3 Marketing

The refrigerator recycling market can be thought of as having two target segments, 1) primary or secondary refrigerators that are replaced by the purchase of another unit and 2) second, third or fourth refrigerators in existing households that could be removed from service. We believe that SCE is making significant inroads in capturing refrigerators that are replaced by new units. There is a need for continued efforts to increase the capture of second refrigerators in existing households.

As in the previous study, **we recommend additional research on households with two or more refrigerators.** We need to understand what portion of this market is made up of refrigerators and freezers that are used and useful and likely cannot be removed and what portion of these units can be targeted and removed. We also need to understand the target audiences. As yet, this market is not well understood and has not been significantly penetrated.

Among program participants, bill inserts were the most effective marketing channel and relatives and friends were the second most important. Information from appliance stores also was important for participants. Among those in the general population who disposed of a refrigerator by any method in the last four years (disposer sample), knowledge of the program had increased from 2004-05). This increased awareness probably resulted from direct mailing of letters or brochures. When compared to program participants or people who cancelled participation in the program, people in the disposer sample were more likely to say that they heard about recycling from the media (TV). Overall, for participants, participants who cancelled, and disposers, the general media, newspaper, radio, and TV, had a relatively small impact compared to the more direct utility methods. **We recommend continuing to use utility channels, direct mail, the website, and appliance stores. We recommend that SCE conduct some experiments to evaluate various marketing messages and market channels.**

Website users were more likely to cancel their appointments and less satisfied with the program than those who contacted the program by telephone. Aside from the lack of a personal touch, webpage access appears to be an issue. **We recommend that an attempt be made to project a more personal touch on the webpage.**

The cancellation data bear out our suspicion that a high percentage of these units are given away. It also confirmed that many of these units are younger. The characteristics of customers who cancel are also different than for participants. **These units are still worth removing but some refined channel and tailoring of messages is likely to be needed to prevent the escape of these units.**

#### *11.5.4 Education and Training*

The incentive is an important message but other messages such as the cost of operation and the environmental issues are important as well. People who cancelled and who were not aware of electrical costs or environmental harm said that they might not have cancelled if they had known this information. **Messages about this program should continue to highlight the direct incentive, the operational incentive, and the environmental effects.**

The range of effects could include:

- A reduction in the emissions from the generation of electricity
- A reduction in the capital requirements for electricity generation and transmission
- The effects of release of refrigerant from second refrigerators that continue to be used
- Pocket book effects
  - Incentive or capital buy down
  - Operating costs
- Convenience
- Other household effects such as increased space
- Refrigerator recycling as a lead to other energy efficiency activities

## 12. Program Manager Interview Guide



**Interview Guide  
Program Managers  
Appliance Recycling Program**

**Purpose**

This guide is intended for use with the utility program managers. The goal of these interviews is to understand the operation of the Appliance Recycling Program at SCE and determine any changes that have been made since the 2004-05 RARP.

**Target**

The targets for these interviews are utility program managers.

**Interview Questions**

**Background**

Record the names and responsibilities for the participants

<u>Name</u>	<u>Title/Responsibilities</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Program Goals**

1. What are the goals of the 2009-11 Appliance Recycling Programs?
  - a. How do these differ from those for 2006-8 and 2004-5?
  - b. How are the goals set?
  - c. What metrics are used to define performance? Have these changed since the 2004-05 program?
  - d. Should there be other metrics or should the metrics be changed?
2. Have you been able to meet your goals?
  - a. What have you had to do to meet those goals?
  - b. How difficult do you think it will be to meet the 2009-11 goals? Do you think you will meet them?
  - c. What program changes do you anticipate in order to meet the 2009-11 goals?
3. Have program eligibility requirements changed since the 2004-05 program?
  - a. If so, what is your perspective on these changes?
4. Do you foresee the possibility that the eligibility requirements might be changed in other ways in the near future? If so, how?

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

### **Program Structure and Operation**

6. Do you have an operations manual or operation guide that describes how the program operates? How about a program plan? Has it been updated since 2004-5? If yes, could we obtain a copy?
7. Beside yourself, who else at your utility is involved in the ARP? Can you tell me the names of the people and what they do?
  - a. Program Staff
  - b. Marketing
  - c. Information technologies
  - d. Contracting
  - e. Call center staff
  - f. Others
8. Has the program structure changed since the last time we talked to you? If so how?
9. Have operations changed in any way? If so, how?

### **Marketing and Awareness**

10. Has the marketing changed in the last two years? If yes, how so?
  - a. What impacts, positive or negative have these changes had on the program?
11. Could you describe the various ways in which the program was marketed in 2006-08?
  - a. Advertisements
  - b. Bill stuffers
  - c. Information at appliance dealers
  - d. Word of mouth
  - e. Radio advertisements
  - f. E-mail blasts
  - g. TV advertisements
  - h. Direct mailings
  - i. Etc.
12. From your perspective which methods were the most effective?
13. Are there other marketing methods that you think would be worth trying?
14. What changes to these methods do you anticipate for 2009-11?
15. Can we obtain a list of all the market events in the 2006-8 time frame?

## Information and screening

16. What are the most common ways in which a customer enters the program?
  - a. Telephone call to the utility call center
  - b. Call to the contractor hotline
  - c. Sign-up through utility web-site
  - d. Sign-up through contractor web-site
  - e. Other methods
17. What role does the utility call center play in marketing the program and getting households signed-up for the program?
18. Have you changed the way your call center staff is trained?
19. Has the process changed when someone places a call to the utility call center and asks about the program since the 2004-05 program?
20. Can you describe any changes to the contractor's call centers since the 2004-05 program?
21. How has the ARP web site changed since the 2004-05 program?
  - a. What is the current ratio of customers using the call center versus signing up through the website?
  - b. How has this changed in the last three years?
  - c. What differences do you think this has made in customer response?
  - d. In 2004-5, customers who used the website appeared to be more likely to drop out. One hypothesis was that they lacked a human touch so had less commitment to continuing.
    - i. What feedback on the website have you received from the contractors?
    - ii. The customers?
22. What is your impression of the contractors' websites? Have you received any feedback from customers about a contractor's website? If so, what was the feedback that you received?

## Sign-up

23. Can you describe any changes to the sign-up process since the 2004-05 program?
  - a. Through the contractor website
  - b. By calling the contractor hotline
  - c. How has the rate of the two sign-up methods changed over the past couple of years?
  - d. Both contractors have call centers. Have there been any issues with customers calling the wrong call center?
24. How are the eligibility criteria handled during the sign-up process?
25. Do the eligibility requirements cause confusion with the customers?
  - a. If so, how?
  - b. In what percentage of cases?

26. How are ineligible customers handled?
  - a. Are they referred to someone who can take their unit off their hands?
  - b. If so, to whom are they referred?
27. Have there been any changes in regard to the data collected at sign up or the survey information since the 2004-05 program year?
  - a. In the previous report Innovologie suggested some changes in regard to surveying motivations for participation and other aspects of the program. Have you changed the intake survey? If so, how?
  - b. How about the procedure for the intake survey?
  - c. From your perspective, has the quality of the data collected improved or declined since the 2004-05 program year?
  - d. What future changes would you make for data collection?

### **The scheduling process**

28. Has the scheduling process changed since the 2004-05 program? If so, how?
29. What feedback have you gotten from customers about the scheduling process?
  - a. Do you have recommendations for improving the scheduling process?
30. Are you aware of any geographical areas or segments of the population that are more likely to schedule a pick-up? If so, which areas or segments? How do you account for the differences?
31. Are you aware of any geographical areas or segments of the population that are less likely to schedule a pick-up? If so, which areas or segments? How do you account for the differences?

### **Pick-up process**

32. Has the pick-up process changed in any way since the 2004-05 program? If so, how?
33. How does the Enerpath system work?
  - a. Is Enerpath involved in the process on a day-to-day basis? If no, how often are they involved?
  - b. What problems, if any, have there been with the Enerpath system?
  - c. What benefits are there from the system?
  - d. How extensively is it used?
  - e. How are drivers using it?
  - f. How does the way drivers use it vary?
  - g. What are drivers' perceptions of the system?
  - h. What improvements could be made in the system?
34. What do customers have to do to establish that an appliance is a working appliance?

- a. What feedback do you get from customers about their having to do this?
- 35. How often does the pick-up agent find that an appliance is ineligible? Has this changed?
- 36. How does the pick-up agent determine if the appliance is a working appliance? Has this changed?
- 37. What feedback have you gotten from customers about the pick-up process? What about the Enerpath process?
- 38. Do you have recommendations for improving the pick-up process?

### **Rebates and the Rebate process**

- 39. Has the rebate increase helped marketing? If yes, how?
- 40. Has the rebate increase helped reduce cancellations? If yes, how?
- 41. Have there been any changes to the rebate process since the 2004-05 program?
- 42. What feedback have you gotten from customers about the rebates and the rebate process?
  - a. What is your perception of the rebate amount? Is it about right? Too high? Too low?
  - b. Are customers satisfied with the amount of time it takes to get the rebate?
  - c. What percentage of rebate checks goes unclaimed?
  - d. How essential is the rebate to the success of the program?
  - e. What do you think motivates customers to use the program?
    - i. The rebate
    - ii. The free removal
    - iii. Getting rid of an unwanted appliance from their household
    - iv. Appliance dealers who encourage customers to use the program

### **Non-Primary Refrigerators**

- 43. What percentage of your refrigerator pick-ups do you estimate are for non-primary refrigerators? What percentage are replaced? What percentage do you estimate are not replaced?
- 44. Are you aware of any characteristics that define customers with non-primary refrigerators?
  - a. Geographic location
  - b. Ethnicity
  - c. Income level
  - d. Other
- 45. Why do you think customers have non-primary refrigerators?
- 46. To what extent do you think non-primary refrigerators can be captured?
- 47. Are there marketing activities that SCE is doing or should be doing, that are better suited for customers with non-primary refrigerators?

48. What incentives or messages do customers need to get or hear in order to dispose of non-primary refrigerators?

### **Cancellations**

49. Previously contractors were following up on cancellations on their own? Have you instituted procedures for following up on cancellations?
50. What are the procedures?
51. Has the rate of cancellations changed over the past two years? If so, why has it changed?
52. What could be done to reduce the number of cancellations?

### **Contractor operations**

53. Could you describe in general terms any changes in the terms of your contract with the contractors since the 2004-05 program?
- A. Dealing with a call center and a web site?
  - B. Scheduling?
  - C. Contractor reimbursement for pick-ups?
  - D. Liability on a customer site?
  - E. De-manufacturing?
  - F. Disposal of raw materials?
  - G. Liability from the de-manufacturing process?
  - H. The average cost per unit for scheduling, pick-up, de-manufacturing, rebate processing?
  - I. Other
54. Have you experienced any throughput problems in the system?
- a. If so, where have these throughput problems occurred? Obtaining sign-ups, scheduling, pick-up, de-manufacturing?
55. What is the capacity of the system? Do you foresee any potential capacity problems?

### **Contractor relations**

56. How often do you interact with your contractors?
57. How would describe your relationships with your contractors? Has this changed since the 2004-05 program?
58. What kinds of issues have arisen in relation to your contractors?
59. Have the contractors been responsive when issues have arisen?

### **Interactions with New Appliance Dealers**

60. Are you currently working with new appliance dealers in regards to the ARP program or any other programs in other areas? If yes, how so?
61. Is this relationship working? What are the benefits?

62. What is your best estimate for the number or percent of the units that new appliance dealers remove that enter the used market?
63. Do you think it is possible to use new appliance dealers to capture refrigerators?
64. Are there potential problems with dealing with new appliance dealers?
65. Are there ways that interactions/relationships with new appliance dealers could be made more effective in terms of reaching program goals? If yes, how?

### **Air-conditioner recycling program**

66. Can you describe SCE's air conditioner recycling program during 2006-8? How was it adjusted during the period?
67. What were the goals?
68. Did the program meet the goals?
69. What do you perceive as the successes and failures of the program?
70. What contributed to those successes and failures?
71. How do you think you would redesign the program?
72. Do you think that requiring a replacement window air condition to receive the rebate prevented people from disposing of air conditioners?
73. Do you think the convenience factor, removing the air conditioner, taking it to a pick-up center was a factor?
74. Do you have any suggestions for alternative ways of managing the program?

### **Future**

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

### **Database Requests**

- Marketing data
  - Marketing event and activity dates
  - Marketing messages
- Basic Participant Data
  - Name
  - Address
  - City
  - Zip Code

- Tracking number
- Number of units picked up
- Type (refrigerator, freezer)
- Age
- Size
- Refrigerator type (side-by-side, top freezer, bottom freezer)
- Model number
- Manufacturer
- Participant/Survey Data where available
  - How customer heard of program
  - Which two aspects of the program most influenced participation
  - Was the discarded unit a primary or secondary unit
  - Was the discarded unit replaced and if so by a new or used model
  - Is the replaced unit larger, smaller or the same size as the old unit
  - Is the replaced unit energy star?
  - The location of the discarded appliance while in use
  - How often unit was kept running last year
  - How many refrigerators customer has running as of today
  - Whether or not customer has discarded other units in the past year and if so, how were they discarded
  - What customer would you have likely done if the recycling program was not available

## 13. ARCA/JACO Guide



**Interview Guide  
ARCA/JACO Managers  
Appliance Recycling Program**

**Purpose**

This guide is intended for use with the recycling company managers. The goal of these interviews is to understand how the operation of the Appliance Recycling Program has changed since the 2004-05 program. We also hope to gain some insight into characteristics of customers with non-primary refrigerators and possible geographical characteristics of participants.

**Target**

The targets for these interviews are recycling company managers.

**Interview Questions**

**Background**

Record the names and responsibilities for the participants

<u>Name</u>	<u>Title/Responsibilities</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Program Goals**

1. What are the goals of the Appliance Recycling Programs for your company?
  - a. How are the goals set?
  - b. What metrics are used to define performance? Have these changed since the 2004-05 program?
  - c. Should there be other metrics or should the metrics be changed?
2. Have you been able to meet your goals?
  - a. What have you had to do to meet those goals?
  - b. What are the goals for 2009-2011?
  - c. How difficult do you think it will be to meet them?
  - d. If difficult, what can you do to meet them? If too low, what can be done to raise them?

3. Have program eligibility requirements changed since the 2004-05 program?
  - a. If so, how have they changed?
  - b. What is your perspective on these changes?
4. Do you foresee the possibility or do you think that the eligibility requirements might (should) be changed? If so, how?
  - a. What impact might changing eligibility requirements have on the program?
5. Do you or others within your organization have recommendations for changes in eligibility requirements? If yes, what?
  - a. Why would you make these recommended changes?

### **Program Structure and Operation**

6. Has the program structure changed since the last time we talked to you? If so how?
7. Have operations changed in any way? If so, how?

### **Marketing and Awareness**

8. Has the marketing changed in the last two years? If yes, how so?
  - a. What impacts, positive or negative have these changes had on the program?
9. Could you describe the various ways in which the program was marketed in 2006-08?
  - a. Advertisements
  - b. Bill stuffers
  - c. Information at appliance dealers
  - d. Word of mouth
  - e. Radio advertisements
  - f. E-mail blasts
  - g. TV advertisements
  - h. Direct mailings
  - i. Etc.
10. Which methods were the most effective?
11. Are there other marketing methods that you think would be worth trying?

### **Information and screening**

12. What are the most common ways in which a customer enters the program?
  - a. Telephone call to the utility call center
  - b. Call to your hotline
  - c. Sign-up through utility web-site
  - d. Sign-up through your web-site
  - e. Other methods

13. How have these changed since the 04-05 program?
  - a. To what do you attribute the change?
14. Have you changed the way your call center staff is trained?
15. What role does the utility call center play in getting households signed-up for the program?
16. Can you describe any changes to your call center since the 2004-05 program?
17. How has your relationship with the ARP website changed?
  - a. How do you perceive these changes?

### Sign-up

18. Have any changes occurred to your sign-up process since the 2004-05 program? If so, what?
19. How are the eligibility requirements enforced during the sign-up process?
20. Do the eligibility requirements cause confusion with the customers? If so, how?
  - a. In what percentage of cases?
21. How are ineligible customers handled?
  - a. Are they referred to someone who can take their unit off their hands?
  - b. If so, to whom are they referred?
22. Have there been any changes with regards to the data collected at sign up or the survey information since the 2004-05 program year?
  - a. In the previous report Innovologie suggested some changes in regard to data collection, for example, the survey of reasons for participating. Have you changed the intake survey? If so, how?
  - b. How about the procedure for the intake survey?
  - c. Has the quality of the data collected changed since the 2004-05 program year? If so, how?
  - d. What future changes would you make for data collection?

### The Scheduling Process

23. Has the scheduling process changed since the 2004-05 program? If so, how?
24. What feedback have you gotten from customers about the scheduling process?
  - a. Do you have recommendations for improving the scheduling process?
25. Are you aware of any geographical areas or segments of the population that are more likely to schedule a pick-up? If so, who are they? Where are they?
26. Are you aware of any geographical areas or segments of the population that are less likely to schedule a pick-up? If so, who or where are these segments? Why you think this is the case?

## Pick-up Process

27. Has the pick-up process changed in any way since the 2004-05 program?  
If so, how?
28. How does the Enerpath system work?
  - a. Is Enerpath involved in the process on a day-to-day basis? If no, how often are they involved?
  - b. What problems, if any, have there been with the Enerpath system?
  - c. What benefits are there with the system?
  - d. How extensively is it used?
  - e. How are drivers using it?
  - f. Do drivers vary in how they use the system?
  - g. What are drivers' perceptions of the system?
  - h. What improvements could be made in the system?
29. What do customers have to do to establish that an appliance is a working appliance?
  - a. What feedback do you get from customers about their having to do this?
30. How often does the pick-up agent find that an appliance is ineligible? Has this changed?
31. How does the pick-up agent determine if the appliance is a working appliance? Has this changed?
32. What feedback have you gotten from customers about the pick-up process?
33. What about the Enerpath process?
34. Do you have recommendations for improving the pick-up process?

## Cancellations

35. Have you instituted or changed procedures for following up on cancellations?
36. If so, what are the procedures
37. Has the rate of cancellations changed over the past two years? If so, to what do you attribute this?
38. Why do you think households cancel?
39. What could be done to reduce the number of cancellations?

## Rebates and the Rebate process

40. Has the rebate increase helped marketing? If yes, how?
41. Has the rebate increase helped reduce cancellations? If yes, how?
42. Have there been any other changes to the rebate process since the 2004-05 program?

43. What feedback have you gotten from customers about the rebates and the rebate process?
- a. What is your perception of the rebate amount? Is it about right? Too high? Too low?
  - b. Are customers satisfied with the amount of time it takes to get the rebate?
  - c. What percentage of rebate checks go unclaimed?
  - d. How essential is the rebate to the success of the program?
  - e. What do you think motivates customers to use the program?
    - i. The rebate
    - ii. The free removal
    - iii. Getting rid of an unwanted appliance from their household
    - iv. Appliance dealers who encourage customers to use the program
    - v. Convenience
    - vi. Other \_\_\_\_\_

### **Non-Primary Refrigerators**

44. What percentage of your refrigerator pick-ups do you estimate are for non-primary refrigerators. What percentage do you estimate are replaced? What percentage is not replaced?
45. Are you aware of any characteristics that define customers with non-primary refrigerators?
- a. Geographic location
  - b. Ethnicity
  - c. Income level
  - d. Other
46. Why do you think customers have (keep) non-primary refrigerators?
47. To what extent do you think non-primary refrigerators can be captured?
48. Are there marketing activities that SCE may or may not be doing that are better suited for customers with non-primary refrigerators?
49. What incentives or messages do customers need to get or hear in order to dispose of non-primary refrigerators?

### **Contractor operations**

50. Have there been any changes to the de-manufacturing process since the 2004-05 program? If so, what?
51. Do you see any substantial changes in the future to the de-manufacturing process?
52. Could you describe any changes that have occurred in the terms of your contract with the utility?
- a. Dealing with a call center and a web site?
  - b. Scheduling?

- c. Contractor reimbursement for pick-ups?
  - d. Liability on a customer site?
  - e. De-manufacturing?
  - f. Disposal of raw materials?
  - g. Liability from the de-manufacturing process?
  - h. The average cost per unit for scheduling, pick-up, de-manufacturing, rebate processing?
  - i. Other
53. Have you experienced any throughput problems in the system?
- a. If so, where have these throughput problems occurred? Obtaining sign-ups, scheduling, pick-up, de-manufacturing?
54. Have you experienced any flow problems or do appliances come into the program on a continuous basis?
- a. If so, how do you deal with flow problems?
  - b. Do you have a sense of why appliances come in clusters?

### Utility relations

55. How often do you interact with the utility?
56. How would describe your relationships with the utility? Has this changed since the 2004-05 program?
57. What could improve your interaction and relationship with the utility?
58. How responsive is the utility?

### Interactions with New Appliance Dealers

59. Are you currently working with new appliance dealers in regards to the ARP program or any other programs in other areas? If yes, how so?
60. Is this relationship working? What are the benefits?
61. What is your best estimate for the number or percent of the units that new appliance dealers remove that actually enters the used market?
62. Do you think it is possible to use new appliance dealers to capture refrigerators?
63. Are there potential problems with dealing with new appliance dealers? If so, what are they?
64. Are there ways that interactions/relationships with new appliance dealers could be made more effective in terms of reaching program goals? If yes, how?

### Future

65. What information do you think would help to improve the operation of the program?
66. What changes to the program would you recommend?
67. What do you forecast for the future of the program? What could extinguish or encourage this forecast?

68. Is there anything else you would like to tell us?

### Database Requests

- Scheduling data
  - Date called
  - Pick-up date
  - Whether or not the pick-up occurred
  - Subsequent pick-up
  - EnerPath pick-up
  - Rebate amount
  - Date of rebate payment
  - Whether or not customer volunteered for Enerpath
- Cancellation data
  - Reason for cancellation
  - Schedule date
  - Pick-up date
  - Cancellation date
  - Number of pick-up attempts if more than one
  - Whether or not a re-schedule and pick-up occurred
- Basic Participant Data
  - Name
  - Address
  - City
  - Zip Code
  - Tracking number
  - Number of units picked up
  - Type (refrigerator, freezer)
  - Age
  - Size
  - Refrigerator type (side-by-side, top freezer, bottom freezer)
  - Model number
  - Manufacturer
- Participant/Survey Data if available
  - How customer heard of program
  - Which two aspects of the program most influenced participation
  - Was the discarded unit a primary or nonprimary unit
  - Was the discarded unit replaced and if so by a new or used model
  - Is the replaced unit larger, smaller or the same size as the old unit
  - Is the replaced unit energy star?
  - The location of the discarded appliance while in use
  - How often unit was kept running last year
  - How many refrigerators customer has running as of today
  - Whether or not customer has discarded other units in the past year and if so, how were they discarded
  - What would the customer have likely done if the recycling program was not available



## 14. Marketing Interview Guide



**Interview Guide  
Marketing Staff  
Appliance Recycling Program**

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

**Purpose**

This guide is intended for use with the utility marketing staff. The goal of these interviews is to understand the marketing operation of the Appliance Recycling Program at SCE and determine any changes that have been made since the 2004-05 RARP.

**Interview Questions**

**Background**

Record the names and responsibilities for the participants

<u>Name</u>	<u>Title/Responsibilities</u>
_____	_____
_____	_____
_____	_____

1. Has the marketing changed in the last two years? If yes, how so?
  - a. What impacts, positive or negative have these changes had on the program?
2. Could you describe the ways in which the program was marketed in 2006-07?
  - a. Advertisements
  - b. Bill stuffers
  - c. Information at appliance dealers
  - d. Word of mouth
  - e. Radio advertisements
  - f. E-mail blasts
  - g. TV advertisements
  - h. Direct mailings
  - i. Etc.
3. Can you describe some of the strategies that were used for the marketing events and activities we just discussed?
4. Can you describe some of the geographic or segment strategies that were used for the marketing events and activities?
5. Which methods and strategies were the most effective?
6. Are there other marketing methods that you think would be worth trying?
7. Can you provide a list of all of the marketing events that were completed in 2006-8? We are particularly interested in media buys, targeted mailings, etc.

8. Do you have information on the target and size of each marketing event or activity?
9. What data does marketing have that would help us understand the characteristics of households with second refrigerators?
10. What marketing segmentation schemes does SCE use? MOSAIC, PRIZM, others? Can Personas be linked to customer account IDs?
11. Are these available for use?
12. We are considering identifying households with second refrigerators and backing into MOSAIC, PRIZM, or some other scheme through 9 digit zip. Does SCE have the data to do that?
13. Who is responsible for the Home Energy Efficiency Survey? How can we get a copy of the Home Energy Efficiency Survey for the last three years?

## 15. Participant Survey



**SCE Appliance Recycling Program Participant Survey****Prefill**

Name:

Phone #:

Address:

Utility:

Item removed:

**Interview**

May I please speak with \_\_\_\_\_(name)? Good morning/afternoon. I'm \_\_\_\_\_ calling on behalf of Southern California Edison. We are talking to customers who had refrigerators or freezers removed through SCE's recycling program.

Our records show that in \_\_\_\_\_(prefill month and year) a (appliance type) was removed by the SCE recycling program. Are you the person who would have been involved and most familiar with having a refrigerator or freezer picked up?

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

I-2. You or someone in your house may have called SCE or signed up on the Internet. You may have been disposing of a refrigerator or freezer because you had an extra one or because you bought a new one. Now, do you recall?

- (1) Yes (Go to 1)
- (0) No (*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* \_\_\_\_\_

**Verification**

1. Let me just verify, when you signed up in \_\_\_\_\_(prefill month and year) you had

(prefill the appliance or appliances removed)

- (1) A refrigerator removed (appliancevar1 = refrigerator)
- (2) A freezer removed (appliancevar1 = freezer) (Go to Q5)
- (3) Two refrigerators (appliancevar1 = first refrigerator appliancevar2 = second refrigerator)
- (4) A refrigerator and a freezer (appliancevar1 = refrigerator appliancevar2 = freezer freezer)
- (5) Two freezers removed (appliancevar1 = first freezer appliancevar2 = the second freezer) (Go to Q5)

Is that correct?

- (1) Yes, that is correct (Go to Q3)
- (2) No, not correct (go to Q2)
- (9) Don't know (go to Q3)

2. So what did you have removed? *Allow the respondent to answer in his/her own words and then select appropriate box below. If the respondent is unsure, prompt by asking, Was there one a refrigerator? What about the other one?*

- (1) A refrigerator removed (appliancevar1 = refrigerator)
- (2) A freezer removed (appliancevar1 = freezer) (go to Q5)
- (3) Two refrigerators (appliancevar1 = first refrigerator appliancevar2 = second refrigerator)
- (4) A refrigerator and a freezer (appliancevar1 = refrigerator appliancevar2 = freezer )
- (5) Two freezers removed (appliancevar1 = first freezer appliancevar2 the second freezer) (Go to Q5)

### Refrigerator/Freezer

Set continueflag = 0

Now I am going to ask you some questions about the *appliancevar1* that was removed.

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

4. How long had it been a secondary or spare? GET MONTHS/YEARS (*If respondent is confused, reinforce that "how long had it been a spare when you decided to get rid of it."*)
- (1) Months \_\_\_\_\_
  - (2) Years \_\_\_\_\_
  - (9) Don't know
5. In the last year, how much was the *appliancevar* used?
- (a) Kept it running all the time. (Go to Q6)
  - (b) For special occasions only
  - (c) During certain months of the year only
  - (d) Never plugged in or running (Go to Q6)
  - (e) Don't know/Don't remember (Go to Q6)
  - (f) Other (Specify \_\_\_\_\_)
- 5a. During the last 12 months, how many total months do you think it was it plugged in an running?
- Months \_\_\_\_\_ (1-12 half = .5)
- (98) Don't know/Don't remember
  - (99) Refused
6. What was the condition of this appliance? Would you say
- (a) It worked and was in good physical condition
  - (b) It worked but needed minor repairs like a door seal or handle.
  - (c) It worked but had some problems like it wouldn't defrost
  - (d) Or, it didn't work
  - (e) Don't know
  - (f) Refused
  - (g) Other (Specify \_\_\_\_\_)
7. Did you recycle the appliance because you:
- (a) Bought a brand new *appliancevar* (go to Q9)
  - (b) Bought a used *appliancevar* (go to Q8)
  - (b) Received an *appliancevar* from someone such as a friend or neighbor (go to Q11)
  - (c) Just to get rid of a *appliancevar* you didn't want (go to Q11)
  - (d) Don't know/Don't remember (go to Q11)
  - (e) Other (Specify \_\_\_\_\_) (go to Q11)
8. Did you buy from a dealer or a private party?
- (1) Dealer (go to Q9)
  - (2) Private party (go to Q11)

9. Did you talk to the salesperson or dealer about how to remove your old *appliancevar* or did they offer to remove the appliance?  
 (0) No (*go to Q11*)     (1) Yes (*go to Q10*)     (9) Don't know (*go to Q11*)

10. *If yes:*

- (a) Did they tell you about the SCE Recycling Program?
- (b) Did the sales person or dealer offer to remove the old appliance for free
- (c) Did they tell you they would remove the appliance for a charge? How much? \_\_\_\_\_

*If (Q1 = 1 or Q1 = 2 or Q2 = 1 or Q2 = 2 or continueflag = 1) then go to 11  
Else let (appliancevar1 = appliancevar2)*

*Then say:*

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

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

11. Have you discarded any other refrigerators or freezers in past couple of years?  
 (1) Yes (*go to Q12*)     (0) No (*go to Q15*)
12. How many? \_\_\_\_\_
13. Did you use SCE's recycling program?  
 (1) Yes (*go to Q15*)     (0) No (*go to Q14*)

14. How did you discard the appliance or appliances? (*don't read, probe if unsure*)
- (a) Sold to a third party
  - (b) Given to a friend or neighbor
  - (c) Given to a charity
  - (d) Delivery crew volunteered to remove it
  - (e) Sold to a dealer who came and removed it
  - (f) Arrangements were made with the new appliance dealer to remove it
  - (g) Hauler or community waste program removed it
  - (h) Took it to a waste management center
  - (i) Other
- (specify) \_\_\_\_\_

### **Recycling Program**

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

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

- a. Appliance store** (*go to Q16*)
- b. Utility**
  - 1. Information that came with a SCE bill (*go to Q17*)
  - 2. Information that came in a letter or brochure from SCE (*go to Q17*)
  - 3. Email from SCE (*go to Q17*)
  - 4. Utility representative (*go to Q17*)
  - 5. Other SCE (Specify) \_\_\_\_\_
- c. Referral from friend/neighbor** (*go to Q17*)
- d. Advertisement**
  - 1. Movie Theater (*go to Q17*)
  - 2. Newspaper/Pennysaver (*go to Q17*)
  - 3. Radio (*go to Q17*)
  - 4. TV (*go to Q17*)
  - 5. Truck ad (*go to Q17*)
  - 7. Website (*go to Q17*)
  - 8. News story (*go to Q17*)
- e. Other (specify)** \_\_\_\_\_ (*go to Q17*)
- f. Don't know** (*go to Q17*)

16. Can you tell me the name of the store? \_\_\_\_\_

(*Do not ask, code internally*)

- (1) Named store       (9) Don't know       (8) Does not apply

17. Had you already considered discarding this refrigerator before hearing about SCE's Recycling Program? By discard we mean getting rid of it either by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center.

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

18. What is the MAIN reason you chose this service over other methods of disposing of your appliance? *If multiple are mentioned: Of those, which is the main reason? (Do not read) (Accept one answer only) (If respondent says something like: "I didn't need or want the refrigerator" re-ask the question)*

- (a) \$50 cash / Incentive payment
- (b) Free pick-up service/Others don't pick up/Don't have to take it myself.
- (c) Environmentally safe disposal/Recycled/Good for Environment
- (d) Savings on electric bill
- (e) Recommendation of a friend/relative
- (f) Recommendation of retailer/dealer
- (g) Utility sponsorship of the program
- (h) Easy way/convenient
- (i) Never heard of any others/only one I know of..
- (j) Other (SPECIFY:\_)
- (k) Don't know
- (l) Refused

19. Were there any other reasons? IF YES: What were they? *(Multiple response do not read)*

- (a) \$50 cash / Incentive payment
- (b) Free pick-up service/Others don't pick up/Don't have to take it myself.
- (c) Environmentally safe disposal/Recycled/Good for Environment
- (d) Savings on electric bill
- (e) Recommendation of a friend/relative
- (f) Recommendation of retailer/dealer
- (g) Utility sponsorship of the program
- (h) Easy way/convenient
- (i) Never heard of any others/only one I know of..
- (j) Other (SPECIFY:\_)
- (k) Don't know
- (l) Refused

### Other Disposal Options

20. Suppose that SCE's Recycling Program had not been available, what alternative would you have been most likely to use? (Read and check one)

- (a) Sell it to a private party, either by running an ad or to someone you know
- (b) Sell it to a used appliance dealer
- (c) Give it away to a private party, such as a friend or neighbor
- (d) Give it away to a charity, such as Goodwill Industries or a church
- (e) Have it removed by the dealer you got your new or replacement appliance from
- (f) Trade it in for a new or replacement appliance
- (g) Haul it to the dump yourself

- (h) Haul it to a recycling center yourself
- (i) Hire someone else haul it away for junking or dumping
- (j) Keep it
- (k) Some Other Way (SPECIFIY:\_)
- (l) (DO NOT READ) Don't know
- (m) (DO NOT READ) Refused

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

- (a) Sell it to a private party, either by running an ad or to someone you know
- (b) Sell it to a used appliance dealer
- (c) Give it away to a private party, such as a friend or neighbor
- (d) Give it away to a charity, such as Goodwill Industries or a church
- (e) Have it removed by the dealer you got your new or replacement appliance from
- (f) Trade it in for a new or replacement appliance
- (g) Haul it to the dump yourself
- (h) Haul it to a recycling center yourself
- (i) Hire someone else haul it away for junking or dumping
- (j) Keep it
- (k) Some Other Way (SPECIFIY:\_\_\_\_\_)
- (l) Don't know
- (m) Refused

22. If you had sold this appliance to someone, how much money do you think you would have received for it?

- (a) DOLLARS \_\_\_\_\_ (\$1 - \$2000)
- (b) Don't know

23. Once you decided to participate, the first step was signing up and pre-qualifying. Are you the one who took care of this, or did someone else in your household?

- (1) Yes, I did it
- (0) No, someone else
- (9) Don't know
- (8) Refused

24. According to our records you signed up by (Howmadeappt). Is that correct?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

24a. How did you sign-up?

- (1) Telephone
- (2) Online
- (3) Other (SPECIFY:\_)

- (9) Don't know
- (8) Refused

25. How satisfied were you with this sign up experience? Use a 5-point scale where "5" means "completely satisfied" and "1" means "not at all satisfied."

- (1) 1 Not at all satisfied
- (2) 2
- (3) 3
- (4) 4
- (5) 5 Completely satisfied
- (6) Don't know
- (7) Refused

*If (Q24 = 1 and Howmadeappt = "online" or Q24a = 2) then go to 26*

*Else go to 30*

26. Was it easy to find the sign up screen on the website?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

27. Did the website answer all your questions about the appliance recycling program?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

28. Were you able to schedule a pickup appointment for a convenient date and time?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

29. Did you receive confirmation that your sign up had been successful?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

29a. *Go to 34*

30. Was the representative you spoke to on the telephone polite and courteous?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

31. *(If Q24 = 01 Telephone)* Did the representative answer all your questions?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

32. *(If Q24 = 01 Telephone)* Were you able to schedule a pickup appointment for a convenient date and time?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

33. *(If Q24 = 01 Telephone)* Did you have to call more than once?

- (1) Yes
- (0) No
- (9) Not Applicable
- (8) Don't know
- (7) Refused

34. The next step is the pickup appointment. Were you present at the time of the pickup or are you familiar enough with the pick-up to answer some questions about it?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

35. How satisfied were you with the actual pick up and removal experience. Use a 5-point scale where "5" means "completely satisfied" and "1" means "not satisfied at all."

- (1) 1 Not at all satisfied
- (2) 2
- (3) 3
- (4) 4
- (5) 5 Completely satisfied
- (6) Don't know
- (7) Refused

36. How much time did it take from when you scheduled the appointment until your appliance was picked up? (RECORD IN DAYS IF LESS THAN 1 WEEK OR BETWEEN WEEKS, IE, 10 DAYS) - *(Do not read)*

- (a) \_\_\_\_\_(Record days)
- (b) 1 week
- (c) 2 weeks
- (d) 3 weeks
- (e) 4 weeks
- (f) 5 weeks
- (g) 6 weeks
- (h) 7 weeks
- (i) 8 weeks or more
- (j) Not Applicable
- (k) Don't know
- (l) Refused

37. Do you think this was too long?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

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

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

39. Did they arrive on time?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

40. Was the representative polite and courteous?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

41. Did the representative appear neat and professional?

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

- (8) Refused

42. Did you receive an incentive check?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

43. For how much?

- (1) \$50
- (2) \_\_\_\_\_(OTHER \$ AMOUNT)
- (3) Don't know
- (4) Refused

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

- (a) \_\_\_\_\_(Record days)
- (b) 1 week
- (c) 2 weeks
- (d) 3 weeks
- (e) 4 weeks
- (f) 5 weeks
- (g) 6 weeks
- (h) 7 weeks
- (i) 8 weeks or more
- (j) Not Applicable
- (k) Don't know
- (l) Refused

45. Do you think this was too long?

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

46. Would you have participated in the program without the incentive check?

- (1) Yes (*go to Q48*)
- (0) No (*go to Q48*)
- (9) Don't know (*go to Q47*)
- (8) Refused (*go to Q47*)

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

- (1) Yes
- (0) No
- (9) Don't know
- (8) Refused

48. Thinking about your experiences throughout the whole process, How satisfied were you with the service OVERALL? Use a 5 point scale where "5" means you were "completely satisfied" and "1" means you were "not at all satisfied."

- (1) 1 Not at all satisfied
- (2) 2
- (3) 3
- (4) 4
- (5) 5 Completely satisfied
- (6) Don't know
- (7) Refused

49. When you first decided to dispose of your appliance, were you aware that keeping and using it could cost up to \$300 a year in electricity to run it?

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

50. Prior to choosing a disposal method, were you aware that the refrigerant in older refrigerators is harmful to the environment if not properly disposed of?

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

51. Did you learn that the refrigerator or freezer that is picked up by the program would be recycled, which means that the coolant in the unit would be safely removed and the materials that the unit is made of would be reused?

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

52. Did you learn everything you wanted to know about the program before participating, or did you still have unanswered questions but signed up anyway?

- (1) Yes, learned all needed to know (Go to 53)
- (0) No, but signed up anyway (Go to 52a)
- (9) Don't know (Go to 53)
- (8) Refused (Go to 53)

52a What other information would you have liked? \_\_\_\_\_

53. 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.)

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

### Customer Characteristic

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

56. And, how many standalone freezers are running at least some of the time \_\_\_\_\_

57. 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? \_\_\_\_\_

58. How many people reside in your home? \_\_\_\_\_

59. How many people under the age of 18 reside in your home? \_\_\_\_\_

60. How long have you lived in your home? \_\_\_\_\_

61. Do you own or rent the home that you live in? \_\_\_\_\_  
 (1) Own       (2) Rent

62. Have you remodeled your home in the past 5 years? \_\_\_\_\_  
 (1) Yes       (0) No

63. What is the approximate square footage of your home? \_\_\_\_\_  
 a. Less than 500  
 b. 500 to just under 1,000  
 c. 1000 to just under 2,000  
 d. 2000 to just under 4,000  
 e. 4,000 and up

64. Please stop me when I reach the category that best represents your total annual household income?  
 a. Less than 25,000  
 b. 25,000 to just under 50,000  
 c. 50,000 to just under 75,000  
 d. 75,000 to just under 100,000  
 e. 100,000 to just under 150,000  
 f. More than 150,000

The interview was done in  
 1. English

- 2. Spanish

**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**

## 16. Disposer Survey



## SCE Appliance Recycling Program Disposer Survey

### Prefill

Phone #:

### Introduction:

Hello, my name is \_\_\_\_\_. I am calling on behalf of Southern California Edison. We are conducting a survey about refrigerators and freezers. We are particularly interested in knowing what people do with old refrigerators. I am not selling anything. Could I speak to someone who could answer some questions about your household's refrigerators or freezers?

*If needed:* The survey takes about 10 to 15 minutes.

*If needed:* I'm calling from Innovologie, an independent research firm.

I-1. Has your household discarded a refrigerator or stand-alone freezer that you owned in the past 4 years? By discard, we mean selling it, giving it away, or having it hauled away, and going back four years is since June 1, 2005. *(Note: Discard means got rid of it and can include selling it, giving it away, hauling to the dump, having someone else take it away, etc. Do not count if rented or borrowed.)*

- (1) Yes *(go to I-2)*
- (2) No *(Thank and terminate)*
- (3) Don't know *(go to I-2)*

I-2. Were you involved or familiar with discarding the appliance?

- (1) Yes *(go to Q1)*
- (2) No *(go to I-3)*
- (3) Don't know *(go to I-3)*

I-3. Is there someone else in your household who might know?

- (1) Yes *(go to I-4)*
- (0) No, *(Thank and terminate)*

I-4. 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 \_\_\_\_\_

### Discard Information

1. How many refrigerators or freezers have you gotten rid of since June 1, 2005 including units you replaced?

- (0) None *(Thank and terminate)*
- (1)\_\_\_\_ *(Record Number 1-9)*

- (9) Don't know
  - (8) Refused
2. How many were **refrigerators** that **worked** at the time of disposal?
- (0) None
  - (1) One
  - (2) More than one \_\_\_\_ (*Record Number 2-9*)
  - (9) Don't know
  - (8) Refused
3. How many were **freezers** that **worked** at the time of disposal?
- (0) None
  - (1) One
  - (2) More than one \_\_\_\_\_ (*Record Number 2-9*)
  - (9) Don't know
  - (8) Refused

*If Q2 > 0 then go to Q4 and say: The next few questions are about the **working refrigerator you got rid of most recently**.*

*If (Q2 = 0 and Q3 > 0) then go to Q19 and say: The next few questions are about the **working freezer you got rid of most recently**.*

*If (Q2 = 0 and Q3 = 0) go to Q32*

### **Working Refrigerators**

4. Do you recall the month and year that you got rid of this refrigerator?
- (0) \_\_\_\_\_ (Record year e.g. 2003)
  - (1) January
  - (2) February
  - (3) March
  - (4) April
  - (5) May
  - (6) June
  - (7) July
  - (8) August
  - (9) September
  - (10) October
  - (11) November
  - (12) December
  - (13) Don't know/Can't remember.
  - (14) Refused
- 4a. During the time just before you decided to get rid of it, 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. If the person recently bought a new main refrigerator and was just waiting for the old one to be picked up, it should be classified as "main."*)
- (1) Main (go to Q7)
  - (2) Secondary/Spare (go to Q5)

5. How long had it been a secondary or spare? *Get months/years (If respondent is confused, reinforce that "how long had it been a spare when you decided to get rid of it.")*
- (1) Months \_\_\_\_\_
  - (2) Years \_\_\_\_\_
  - (9) Don't know
6. In the last year before you got rid of it, how much was the refrigerator 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) Don't know/Don't remember
7. What was the condition of this refrigerator just before you got rid of it? 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
  - (5) Don't know
  - (6) Refused
  - (7) Other (*Specify* \_\_\_\_\_)
8. Approximately how old was the unit when you discarded the unit?
- (1) Less than 6 years
  - (2) 6-10
  - (3) 11-15
  - (4) 16-20
  - (5) Greater than 20 \_\_\_\_\_
  - (6) Don't know
9. What type of unit was it? (side-by-side, top freezer, bottom freezer)
- (1) Side-by-side
  - (2) Top freezer
  - (3) Bottom freezer
  - (4) Other \_\_\_\_\_
  - (5) Don't know
10. Approximately what size was it?
- (1) Small (under 14 sq. ft.)
  - (2) Medium (15 – 18 sq. ft.)
  - (3) Medium –Large (19-22 sq. ft.)
  - (4) Large (23 sq. ft. and above)
  - (5) Don't know

11. Did you discard the appliance because you:
- (1) Bought a brand new refrigerator (*go to Q13*)
  - (2) Bought a used refrigerator (*go to Q12*)
  - (3) Just to get rid of a refrigerator you didn't want (*go to Q15*)
12. Did you buy from a dealer or a private party?
- (1) Dealer (*go to Q13*)
  - (2) Private party (*go to Q15*)
13. Did you talk to the salesperson or dealer about how to remove your old refrigerator or did they offer to remove the appliance?
- (1) Yes (*go to Q14*)
  - (0) No (*go to Q15*)
14. *If yes:*
- (1) Did they tell you about the SCE Recycle Program?
  - (2) Did the sales person or dealer offer to remove the old appliance for free
  - (3) Did they tell you they would remove the appliance for a charge? How much? \_\_\_\_\_
15. How did you get rid of this refrigerator? (*Clarify if needed to fit list below. For example: Did you give it away or sell it?*)
- Hauled it away yourself
- (1) Took it to a recycler or scrap dealer (*go to Q17*)
  - (2) Took it to the landfill or threw it away (*go to Q17*)
- Sold it
- (3) Sold it to a friend, acquaintance or relative (*go to Q16*)
  - (4) Sold it to a used refrigerator / freezer dealer (*go to Q16*)
  - (5) Sold it via garage sale, estate sale, or newspaper ad (*go to Q16*)
  - (6) Sold it when you moved to new occupant (*go to Q16*)
- Someone else hauled it away
- (7) Hired someone to pick it up (for junking or dumping) (*go to Q17*)
  - (8) Called utility's appliance recycling program (*go to Q16*)
- Dealer took it
- (9) Traded it for a replacement unit (*go to Q18*)
  - (10) Dealer I bought a new one from took it away (*go to Q17*)
- Gave it away (not sold)
- (11) Gave it away (*go to Q18*)
  - (12) Left it behind when moved (for new occupant) (*go to Q18*)
- Some other way
- (13) Stolen/unknown removal (*go to Q18*)
  - (14) Other (*Specify* \_\_\_\_\_) (*go to Q18*)
  - (15) Don't know (*go to Q18*)
  - (16) Refused (*go to Q18*)

16. How much did you get for it?

- (0) None
- (1) Dollars \_\_\_\_ (*Record*)
- (9) Don't know
- (8) Refused

17. How much did you pay to get rid of it?

- (0) None
- (1) Dollars \_\_\_\_ (*Record*)
- (9) Don't know
- (8) Refused

18. What other options for getting rid of this refrigerator/freezer did you seriously consider? (*Clarify if needed to fit list below. For example: Would you have given it away or sold it? To whom?*) (*Multiple Responses okay*)

Haul it away yourself

- (1) Take it to a recycler or scrap dealer
- (2) Take it to the landfill or threw it away

Sell it

- (3) Sell it to a friend, acquaintance or relative
- (4) Sell it to a used refrigerator / freezer dealer
- (5) Sell it via garage sale, estate sale, or newspaper ad
- (6) Sell it when you moved to new occupant.

Someone else haul it away

- (7) Hire someone to pick it up (for junking or dumping)
- (8) Call utility's appliance recycling program

Dealer take it

- (9) Trade it for a replacement unit
- (10) Have dealer I bought a new one from take it away

Give it away (not sold)

- (11) Gave it away
- (12) Left it behind when moved (for new occupant)

Keep it

- (13) Keep it in use
- (14) Keep it out of use

Some other way

- (15) Other (*Specify \_\_\_\_\_*)
- (16) Don't know
- (17) Refused

*If Q2 = 2 repeat Q15 for next refrigerator and make field 15a. Say: Looking at the next most recently disposed working refrigerator, how was it disposed?*

*If Q3 > 0, then go to Q19 and say: The next few questions are about the working freezer you got rid of most recently.*

If Q3 = 0, then go to Q32.

### Working Freezers

19. Do you recall the month and year that you got rid of this freezer?

- (0) \_\_\_\_\_ (Record year e.g. 2003)
- (1) January
- (2) February
- (3) March
- (4) April
- (5) May
- (6) June
- (7) July
- (8) August
- (9) September
- (10) October
- (11) November
- (12) December
- (13) Don't know/Can't remember.
- (14) Refused

19a. In the year before you got rid of it, how much was the freezer 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) Don't know/Don't remember

20. What was the condition of this freezer? 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
- (5) Don't know
- (6) Refused
- (7) Other (*Specify*\_\_\_\_\_)

21. Approximately how old was the unit?

- (1) Less than 6 years
- (2) 6-10
- (3) 11-15
- (4) 16-20
- (5) Greater than 20 \_\_\_\_\_
- (6) Don't know

22. What type of unit was it? (chest freezer)

- (1) Upright
- (2) Chest
- (3) Other \_\_\_\_\_

- (4) Don't know
23. Approximately what size was it?
- (1) Small (under 14 sq. ft.)
  - (2) Medium (15 – 18 sq. ft.)
  - (3) Medium –Large (19-22 sq. ft.)
  - (4) Large (23 sq. ft. and above)
  - (5) Don't know
24. Did you discard the appliance because you:
- (1) Bought a brand new freezer (*go to Q26*)
  - (2) Bought a used freezer (*go to Q25*)
  - (3) Just to get rid of a freezer you didn't want (*go to Q28*)
25. Did you buy from a dealer or a private party?
- (1) Dealer (*go to Q26*)
  - (2) Private party (*go to Q28*)
26. Did you talk to the salesperson or dealer about how to remove your old freezer or did they offer to remove the appliance?
- (1) Yes (*go to Q27*)
  - (0) No (*go to Q28*)
27. *If yes:*
- (1) Did they tell you about the SCE Recycle Program?
  - (2) Did the sales person or dealer offer to remove the old appliance for free
  - (3) Did they tell you they would remove the appliance for a charge? How much? \_\_\_\_\_
28. How did you get rid of this freezer? (*Clarify if needed to fit list below. For example: Did you give it away or sell it?*)
- Hauled it away yourself
- (1) Took it to a recycler or scrap dealer (*go to Q30*)
  - (2) Took it to the landfill or threw it away (*go to Q30*)
- Sold it
- (3) Sold it to a friend, acquaintance or relative (*go to Q29*)
  - (4) Sold it to a used refrigerator / freezer dealer (*go to Q29*)
  - (5) Sold it via garage sale, estate sale, or newspaper ad (*go to Q29*)
  - (6) Sold it when you moved to new occupant (*go to Q29*)
- Someone else hauled it away
- (7) Hired someone to pick it up (for junking or dumping) (*go to Q30*)
  - (8) Called utility's appliance recycling program (*go to Q29*)
- Dealer took it
- (9) Traded it for a replacement unit (*go to Q31*)
  - (10) Dealer I bought a new one from took it away (*go to Q30*)
- Gave it away (not sold)

- (11) Gave it away (*go to Q31*)
  - (12) Left it behind when moved (for new occupant) (*go to Q31*)
- Some other way
- (13) Stolen/unknown removal (*go to Q31*)
  - (14) Other (*Specify\_\_\_\_\_*) (*go to Q13*)
  - (15) Don't know (*go to Q31*)
  - (16) Refused (*go to Q31*)
29. How much did you get for it?
- (0) None
  - (1) Dollars \_\_\_\_ (*Record*)
  - (9) Don't know
  - (8) Refused
30. How much did you pay to get rid of it?
- (0) None
  - (1) Dollars \_\_\_\_ (*Record*)
  - (9) Don't know
  - (8) Refused
31. What other options for getting rid of this freezer did you seriously consider?  
(*Clarify if needed to fit list below. For example: Would you have given it away or sold it? To whom?*) (*Multiple Responses okay*)
- Haul it away yourself
- (1) Take it to a recycler or scrap dealer
  - (2) Take it to the landfill or threw it away
- Sell it
- (3) Sell it to a friend, acquaintance or relative
  - (4) Sell it to a used refrigerator / freezer dealer
  - (5) Sell it via garage sale, estate sale, or newspaper ad
  - (6) Sell it when you moved to new occupant.
- Someone else haul it away
- (7) Hire someone to pick it up (for junking or dumping)
  - (8) Call utility's appliance recycling program
- Dealer take it
- (9) Trade it for a replacement unit
  - (10) Have dealer I bought a new one from take it away
- Give it away (not sold)
- (11) Gave it away
  - (12) Left it behind when moved (for new occupant)
- Keep it
- (13) Keep it in use
  - (14) Keep it out of use
- Some other way
- (15) Other (*Specify\_\_\_\_\_*)

- (16) Don't know
- (17) Refused

If Q3 = 2, repeat Q28 for freezer and make field 28a. Say: Looking at the next most recently disposed working freezer, how was it disposed?

### Non-Working Removal

32. Have you gotten rid of any **non-working** refrigerators or stand-alone freezers in the last four years, that is since June 1, 2005?

- (1) Yes (go to Q33)
- (0) No (go to Q37)
- (9) Don't know (go to Q37)
- (8) Refused (go to Q37)

33. How many **non-working** refrigerators have you gotten rid of since June 1, 2005?

- (0) None (go to Q35)
- (1) One
- (2) More than one \_\_\_\_\_ (Record Number 2-9)
- (9) Don't know
- (8) Refused

34. How did you dispose of it (if Q33 =2 then say: Looking at the most recently disposed non-working refrigerator, how did you dispose of it?)

Hauled it away yourself

- (1) Took it to a recycler or scrap dealer
- (2) Took it to the landfill or threw it away

Sold it

- (3) Sold it to a friend, acquaintance or relative
- (4) Sold it to a used refrigerator / freezer dealer
- (5) Sold it via garage sale, estate sale, or newspaper ad
- (6) Sold it when you moved to new occupant.

Someone else hauled it away

- (7) Hired someone to pick it up (for junking or dumping)
- (8) Called utility's appliance recycling program

Dealer took it

- (9) Traded it for a replacement unit
- (10) Dealer I bought a new one from took it away

Gave it away (not sold)

- (11) Gave it away
- (12) Left it behind when moved (for new occupant)

Some other way

- (13) Stolen/unknown removal
- (14) Other (Specify \_\_\_\_\_)

- (15) Don't know
- (16) Refused

*If Q33 = 2, repeat Q34 for next refrigerator and make field 34a. Say: Looking at the next most recently disposed non-working refrigerator, how was it disposed?*

35. How many non-working freezers have you gotten rid of since June 1, 2005?

- (0) None (go to Q37)
- (1) One
- (2) More than one \_\_\_\_\_ (Record Number 2-9)
- (9) Don't know
- (8) Refused

36. How did you dispose of it? (if Q35 =2 then say: Looking at the most recently disposed non-working freezer, how did you disposed of it?)

Hauled it away yourself

- (1) Took it to a recycler or scrap dealer
- (2) Took it to the landfill or threw it away

Sold it

- (3) Sold it to a friend, acquaintance or relative
- (4) Sold it to a used refrigerator / freezer dealer
- (5) Sold it via garage sale, estate sale, or newspaper ad
- (6) Sold it when you moved to new occupant.

Someone else hauled it away

- (7) Hired someone to pick it up (for junking or dumping)
- (8) Called utility's appliance recycling program

Dealer took it

- (9) Traded it for a replacement unit
- (10) Dealer I bought a new one from took it away

Gave it away (not sold)

- (11) Gave it away
- (12) Left it behind when moved (for new occupant)

Some other way

- (13) Stolen/unknown removal
- (14) Other (Specify \_\_\_\_\_)
- (15) Don't know
- (16) Refused

*If Q35 = 2, repeat Q36 for next freezer and make field 36a. Say: Looking at the next most recently disposed non-working freezer, how was it disposed?*

### **Appliance Recycling Program**

Now I have just a few general questions about a program offered by your electric utility.

37. SCE provides a refrigerator and freezer removal service called the Appliance Recycling Program. This program helps save energy by removing and recycling unwanted or out of date appliances. Do recall hearing about this program?

- (1) Yes (*go to Q38*)
- (0) No (*read following statement*)
- (9) Don't know (*read following statement*)
- (8) Refused (*read following statement*)

The program will pay you \$50 and pick up your used, working refrigerator or freezer. You would call or go online to schedule the pick-up. It can take up to 2 to 3 weeks for the pick-up appointment, and you have to be present at the time of the pick-up. (*go to Q42*)

38. How did you hear about this program? (*Do not read*)

- (1) Appliance store**
- Utility**
  - (2) Information that came with a **SCE bill**
  - (3) Information that came in a **letter or brochure** from SCE
  - (4) **Email** from SCE
  - (5) Utility **representative**
- (6) Referral from friend/neighbor**
- Advertisement**
  - (7) Movie Theater
  - (8) Newspaper
  - (9) Radio
  - (10) TV
  - (11) Truck ad
  - (12) Website
  - (13) News story
- (14) Other (*Specify \_\_\_\_\_*)**
- (15) Don't know**

39. Have you ever had an appliance picked up by this program?

- (1) Yes (*go to Q40*)
- (0) No (*go to Q41*)
- (9) Don't know (*go to Q41*)
- (8) Refused (*go to Q41*)

40. How long ago did you use the Appliance Recycling Program?

- (1) Within the last year (*go to Q42*)
- (2) 1 to 2 years ago (*go to Q42*)

- (3) More than 2 years (*go to Q42*)
- (9) Don't know (*go to Q42*)
- (8) Refused (*go to Q42*)

41. Why didn't you use this recycling program before? (*Read, rotate list*)

- (1) Didn't have any appliances to recycle
- (2) Incentive is too low
- (3) Wait time is too long
- (4) Cannot be home as required when unit is picked up
- (5) Unit was not working
- (6) Need secondary unit for food/beverage storage at certain times of the year
- (7) Wanted to retain secondary unit for future use
- (8) Planned to give unit away to friend/relative in the future
- (9) Planned to sell unit as used in the future
- (10) Have not heard of the program until now
- (11) We rent/ landlord decides
- (12) Signed up /but no one ever came to pick it up
- (13) Dealer/ Retailer picked up/Disposed of the old one
- (14) Inconvenient (Misc.)
- (15) Other (*Specify \_\_\_\_\_*)
- (16) Don't know
- (17) Refused

42. How likely would you be to use this program the next time you have an extra refrigerator or freezer that is working? (*Read*)

- (0) Not at all likely
- (1) Somewhat likely
- (2) Very Likely
- (9) (*Do not read*) Don't know
- (8) (*Do not read*) Refused

### ARP Preferences

*Your utility is considering changing several features to the appliance recycling program. I am going to read you a list of the changes they are considering. For each one, please tell me if it would make you more likely to use this program, or would it make no difference?*

43. If the program offered more than the current \$50 incentive?

- (1) More likely to use the program (*go to Q44*)
- (0) No difference (*go to Q45*)
- (9) Don't know (*go to Q45*)
- (8) Refused (*go to Q45*)

44. How much would you need to be offered so that you would be very likely to use this program?
- (1) Dollars \_\_\_\_\_ (\$1-\$500)
  - (9) Don't know
  - (8) Refused
45. If the wait time between when you call to schedule and when the appliance is picked up was shorter than 1 to 2 weeks?
- (1) More likely to use the program
  - (0) No difference
  - (9) Don't know
  - (8) Refused
46. What is the maximum number of days you would wait?
- (1) Same day
  - (2) Days \_\_\_\_ (1-30)
  - (9) Don't know
  - (8) Refused
47. If your old unit could be picked up by the appliance dealer at the time the new unit is being delivered?
- (1) More likely to use the program
  - (0) No difference
  - (9) Don't know
  - (8) Refused
48. Is there anything else that would make you more likely to use the Appliance Recycling Program in the future?
- (1) *Record comments*
  - (0) Nothing/Can't think of anything
  - (9) Don't know
  - (8) Refused

### Household Appliance Use

49. How many refrigerators do you currently have at your home, including any that don't work?
- (0) None
  - (1) \_\_\_\_\_ (*Record number 1-9*)
  - (9) Don't know
50. How many stand-alone freezers do you currently have at your home, including any that don't work?
- (0) None
  - (1) \_\_\_\_\_ (*Record number 1-9*)

- (9) Don't know

**Customer Characteristic**

51. How many people reside in your home? \_\_\_\_\_

52. How many people under the age of 18 reside in your home? \_\_\_\_\_

53. How long have you lived in your home?  
 (1) Years \_\_\_\_\_ or  (2) Months \_\_\_\_\_

54. Do you own or rent the home that you live in? \_\_\_\_\_  
 (1) Own  (2) Rent

55. Have you remodeled your home in the past 5 years? \_\_\_\_\_  
 (1) Yes  (0) No

56. What is the approximate square footage of your home? \_\_\_\_\_  
 (1) Less than 500  
 (2) 500 to just under 1,000  
 (3) 1000 to just under 2,000  
 (4) 2000 to just under 4,000  
 (5) 4,000 and up

57. Please top 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

**Identification**

Let me finish this up by getting your name and some household information.

58. Name \_\_\_\_\_

59. And your Zip Number is? \_\_\_\_\_

If possible, do you know your Zip plus 4 number? \_\_\_\_\_

60. The interview was done in  
 (1) English  
 (2) Spanish

**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**



## 17. Cancellation Survey



## **SCE ARP Cancellation Survey**

### **Prefill**

Name:

Phone #:

Address:

Date first called:

Date cancelled:

### **Interview**

May I please speak with \_\_\_\_\_(name)? Good morning/afternoon/evening. I'm \_\_\_\_\_ calling on behalf of Southern California Edison. We are talking to customers who signed up with SCE's recycling program in 2008 to have a refrigerator or freezer removed but then did not do it..

I-1. Our records show that in \_\_\_\_\_(prefill month and year) you or someone in your household signed up to have the SCE Appliance Recycling Program remove a refrigerator or freezer. According to our records the appliance was not removed. Do you know about the sign-up to remove the appliance?

- (1) Yes, I do (*go to 1e*)
- (4) Yes, *but they offer someone more knowledgeable* (Go to I-2a)
- (3) No / Don't know about the removal (go to I-2)

I-2. You or someone in your house may have called a hotline or signed up on the Internet. You may have been disposing of a refrigerator or freezer because you had an extra one or because you bought a new one. Now, do you recall?

- (1) Yes (Go to 1e)
- (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* \_\_\_\_\_

### **Verification**

1. (Deleted)

1a. (Deleted)

1b. (Deleted)

1c. (Deleted)

1d. (Deleted)

1e. When you signed up to participate did you sign up to have one or two appliances removed?

- a. One (*go to 1f*)
- b. Two (*go to 1i*)
- c. Don't know (*go to 1e1*)

1e1. Just let me check, you did sign up to have an appliance removed correct?

- (1) Yes (*go to Q2*)
- (0) No, (*Thank and terminate*)

1f. Was it a refrigerator or a freezer

- a. Refrigerator (*go to 1g*)
- b. Freezer (*go to 1g*)
- c. Don't know (*go to 1g*)

1g. At some time later did you call back to the Appliance Recycling program and have the program remove the appliance?

- (0) No (*Go to Q2*)
- (1) Yes (*Go to 1h*)

1h. So in the end you had the SCE appliance program remove the appliance, is that correct?

- (0) No, disposed some other way (*Go to Q2*)
- (1) Yes, disposed through the program (*Thank and terminate*)

1i. Were they

- a. A refrigerator and a freezer (*go to Q1j*)
- b. Two Refrigerators (*go to Q1j*)
- c. Two Freezers (*go to Q1j*)
- d. Don't know (*go to Q1n*)

1j. At some time later did you call back to the Appliance Recycling program and have the program remove one or both of the appliances?

- (0) No (Go to Q1o)       (1) Yes (Go to Q1k)

1k. Was it one or both?

- (0) One, (Go to Q1m)  
 (1) Both, (Go to 1l)

1l. So in the end you had the SCE appliance program remove both appliances, is that correct?

- (0) No, disposed some other way (Go to Q2)  
 (1) Yes, disposed through the program (Thank and terminate)

1m. From now on lets just talk about the appliance that was not disposed of through the program (Go to Q2)

1n. Just let me check, you did sign up to have an appliance removed correct?

- (1) Yes (go to 1o)  
 (0) No, (Thank and terminate)

1o. From now on I want you to think about just one of the appliances and answer the questions while just thinking about that one appliance (Go to Q2)

## ARP Awareness

2. How did you first learn about the Appliance Recycling Program? (*Do not read. Check most appropriate response. If they just say utility or if they say a mailing from SCE, probe to clarify using more detailed responses. For example, if they heard it from the utility, ask whether they heard about it through information in a bill or as a letter separate from a billing.*)

- a. Appliance store** (go to Q3)

**b. Utility**

1. Information that came with a **SCE bill** (go to Q4)  
 2. Information that came in a **letter or brochure** from SCE (go to

- Q4)
- 3. **Email** from SCE(*go to Q4*)
  - 4. Utility **representative** (*go to Q4*)
- c. Referral from friend/neighbor** (*go to Q4*)
- d. Advertisement**
- 1. Movie Theater (*go to Q4*)
  - 2. Newspaper (*go to Q4*)
  - 3. Radio (*go to Q4*)
  - 4. TV (*go to Q4*)
  - 5. Truck ad (*go to Q4*)
  - 7. Website (*go to Q4*)
  - 8. News story (*go to Q4*)
- e. Other (specify)** \_\_\_\_\_ (*go to Q4*)
- f. Don't know** (*go to Q4*)

3. Can you tell me the name of the store? \_\_\_\_\_

(Do not ask, code internally)

- (1) Named store       (9) Don't know       (8) Does not apply

4. Did you first learn of the program:

- a. While looking for a way to dispose of a unit or did you
- b. Know about the program prior to deciding to have the unit
- removed?
- c. Don't know

5. Before you called about having your refrigerator/freezer removed, did you try other ways to get rid of it?

- (1) Yes       (0) No       (9) Don't know       (8) Does not apply

6. Why did you initially call the ARP program to have your refrigerator/freezer removed? (Check all that apply. Rotate list a-k)

- a. First place you found to dispose of the unit
- b. It was the best option you found
- c. Just wanted to get the unit out of the house
- c. The cash incentive
- d. Free pick-up
- e. Simple one call or internet sign-up procedure
- f. The electricity savings
- g. The electricity cost savings
- h. To help the environment by recycling
- i. Trusted the utility

- j. Friend or family recommended it
- k. Appliance retailer/dealer recommended it
- l. Other (specify) \_\_\_\_\_
- m. Don't know

### Reasons for Cancellation

7. Why wasn't the refrigerator or freezer picked-up as scheduled? *(Let the customer explain in their own words. Record closest response. Probe to be sure of response. Use other if not sure)*

- a. Appliance didn't qualify for the program
- b. Decided to keep it
- c. Couldn't meet the scheduled pick-up time
- d. Recycling company (ARCA/JACO) didn't show up as scheduled
- e. Wanted to get rid of it sooner than it could be picked up
- f. Received a better offer (skip to 11)
- g. Decided somebody else could use the unit
- h. Didn't want it destroyed
- i. Other reason (specify) \_\_\_\_\_
- j. Don't know

8. Do you still have the refrigerator or freezer?

- (0) No (go to 11)    (1) Yes (go to 9)

9. Is the unit still in use?

- (0) No (go to 21)    (1) Yes (go to 10)

10. Question removed. Number holder

11. What did you do with the refrigerator or freezer? *(Let the customer explain. Chose the best response. Verify your choice. If the customer hesitates then offer the responses)*

- a. Sold it to someone else (go to Q12)
- b. Gave it to someone else (go to Q16)
- c. The appliance delivery crew took the unit when they delivered new unit (go to Q17)
- d. Had a hauler or community waste program remove it (go to Q21)
- e. Took it to a waste management center (go to Q21)
- f. Disposed some other way (specify) \_\_\_\_\_ (go to Q21)
- g. Don't know (go to Q21)

12. To whom was the appliance sold?

- a. A neighbor/friend/co-worker
- b. A dealer
- c. A person you did not know
- d. Someone else, please specify \_\_\_\_\_

- e. Don't know

13. Did you advertise?

- (0) No (go to Q15)
- (1) Yes (go to Q14)

14. Where did you advertise? (*Do not read! Check the appropriate item*)

- a. Craigslist
- b. Pennysaver
- c. Local newspaper
- d. Local bulletin board
- e. Other internet, please
- specify \_\_\_\_\_
- f. Other, please specify \_\_\_\_\_
- g. Don't know
- h. Can't remember/no answer
- i. Does not apply

15. How much did you get for the unit? \_\_\_\_\_ (go to Q21)

- (9) Don't know
- (7) Can't remember/no answer
- (8)

Does not apply

16. To whom was the appliance given?

- a. A family/neighbor/friend/co-worker (go to Q21)
- b. A dealer (go to Q21)
- c. Someone you did not know (go to Q21)
- d. A charity (go to Q21)
- e. Other, please specify \_\_\_\_\_ (go to Q21)
- f. Don't know (go to Q21)

17. Were arrangements made at the store when purchasing the new unit to have the old one removed?

- (1) Yes (go to Q18)
- (0) No (go to Q19)

18. Was the removal free or did you pay for it?

- (1) Free (go to Q20)
- (2) Paid for it (go to Q19)

19. At the time of pick-up, did the delivery crew volunteer to remove the unit for free or for a small fee?

- (1) Free (go to Q21)
- (2) Small fee (go to Q20)

20. How much were you charged? \_\_\_\_\_

- (9) Don't know
- (7) Can't remember/no answer
- (8) Does not

apply

## Appliance Information

21. During the time just before you contacted the recycling program, was the refrigerator/freezer being used as your main refrigerator/freezer, or had it been a secondary or spare? (*Interviewer: a main refrigerator is typically in the kitchen, a secondary or spare is usually kept someplace else and might or might not be running. If the person recently bought a new main refrigerator and was just waiting to get rid of the unit, it should be classified as "main."*)
- (1) Main (go to Q24)       (2) Secondary or spare (go to Q22)
22. At the time you called the recycling program, was it a secondary or spare because you had recently purchased a new or used machine and you wanted to get rid of the spare, or had you had the spare for a while?
- (1) Recent (go to Q24)       (0) Had the spare for a while (go to Q23)
23. In the year before you called SCE to have it removed, about how much was the refrigerator/freezer used?
- a. Kept it running all the time.  
 b. Ran it just part of the year. How much? \_\_\_\_\_  
 c. Ran it on special occasions. How much? \_\_\_\_\_  
 d. Didn't use it at all  
 e. Don't know
24. Was the unit that was removed replaced by a . . .
- a. New model  
 b. Used model  
 c. Not replaced  
 d. Don't know

## Disposer Preferences

25. If you knew the refrigerator or freezer would have been picked up within a week, would you have stayed with the SCE Appliance Recycling Program?
- (1) Yes (go to Q28)       (0) No (go to Q26)
26. If the appliance could have been picked up within 3 days, would you have stayed with the SCE Program?
- (1) Yes (go to Q28)       (0) No (go to Q27)
27. What if the appliance could have been picked up the same day or the next day after you signed up?
- (1) Yes       (0) No       (9) DKNA       (8) DNA

28. When you first decided to dispose of your appliance, were you aware that keeping and using it could cost up to \$300 a year in electricity to run it?  
 (1) Yes                       (0) No             (9) DKNA    (8) DNA
29. Prior to choosing a disposal method, were you aware that the refrigerant in older refrigerators is very harmful to the environment if not properly disposed of?  
 (1) Yes                       (0) No             (9) DKNA    (8) DNA
30. (*Ask if Q28 = 0*) Would knowing about the cost of running an old refrigerator change your mind about how you would dispose of your next appliance?  
 (1) Yes                       (0) No             (9) DKNA    (8) DNA
- 30a. (*Ask if Q29 = 0*) Would knowing about the potential harm to the environment change your mind about how you would dispose of your next appliance?  
 (1) Yes                       (0) No             (9) DKNA    (8) DNA
31. When choosing a way to dispose of an old refrigerator or freezer what is the most important thing to you? (*Read options*)
- a. The incentive
  - b. Getting money from selling the unit
  - c. Have someone else be able to use it and get good from it
  - d. Convenient and/or fast pick-up
  - e. Making sure it is disposed of in an environmentally safe manor
  - f. Having someone else remove it
  - g. Not having to spend much time getting rid of it
  - h. Other (specify) \_\_\_\_\_
  - i. Don't know
32. What is the next most important reason when choosing a way to dispose of an old refrigerator or freezer? (*Read options*)
- a. The incentive
  - b. Getting money from selling the unit
  - c. Have someone else be able to use it and get good from it
  - d. Convenient and/or fast pick-up
  - e. Making sure it is disposed of in an environmentally safe manor
  - f. Having someone else remove it
  - g. Not having to spend much time getting rid of it
  - j. Other (specify) \_\_\_\_\_
  - k. Don't know
33. If the SCE incentive had been \$75, would you have stayed with the program?  
 (1) Yes (*go to Q36*)                       (0) No (*go to Q34*)

34. How about \$100, would you have stayed with the program?  
 (1) Yes (*go to Q36*)                       (0) No (*go to Q35*)
35. How about \$125, you have stayed with the program?  
 (1) Yes                       (0) No
36. If there were no cash incentives but other aspects of the program were unchanged, would you consider using SCE's Appliance Recycling Program in the future?  
 (1) Yes                       (0) No
37. In the future, if you were to purchase a new refrigerator or freezer and the appliance dealer could remove the old unit for free, would you consider that option  
 (1) Yes (*go to Q39*)                       (0) No (*go to Q38*)       (9) Don't know (*go to Q38*)
38. In the future, if you were to purchase a new refrigerator or freezer and the appliance dealer could remove the unit and you received a \$50 incentive (\$50) would you consider that?  
 (1) Yes                       (0) No                       (9) Don't know
39. What suggestions do you have for improving the Appliance Recycling Program?

### **Refrigerator Characteristics**

40. Approximately how old was the unit that was scheduled to be removed?  
 a. less than 6 years  
 b. 6-10  
 c. 11-15  
 d. 16-20  
 e. Greater than 20 \_\_\_\_\_  
 f. Don't know
41. What type of unit was it? (side-by-side, top freezer, bottom freezer)  
 a. Side-by-side  
 b. Top freezer  
 c. Bottom freezer  
 d. Freezer  
 e. Other \_\_\_\_\_  
 f. Don't know
42. Approximately what size was it?  
 a. Small (under 14 sq. ft.)  
 b. Medium (15 – 18 sq. ft.)

- c. Medium –Large (19-22 sq. ft.)
- d. Large (23 sq. ft. and above)
- e. Don't know

43. Was the unit working?

- a. (0) No
- b. (1) Yes
- c. (9) Don't know

44. How much do you think the unit was worth? \_\_\_\_\_

### **Customer Characteristics**

45. How many refrigerators/freezers do you currently have in your home?  
\_\_\_\_\_

46. How many people reside in your home? \_\_\_\_\_

47. How many people under the age of 18 reside in your home? \_\_\_\_\_

48. How many years and/or months have you lived in your home?  
\_\_\_\_\_ Years \_\_\_\_\_ Months

49. Do you own or rent the home that you live in? \_\_\_\_\_  
 (1) Own                       (2) Rent

50. Have you remodeled your home in the past 5 years? \_\_\_\_\_  
 (1) Yes                       (0) No

51. What is the approximate square footage of your home? \_\_\_\_\_

- a. Less than 500
- b. 500 to just under 1,000
- c. 1000 to just under 2,000
- d. 2000 to just under 4,000
- e. 4,000 and up

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

- a. Less than 25,000
- b. 25,000 to just under 50,000
- c. 50,000 to just under 75,000
- d. 75,000 to just under 100,000
- e. 100,000 to just under 150,000
- f. More than 150,000

The interview was done in

- 1. English
- 2. Spanish

**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**