SDG&E 2010-2011 Residential Program Process Evaluation

Final Report

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Executive Summary

This report presents the research results of the process evaluation conducted on SDG&E's 2010-2012 Residential Energy Efficiency Program portfolio (Residential Programs). The Evergreen Economics evaluation team was comprised of the following members:

- Evergreen Economics (Prime Contractor)
- Research Into Action
- Energy Market Innovations (EMI)
- Dr. Robert Wirtshafter (Wirtshafter Associates)
- John Stevenson
- CIC Research

Figure 1 shows the SDG&E programs covered in this evaluation along with the original program implementation budgets as provided in the Program Implementation Plans (PIP).

Figure 1: SDG&E Residential Programs and Implementation Budgets

SDG&E	Total 2010-2012 Program Cycle Budget	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation
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The evaluation began with a kick-off meeting at SDG&E offices in May 2011. A final evaluation plan was delivered to SDG&E in August 2011. Data collection activities began shortly thereafter and continued through January 2012.

Researchable Issues

The original research issues established for this evaluation by SDG&E include the following:

- **Understanding**. General understanding of and past experience with the Residential Programs

- **Communication/Awareness.** How customers first learned about the program and the best channels to use to reach these customers
- **Point of Entry.** Ease of application process, barriers to participation, suggestions to make participation easier
- **Participation Experience.** Satisfaction with services received, participation drivers, timeliness, suggestions for improvement, customer preferences for online tracking and other potential program features
- **Impact / Effectiveness.** Satisfaction with program outcome, savings, other benefits customer perceive from participation
- **Additional Offerings.** Suggestions for other programs or services to help meet customer energy management needs.

In the course of developing the final evaluation research plan, the following additional research issues were identified that are applicable to all the SDG&E Residential Programs:

- Is there a consistent and recognized branding across programs?
- Are there programs or program elements that are working at cross-purposes with each other?
- Are there significant overlaps across programs?
- Are the programs reaching all customer types, and if not, what might be needed to reach them?
- Are there elements of programs that can become more standardized?
- Where are the growth areas within the residential market and residential efficiency potential, and how can the programs address these areas?
- What information should be routinely tracked in order to measure progress relative to the Program Performance Metrics (PPMs) established for these programs?
- What are the characteristics of the participants in terms of geography and demographics (GIS analysis)?
- How do participation patterns compare with areas and customer groups outside the program (GIS analysis)?
- Are important segments of the residential population not participating in any program?
- Currently SDG&E uses two different savings values (based on different versions of DEER) for internal management and external reporting. How much is this affecting the day-to-day operations of the program?
- How are the programs performing as determined by their PPMs?

Additional researchable issues for specific programs are included in the discussions of the individual program results. These research issues formed the basis of the evaluation; all of the data collection and analysis activities were designed to address them.

Data Collection and Analysis Methods

The evaluation used several data collection and analysis methods, as described below.

- **Participant phone surveys**. For programs with participant data that included customer names and phone numbers, the evaluation team fielded a phone survey to collect information on multiple topics related to the process evaluation research issues discussed above. A total of 747 participant phone surveys were completed.
- **General population survey.** A general population survey was fielded to collect information on non-participant customers' awareness, knowledge and attitudes (AKA) toward energy efficiency. This survey also was used to identify a sample of customers who participated in some of the programs (e.g., Lighting, HEER) where detailed participant data are not available through SDG&E. A total of 721 general population phone surveys were completed.
- **In-depth interviews.** In addition to the phone surveys, a complementary data collection activity was in-depth interviews of key market actors involved with the programs. The in-depth interviews were less structured than the phone surveys. This more flexible approach allowed the interviewer to ask follow-up questions and collect additional detail on important evaluation topics. A total of 115 in-depth interviews were completed, in addition to interviews with SDG&E program and management personnel.
- **Best Practices Assessment**. An additional evaluation component was a comparison of each program to industry best practices. The primary source for determining best practices is the energy efficiency Best Practices Study benchmarking tool found at www.eebestpractices.com. The evaluation team also relied on the team members' experience with evaluating similar programs in other jurisdictions. This allowed the team to provide more current best practices for comparison, and to assess some of the newer, more innovative programs (e.g., Whole House Performance) that were not explicitly addressed in the original Best Practices Study.
- **GIS Analysis.** One of the innovative elements of this evaluation is the GIS analysis that was conducted on the SDG&E customer data. For this analysis, the entire SDG&E customer database was geo-coded, along with US Census data on income, race, and dwelling type. This allowed the evaluation team to compare participation patterns by geography, as well as identify the distribution of program dollars (both for the Residential Programs and the low income program) across the income levels of SDG&E customers. The matching of customer participation data with Census demographic data helped the evaluation team assess how well the program was covering targeted markets and demographics and identify any population sub-groups the programs might miss.

Summary of Results

The following are some portfolio-level observations and recommendations for SDG&E's Residential Program Portfolio.

The Residential Program portfolio is providing good coverage of SDG&E's residential customer base. As demonstrated by the GIS analysis, SDG&E is providing good coverage both in terms of geography and household income. While the basic Residential Programs may

appear to be favoring wealthier households, it becomes clear that lower income households benefit proportionately from the programs when the analysis accounts for the cost of measures and the relative share covered by the SDG&E rebate. Furthermore, once the support provided by the low income programs is considered, the level of support provided increases as household income decreases.

Table 1 shows the amount of program support provided by income group for the general Residential Programs. The first column shows that the level of rebates received per household generally increases by income. However, as shown in the second column, the amount of support provided by the low income program (which covers 100 percent of the measure cost), decreases with income. When these two channels of program assistance are considered together (column three), the amount of program assistance overall increases as household income decreases. The far right column shows the share of measure cost that is covered by the SDG&E rebate by income for the residential program only. The data in this column indicate that program support is relatively even across income once the cost of the equipment is taken into account, and that the share of measure cost covered by the rebate is significantly higher for the lowest income groups.

Table 1: Residential and Low Income Rebates and Mesure Cost s by Income

Percent Below 150% of Poverty (Quintiles)	Residential Programs (Rebate $/Household)	Low Income (Measure Cost $/Household)	Residential Programs and Low Income (Rebates + Measure Cost $/Household)	Percent of Residential Program Only Measure Cost Covered by the Rebate (Excludes Low Income Program)
Least poor (< 6% below poverty)	$10.08	$9.69	$19.77	20.7%
Next least poor (6-11% below poverty)	$6.62	$13.90	$20.52	20.9%
Middle (11-19% below poverty)	$6.98	$21.49	$28.46	21.5%
Next most poor (19-31% below poverty)	$6.47	$31.25	$37.72	19.1%
Most poor (>31% below poverty)	$4.28	$45.45	$49.78	28.8%
Average	**$6.81**	**$24.88**	**$31.69**	**21.4%**

SDG&E customers generally are concerned about how their energy use affects the environment. The results of the general population survey questions clearly show that SDG&E customers have a high level of awareness and concern about their energy use and how that use may impact the environment. They are slightly less concerned about how energy use affects global warming. Other question responses indicate a general willingness to take at least some actions to reduce energy use.

Program managers widely perceive increased regulatory reporting as an issue. Program managers generally considered regulatory reporting a burden, and expressed little understanding of the purpose of many of the reporting tasks. Specific issues included having to report savings values to the CPUC for savings goals that are different from those used within SDG&E, and inconsistent definitions of Hard-to-Reach areas. While the regulatory issues are unlikely to disappear, the Energy Division could alleviate some of the SDG&E program staff's frustrations by communicating more regularly with these staff about the purpose of these reporting requirements.

Program tracking and data access need to be improved. Some of the programs do not track program data adequately. In particular, several programs lack complete contact data for participating contractors and retailers. This makes evaluation and program follow-up difficult, if not impossible. For the Appliance Recycling Program, the tracking system often is down or unavailable and customer account records are out of date; this makes scheduling pickups and confirming customer accounts difficult, because these tasks must be done manually. Additionally, there is no simple way to track if HEES participants are participating in other programs after taking the HEES survey. (At the time of this evaluation, the HEES Program was being revamped, so this issue may be addressed in the future.)

Rebate payment times need to be shortened. Slow rebate payment times are an issue with several programs. Some contractors said that they avoid working in SDG&E's territory because they get paid faster for jobs they do in other utility service areas. While the rebate process appears to have improved from the previous evaluation, additional progress in this area is needed.

Programs generally are consistent with industry best practices. In general, the SDG&E programs are mature programs that have been refined to follow industry best practices. These programs typically are clearly designed with documented program theory and logic, and have clearly defined areas of responsibilities between SDG&E program staff and others involved with program implementation. For some programs, there is room for improvement in terms of marketing, rebate payment times, and the level of interaction and involvement with SDG&E. The phone survey results also indicate that SDG&E customers generally are very satisfied with their program experience.

Additional detail on the best practice assessment by program is provided in Table 2.

Table 2: SDG&E Residential Program Comparison to Best Practices

Program	Consistent w/ Best Practices	Inconsistent w/ Best Practices
Lighting	Program logic/theory well-defined, market understood, simple participation process, clearly defined management roles, customer satisfaction is high.	Limited program contact with retailers and manufacturers, marketing message to customers could be improved. Customer participation data not tracked, energy savings values in tracking system outdated.
Home Energy Efficiency Rebates	Program logic/theory well-defined, simple participation process, clearly defined management roles, high customer satisfaction, leverages ENERGY STAR brand, electronic applications.	Low awareness of program among retailers. Market understanding and program theory may need revision as program may be having limited effect on consumers. Customer participation data not tracked, energy savings values in tracking system outdated.
Multi-family Programs	Program logic/theory defined, targeted marketing used, participant data tracked.	Differentiate between measures in tenant spaces, should have tiered rebates, move toward a whole building approach, energy savings values in tracking system outdated.
Consumer Electronics	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, leverages ENERGY STAR brand.	Low awareness of program among retailers. Market understanding and program theory may need revision as program may be having limited effect on consumers. Customer participation data not tracked, energy savings values in tracking system outdated.
Whole House	Program logic/theory well-defined, customer satisfaction is high, participation data tracked.	QA/QC process may be hindering the participation process, more training/mentoring of contractors, increase marketing of non-energy benefits, more support for contractor marketing efforts.
Appliance Recycling	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked.	Appointment scheduling gets held up by account verification, energy savings values in tracking system outdated.
Mobile Home	Delivers multiple programs in targeted neighborhoods through one delivery	None

Program	Consistent w/ Best Practices	Inconsistent w/ Best Practices
	approach, clear target market, substantial expertise in targeted market, delivers a suite of measures relatively easily for homeowners, employs multiple marketing strategies that respond to limitations of prior marketing strategies	
HEES	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked.	HEES could have better placement on SDG&E website, program managers have limited data access, flow of participation from HEES to other programs not easily determined.
K-12 EE Education	Exemplifies best practices for curriculum development, follows best practices for design of educational web content	Data collection and tracking processes are limited so program reach is unclear, website does not encourage users to return.
ENERGY STAR QI	Program logic/theory defined but untested, clearly defined management roles, contractor training provided, participation data tracked, leverages ENERGY STAR logo, QC/verification done on installations.	SDG&E logo not used, effectiveness of program marketing and training unclear as program is new and has no participation at the time of this report.
HVAC QI / Tune Up	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked, QC/verification done on installations.	Lack of contractor incentives, no contractor marketing allowed (may not be needed).

Finally, Table 3 provides a summary of the program-specific conclusions and recommendations for each program covered in this evaluation. Additional detail on all the evaluation methods and research findings are provided in the main body of this report.

Table 3: SDG&E Residential Program Process Evaluation Summary of Findings and Recommendations

Program Name	Main Issues Identified	Main Recommendations	Difficulty in addressing (Low/ Med/High)	Value of addressing (Low/Med/High)
Lighting Programs	Balancing goals for savings with market transformation goals (and staying in budget)	Build tracking and reporting systems.	High	High
	Lack of consumer education on Advanced Lighting benefits	Increase marketing that also considers customer wants/needs for lighting products	Med/High	High
	Outdated per-unit savings in SMART	Update SMART to include current per-unit savings values	Med/High	High
HEER	Customers already planning on purchasing appliance before going to store	Assess primary purpose of program: demonstrating good will or influencing purchases? Revise program theory/logic if needed. Develop online marketing to influence customers when researching products	High	High
	Outdated per-unit savings in SMART	Update SMART to include current per-unit savings values	Med/High	High
Multi-Family Programs	Limited focus on certain measures, other opportunities missed	Move toward whole-building approach similar to EUC. Expand list of measures, include cold-water clothes washers.	Med/High	High
	Both MF and low income programs can target units within the same building (inefficient).	Allow entire buildings be designated low income eligible once a certain threshold is reached	Med	Med/High

Program Name	Main Issues Identified	Main Recommendations	Difficulty in addressing (Low/ Med/High)	Value of addressing (Low/Med/High)
Appliance Recycling	Current customer database is outdated	Provide updated customer database	Low	High
	Not recruiting new appliance purchasers	Market to new purchasers at appliance retailers	Low	Med
Consumer Electronics	Program theory may be inaccurate	Assess primary purpose of program: demonstrating goodwill or influencing purchases? Revise program theory/logic if needed	Med	High
	Sales associates may not be promoting, and qualified products may be incorrectly labeled	Determine retail roles and POP material roles, possibly provide training	Med	Med
Whole House	Contractors play key role in marketing program and driving participation	Encourage more contractor marketing, try to reduce uncertainty around incentive estimates and QA/QC process to get more contractors to embrace program	Med	Med
	Lengthy QA/QC process a concern to contractors, but appears to be improving	Monitor QA/QC process so project completion is not delayed	Med	High
Mobile Home	Synergy has developed an effective marketing strategy that addresses the major barriers affecting the target market.	Continue to work with SDG&E to increase their marketing success	Low	Med

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	Synergy has demonstrated the benefits of delivering multiple programs to the same neighborhood by cross-marketing and delivering measures for ESAP and CARE as well the Mobile Home program	Synergy's presence in this market should be leveraged as much as possible	Med	Med
Home Energy Efficiency Survey	Difficult to link HEES participation with participation in other programs	Develop system that allows easier tracking from HEES to rebate programs	Med	Med
	HEES not easy to locate on SDG&E website	Clearly identify HEES on the website	Low	Med
K-12 Energy Efficiency Education	Limited teacher participation, especially online	Develop multi-pronged dissemination strategy, better understand online barriers	Med/High	Med/High
	Program staff unaware of exposed students and implementation	Develop data collection process	Med	High
HVAC Tune-Up	Contractors not allowed to market program	Expand marketing responsibilities to contractors if needed to reach participation goals	Low	Low
	Some felt the program didn't positively impact their business and that implementer performance was not up to par	Monitor relationship between implementers and contractors	Low/Med	Med

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ENERGY STAR QI	Program launched before details were clarified, frustrating contractors	Avoid recruiting contractors when details are still TBD	Low	High
	Low contractor certification	Consider incentive for contractor participation	Med	Med

1 Introduction

1.1 Introduction and Program Background

This report presents the research results of the process evaluation conducted on SDG&E's 2010-2012 Residential Energy Efficiency Program portfolio (Residential Programs). The Evergreen evaluation team was comprised of the following members:

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1.2 Researchable Issues

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- How are the programs performing as determined by their PPMs? What information should be routinely tracked to measure performance relative to the PPMs?

Additional researchable issues for specific programs are included as part of the discussion of the individual program results. These research issues formed the basis evaluation; all of the data collection and analysis activities were designed to answer these questions.

The remainder of this report is structured as follows. *Chapter 2* provides an overview of the evaluation methods employed, and details about the data collection activities completed. *Chapter 3* presents a summary of the portfolio-level evaluation results, including SDG&E's general customers' responses to the awareness, knowledge, and attitude (AKA) questions; a comparison of the programs to industry best practices; a GIS analysis of participation patterns; and a synthesis of the overarching portfolio findings. Evaluation results for the individual programs are provided in *Chapter 4.* The survey instruments, tabulation of the phone survey results, and additional GIS maps are included as appendices to the main report (separate document).

2 Evaluation Methods and Data Collection Activities

The evaluation team used a variety of evaluation methods and data collection activities in this evaluation. Each of the data collection activities was tailored to address the program-specific research issues identified as part of the evaluation plan development. This section presents general data collection and analysis activities; additional program-specific detail is provided as needed in the discussion of evaluation results in *Chapter 4*.

2.1 Phone Surveys

Phone surveys of recent program participants were a primary data collection activity. CIC Research fielded these surveys from October 2011 through January 2012; interviews lasted an average of approximately 15 minutes. The phone survey samples were drawn from SDG&E's participant tracking database and then screened to remove customers who were on SDG&E's "Do Not Call" list. While the evaluation team attempted to meet the original survey quotas planned for each program, in some cases there was not enough participation data to reach the targets. Despite the lack of data for a few programs, enough surveys were completed to address the various research objectives identified for each program.

Table 4 shows the final survey counts achieved for each program.

Table 4: Program-Specific Surveys

SDG&E Program	Target Group	Surveys Completed
Appliance Recycling	Participants	100
	Drop-outs	101
Home Energy Efficiency Rebates	Participants (non-point of sale)	288
	Participants (point of sale)	62
Lighting	Retail Stores	15
Mobile Homes	Mobile Home Owner (participants)	101
Multi-Family	Building Owners (participants)	30
	Building Owners (non-participants)	50
Total Surveys		**747**

A second major data collection component was a general population survey of 600 SDG&E customers. The general population survey served several purposes. First, it identified participants in the programs for which SDG&E does not have tracking data (i.e., Lighting, HEER) so that the evaluation team could interview them about their experience with the programs. Second, the survey provided an opportunity to interview program non-participants

about energy efficiency awareness, knowledge, and awareness (AKA). The evaluation team tested a series of "AKA questions" to support broader statewide program evaluations being coordinated by the CPUC Energy Division.

The general population survey sample came from SDG&E's customer database. Each survey lasted an average of 15 minutes. Table 5 shows the completed surveys for each quota. Respondents were used to fill multiple quotas whenever possible; some respondents completed more than one survey battery.

Table 5: General Population Survey

Research Category	Target Group	Completes
Home Energy Efficiency Rebates	Appliance purchasers	49
Lighting	CFL purchasers	391
Multi-Family	Multi-family tenants	81
General Awareness	Non-participants	200
Total Surveys		**721**

2.2 In-depth Interviews

In-depth interviews with key actors involved with the programs complemented the phone surveys. These were less structured than the phone surveys, so the interviewer to ask follow-up questions and collect additional detail on important evaluation topics.

The breakdown of the in-depth interviews completed for this evaluation is shown in Table 6. Note that these totals do not include the interviews with the one or two SDG&E program staff that were conducted for the individual program evaluations, and which are reported separately in *Chapter 4*.

Table 6: SDG&E Completed In-Depth Interviews

SDG&E Program	Completed Interviews
Lighting Programs Manufacturers	9
Home Energy Efficiency Rebates Contractors	15
Home Energy Efficiency Rebates Retailers	10
Multi-Family Rebate Program Contractors	10
Business and Consumer Electronics Retailers	9
Business and Consumer Electronics Manufacturers	5
Mobile Home Program Technicians / Implementers	7
K-12 Energy Efficiency Education Teachers / Staff	8
Local Whole House Performance Contractors / Implementers	16
HVAC Tune-up QI Participating Contractors	10
HVAC Tune-up QI Nonparticipating Contractors	11
Appliance Recycling Retailers	5
Total In-Depth Interviews	**115**

2.3 Best Practices Assessment

An additional evaluation component was a comparison of each program to industry best practices. The primary source for determining best practices is the energy efficiency Best Practices Study benchmarking tool found at www.eebestpractices.com. In addition to the Best Practices Study, the team relied on members' extensive experience evaluating similar programs in other jurisdictions. This allowed the team to provide additional current best practices for comparison, and assess some of the newer, more innovative programs (e.g., Whole House Performance) that were not explicitly addressed in the original Best Practices Study.

2.4 GIS Analysis

One of the innovative elements of this evaluation is the GIS analysis that was conducted on the SDG&E customer data. For the GIS analysis, the entire SDG&E customer database was geo-coded, along with US Census data on income, race, and dwelling type. As discussed in the following chapter, this allowed the evaluation team to compare participation patterns by geography, as well as identify the distribution of program dollars (both for the Residential Programs and the low income program) across the income levels of SDG&E customers. The matching of customer participation data with Census demographic data helped the evaluation team to assess how well the program was covering targeted markets and demographics and to identify any population subgroups that might be missed by these programs.

3 Portfolio Level Evaluation Results

3.1 Program Spending and Progress Toward Goals

The following figures show the progress that the resources programs have made toward their 2010-2012 impact goals, based on the monthly progress reports submitted by SDG&E to the CPUC Energy Division. These graphs are based on only 23 months of impact data, while the goals are set for a 36-month period. Note that any lack of progress toward goals should not be interpreted as a sign that a program is faltering. Rather, the progress-toward-goal information is presented as context to show the amount of activity for each program to date.

Figure 3 and Figure 4 show the current progress toward goals for the SDG&E resource acquisition programs. All the programs have made significant progress toward the 3-year savings goals, with therm savings typically lagging behind the energy and demand goals. Some programs, such as Advanced Lighting, Business and Consumer Electronics (BCE), Home Energy Efficiency Rebates (HEER), and Mobile Homes, already have exceeded some of their 3-year savings goals. In these cases, the achievements have been capped at 100 percent in these graphs for presentation purposes. Also note that negative gas impacts, such as those that occur with CFLs, are not shown in these graphs.

Figure 3: Progress Toward 3-Year Savings Goals (Jan. 2009 - Nov. 2011)

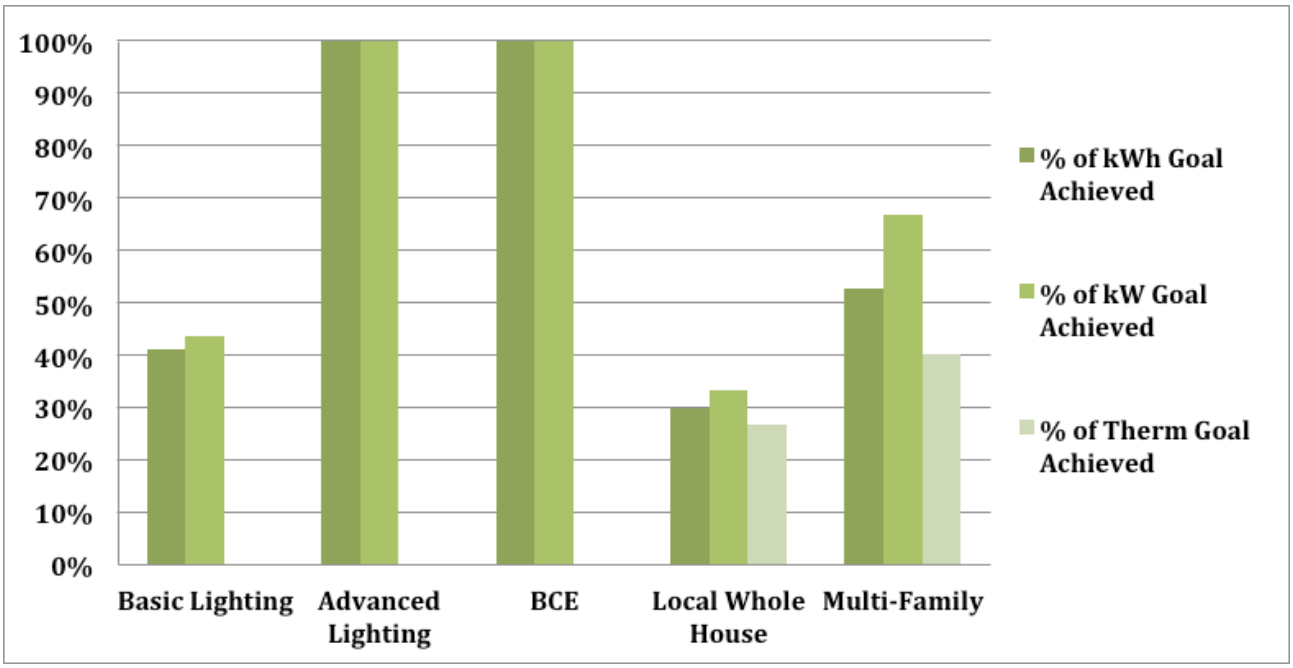
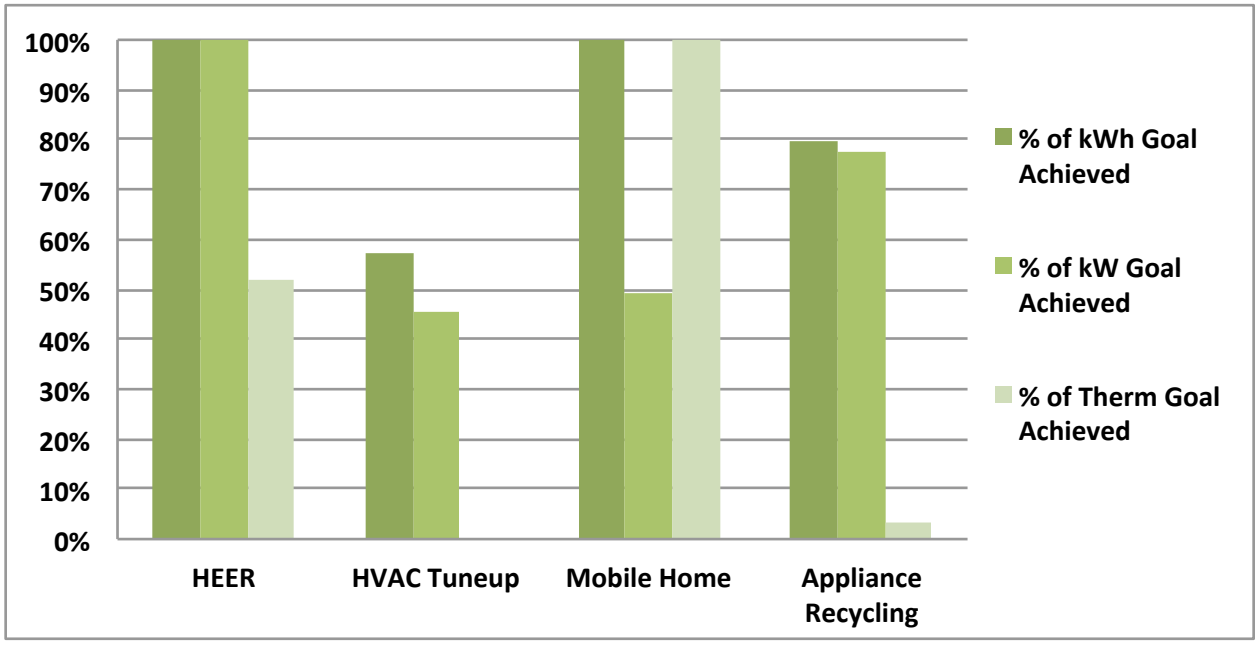


Figure 4: Progress Toward 3-Year Savings Goals (Jan. 2009 - Nov. 2011)



In addition to the savings goals, Figure 5 and Figure 6 show how much of the 3-year program budget has been spent as of November 2011 (the latest data available). As with the savings information, the spending data are presented solely for context to show the level of activity occurring with each program.

Figure 5: Proportion of Program Budget Spent (Jan. 2009 - Nov. 2011)

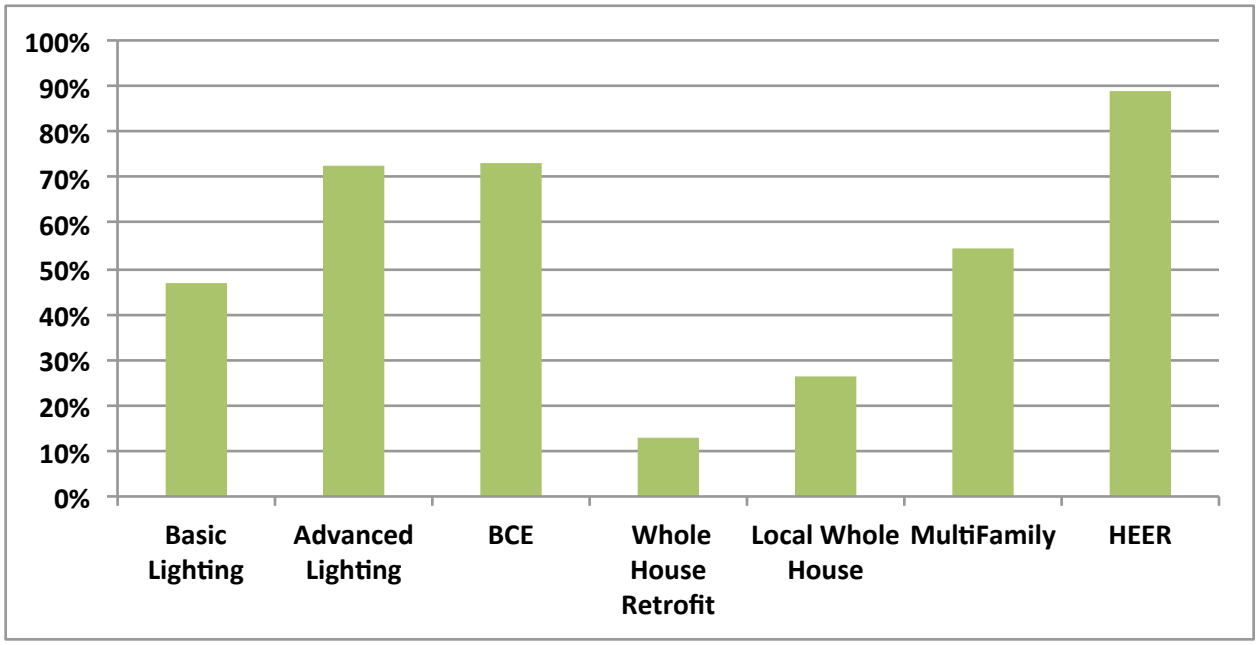
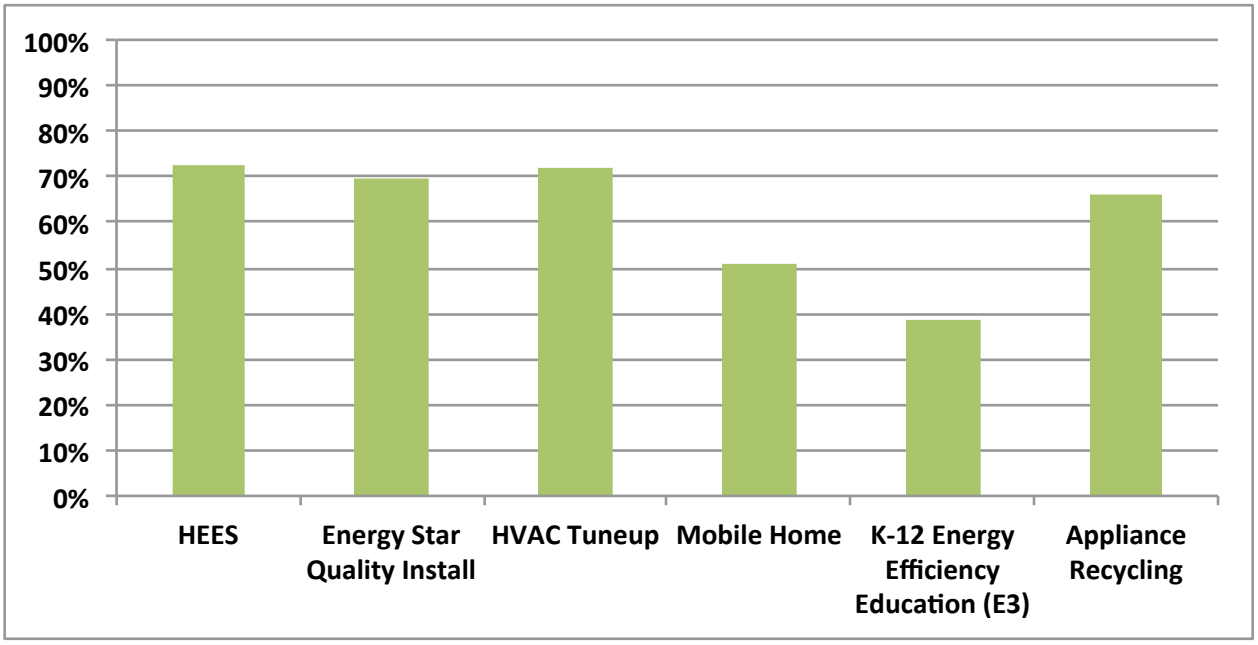


Figure 6: Proportion of 3-Year Program Budget Spent (Jan. 2010 - Nov. 2011)



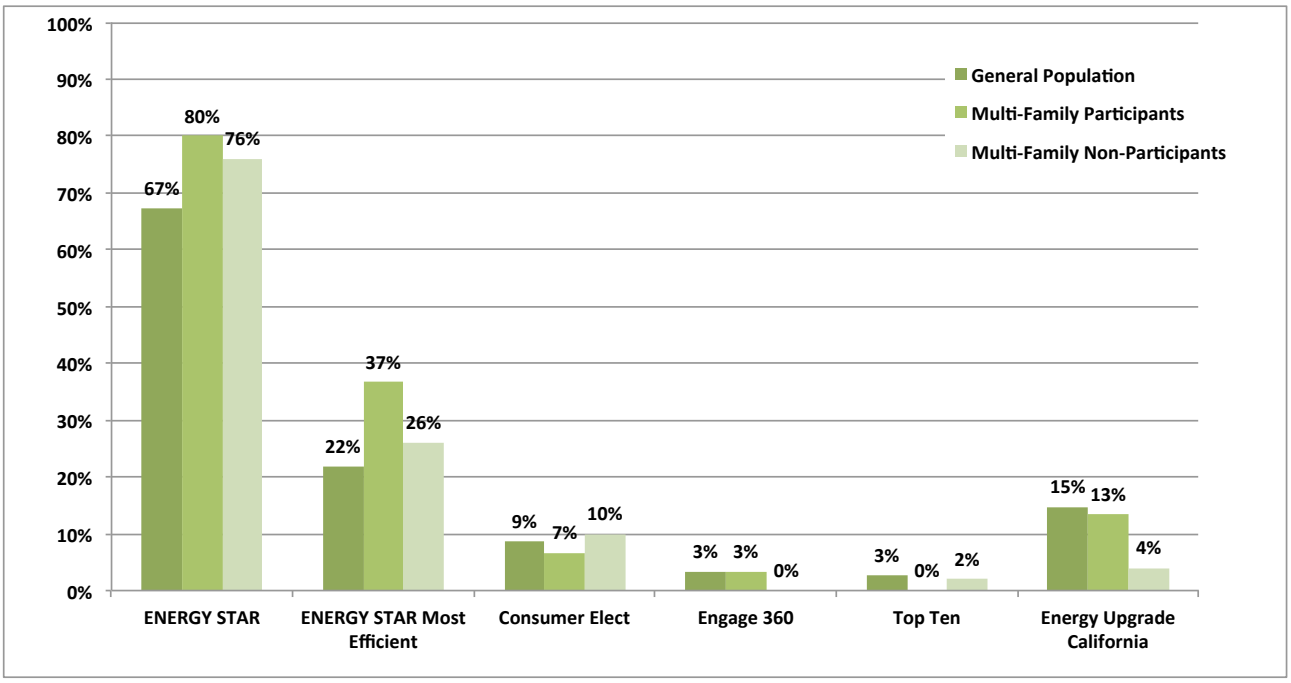
3.2 Awareness, Knowledge, and Attitudes (AKA) Questions

For the California Statewide evaluations involving all of the investor-owned utilities (IOU), the IOUs and the CPUC Energy Division are collaborating on the development of a series of survey questions that address customer awareness, knowledge, and attitudes (AKA) relating to energy efficiency. The purpose of this effort is to provide a common set of questions to measure the current level of understanding of and concerns about how energy use may be affecting the environment.

At the time of this evaluation, the AKA question design had not been completed. Rather than delay this evaluation, the decision was made to field the most current version of these questions for a sample of the general population that included both single-family residents and multi-family tenants. The IOUs and Energy Division had not begun designing an analogous AKA question battery for multi-family residences, so the evaluation team developed its own AKA questions for this customer segment. The AKA questions were asked as part of the general population survey fielded in the fall of 2011.

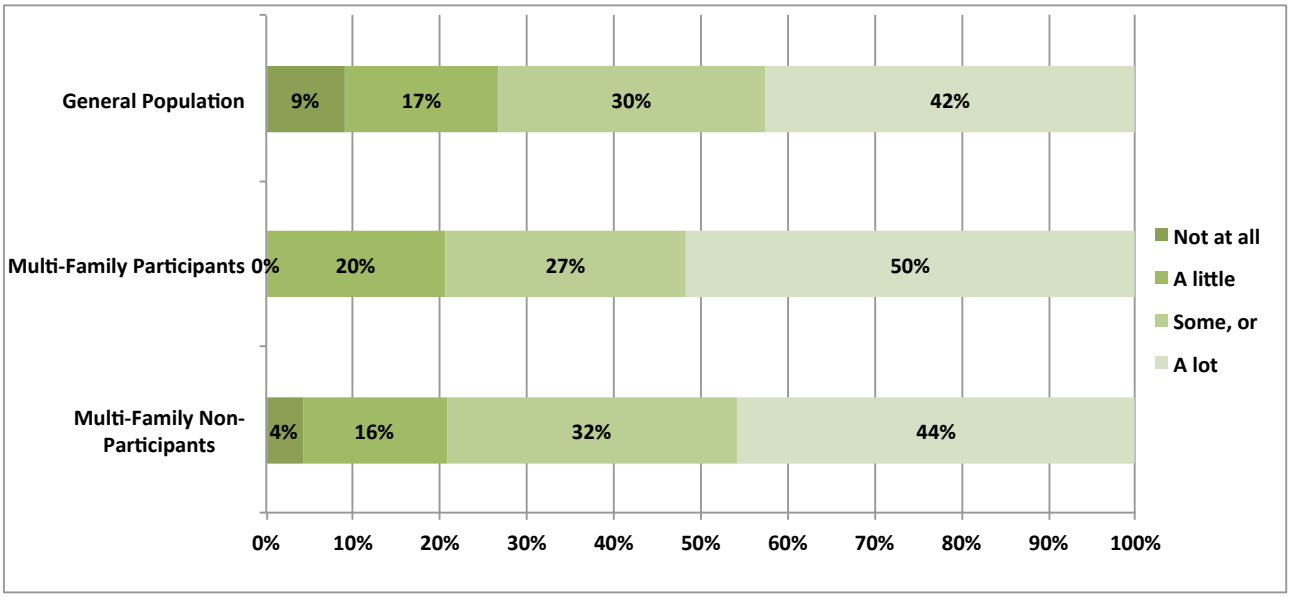
Figure 7 shows survey respondents' levels of awareness with various brands and programs promoting energy efficiency in California. Not surprisingly, respondents had the greatest awareness of the ENERGY STAR label; two-thirds of the general population respondents and almost 80 percent of multi-family respondents were aware of the label. As discussed later in this report, this awareness is important, as several programs have been able to capitalize on the ENERGY STAR brand to promote efficiency measures.

Figure 7: Awareness of Energy-Efficient Product Labels and Programs



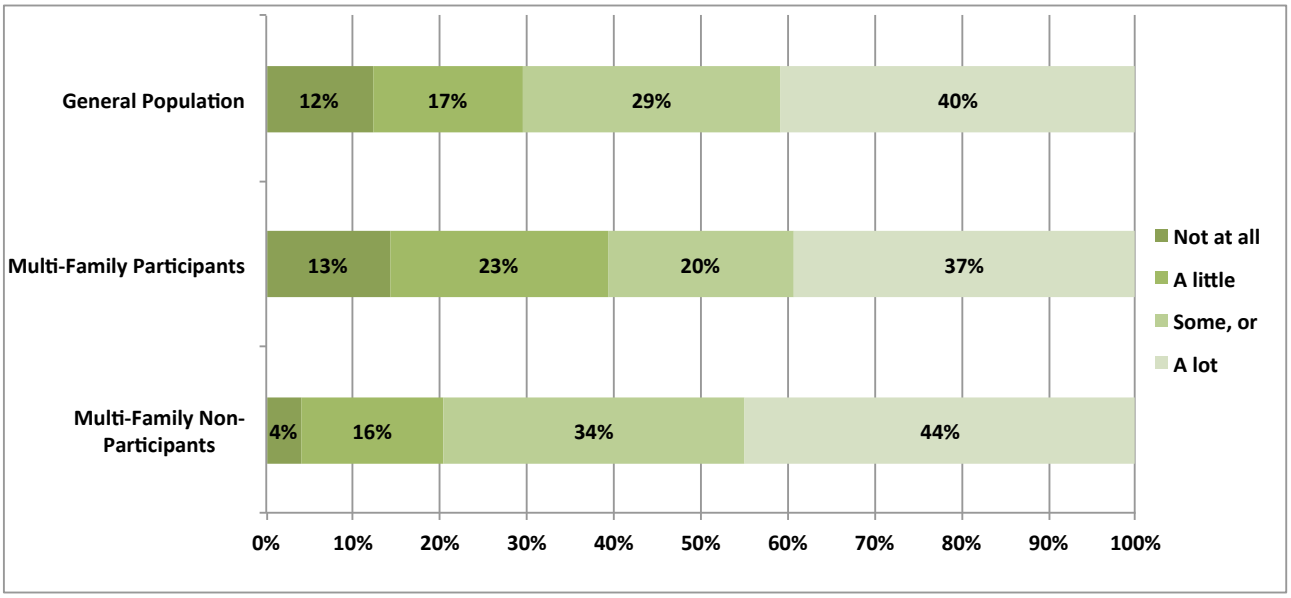
A separate question asked customers how much they had thought about how their energy use affects the environment. These responses are shown in Figure 8. About three-quarters of the respondents reported that they had thought about it "some" or "a lot," indicating a significant amount of concern across all three customer groups.

Figure 8: Time Spent Considering How Energy Use Affects the Environment



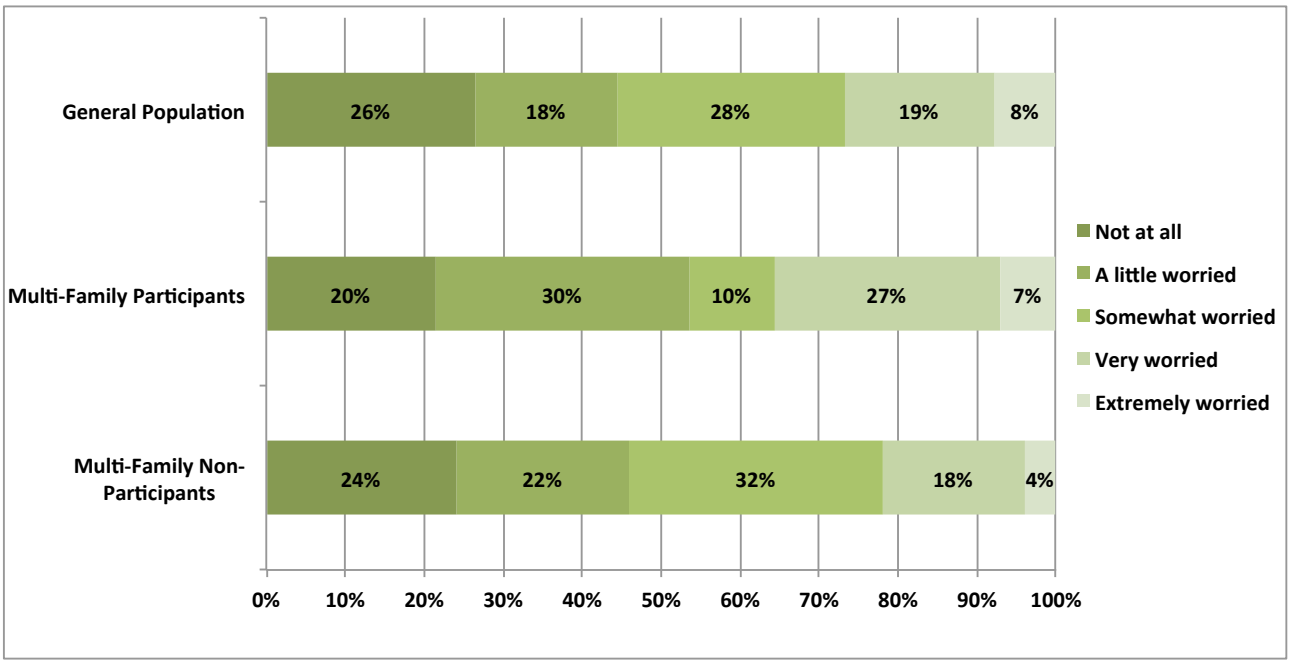
The surveys also asked respondents how much they had thought about global warming prior to taking the survey. These results are shown in Figure 9. The non-participating multi-family property owners reported that they had thought about global warming more than the other two populations, with 78 percent reporting that they had thought about it "some" or "a lot," compared to 57 percent for participating property managers and 69 percent for the general population.

Figure 9: Time Spent Thinking About Global Warming



The surveys then asked how worried the respondents were about global warming. As shown in Figure 10, responses were somewhat varied with no general consensus. A small portion of all three groups (less than 10 percent) reported being "extremely" worried about global warming, and about a quarter of all three groups reported that they were "not at all" worried.

Figure 10: Level of Worry Concerning Global Warming



To gauge customers' attitudes on a variety of topics, the survey team asked respondents to indicate to what degree they agreed with 13 statements about energy and energy use. Respondents were asked to rate their opinions on a 0-to-10-point scale, where "0" was "completely disagree" and "10" was "completely agree."

Table 7 shows the responses to the AKA questions that were asked of both the general population sample and multi-family tenants. In general, respondents said they were concerned about all of the environmental issues raised in these questions. Multi-family respondents rated these issues slightly more highly than general population respondents. Across all customer groups, there is concern about the effect energy use is having on the environment, but slightly less concern/belief that respondents' energy choices are having an effect on global climate change.

Table 7: Summary Statistics for Attitude Statement Answers

Statement	Average Response		
	General Population	Multi-Family Participants	Multi-Family Non-Participants
Household electricity use has an impact on the environment.	6.9	7.8	7.9
I am very concerned about how energy use affects the environment.	6.8	7.3	8.1
Conserving electricity will help reduce global warming.	6.6	7.1	7.0
I believe that household energy use has an impact on global warming and climate change.	6.3	6.8	7.0

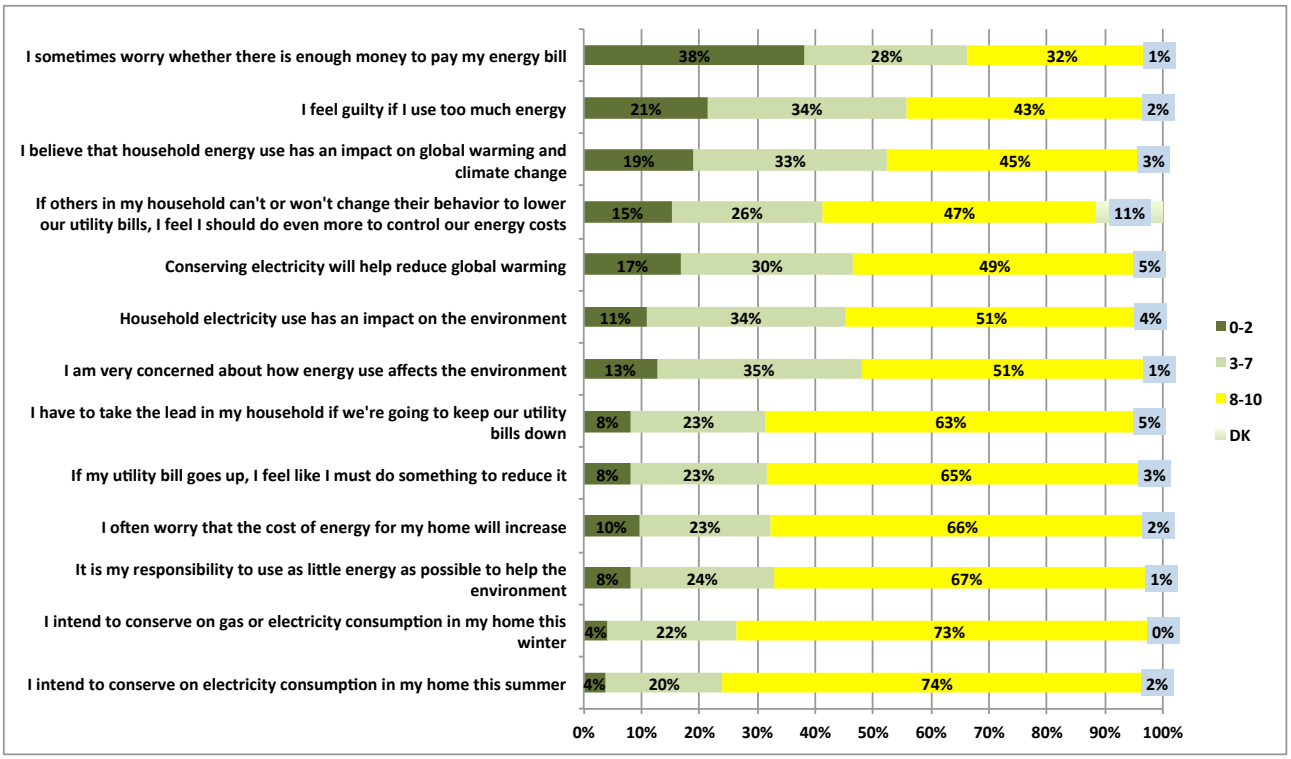
Additional questions were asked of general population respondents only. Table 8 displays the average responses to these questions. The greatest agreement concerned intentions to reduce electricity and gas consumption, followed by agreement with statements regarding reducing energy bills and feeling responsible to help the environment by reducing energy consumption. Respondents agreed the least with statements expressing concern about having enough money to pay utility bills.

Table 8: Summary Statistics for Attitude Statement Answers (General Population Respondents Only)

Statement	Average Response
I intend to conserve on electricity consumption in my home this summer.	8.3
I intend to conserve on gas or electricity consumption in my home this winter.	8.2
If my utility bill goes up, I feel like I must do something to reduce it.	7.8
I have to take the lead in my household if we're going to keep our utility bills down.	7.8
I often worry that the cost of energy for my home will increase.	7.7
It is my responsibility to use as little energy as possible to help the environment.	7.7
If others in my household can't or won't change their behavior to lower our utility bills, I feel I should do even more to control our energy costs.	6.6
I feel guilty if I use too much energy.	6.0
I sometimes worry whether there is enough money to pay my energy bill.	4.8

Figure 11 shows the distribution of responses (rather than just the average) for the same questions discussed above for the general population sample. These responses show that – for the most part – there is a high level of agreement (a rating of "8" or higher) for almost all of the AKA statements. Two exceptions are the statements relating to having enough money to pay the energy bill and feeling guilty about using too much energy, to which over 20 percent rated their agreement at "2" or less.

Figure 11: General Population AKA Responses (0-10 Scale, 0 = "Completely Disagree", 10 = "Completely Agree")



3.3 Comparison to Best Practices

Each of the programs covered in this evaluation was assessed against the industry best practices for that program type. In general, SDG&E is implementing programs that are consistent with industry best practices. Table 9 provides a summary of how each program compares with the industry best practices, with additional detail provided in the program-specific discussions in *Chapter 4*.

Table 9: SDG&E Residential Program Comparison to Best Practices

Program	Consistent w/ Best Practices	Inconsistent w/ Best Practices
Upstream Residential Lighting Program	Program logic/theory well-defined, market understood, simple participation process, clearly defined management roles, high customer satisfaction	Limited program contact with retailers and manufacturers; marketing message to customers could be improved. Customer participation data not tracked; energy savings values in tracking system outdated.

Program	Consistent w/ Best Practices	Inconsistent w/ Best Practices
Home Energy Efficiency Rebates Program	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, leverages ENERGY STAR brand, electronic applications.	Low awareness of program among retailers. Market understanding and program theory may need revision as program may be having limited effect on consumers. Customer participation data not tracked; energy savings values in tracking system outdated.
Multi-family Rebate Program	Program logic/theory defined, targeted marketing used, participant data tracked.	Differentiate between measures in tenant spaces, should have tiered rebates, move toward a whole building approach, energy savings values in tracking system outdated.
Appliance Recycling Program	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked.	Appointment scheduling gets held up by account verification, energy savings values in tracking system outdated.
Business and Consumer Electronics Program	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, leverages ENERGY STAR brand.	Low awareness of program among retailers. Market understanding and program theory may need revision as program may be having limited effect on consumers. Customer participation data not tracked; energy savings values in tracking system outdated.
Whole House Performance Programs	Program logic/theory well-defined, customer satisfaction is high, participation data tracked.	QA/QC process may be hindering the participation process, more training/mentoring of contractors, increase marketing of non-energy benefits, more support for contractor marketing efforts.

Program	Consistent w/ Best Practices	Inconsistent w/ Best Practices
Comprehensive Manufactured and Mobile Home	Delivers multiple programs in targeted neighborhoods through one delivery approach, clear target market, substantial expertise in targeted market, delivers a suite of measures relatively easily for homeowners, employs multiple marketing strategies that respond to limitations of prior marketing strategies	None identified
Home Energy Efficiency Survey	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked.	HEES could have better placement on SDG&E website, program managers have limited data access, flow of participation from HEES to other programs not easily determined.
K-12 Energy Efficiency Education Program	Curriculum development, website development for teacher recruitment	Website does not provide content that would encourage teachers to use on an ongoing basis.
HVAC Tune-Up Program	Program logic/theory well-defined, simple participation process, clearly defined management roles, customer satisfaction is high, participation data tracked, QC/verification done on installations.	Lack of contractor incentives, no contractor marketing allowed (may not be needed).
ENERGY STAR Quality Installation/Quality Maintenance Program	Program logic/theory defined but untested, clearly defined management roles, contractor training provided, participation data tracked, leverages ENERGY STAR logo, QC/verification done on installations.	SDG&E logo not used, effectiveness of program marketing and training unclear as program is new and has no participation at the time of this report.

3.4 GIS Analysis of Program Participation

As noted in section 2.4, the evaluation team used GIS to map different elements of the SDG&E customer population. In particular, GIS data allowed the team to characterize the entire SDG&E customer population by income and race (based on 2010 US Census data at the census block level), and then overlay information on program participation. As a result, the team was able to examine how program rebate dollars are distributed across the population and to identify any areas that might be underserved or missed by the Residential Programs.

Table 10 shows the amount of program support provided by income group for the general Residential Programs. The first column shows that the level of rebates received per household

generally increases by income. However, when the cost of measures is included, it is apparent that the cost of equipment purchased also increases by income. The column on the far right shows the share of measure cost that is covered by the SDG&E rebate by income and indicates that program support is relatively even across incomes once the cost of the equipment is taken into account. The share of measure cost covered by the rebate is significantly higher for the lowest income groups.

Table 10: Residential Program Rebates and Measure Cost by Income

Percent Below 150% of Poverty (Quintiles)	Residential Programs (Rebate $/Household)	Residential Programs (Measure Cost $/Household)	Percent of Residential Program Measure Cost Covered by the Rebate
Least Poor (< 6% below poverty)	$10.08	$48.71	20.7%
Next least Poor (6-11% below poverty)	$6.62	$31.64	20.9%
Middle (11-19% below poverty)	$6.98	$32.41	21.5%
Next Most Poor (19-31% below poverty)	$6.47	$33.91	19.1%
Most Poor (>31% below poverty)	$4.28	$14.87	28.8%
Average	**$6.81**	**$31.88**	**21.4%**

Table 11 shows the amount of program support provided for both the standard Residential Programs and the low income program. While this evaluation does not cover SDG&E's low income program, the evaluation team felt it was important to examine it in the assessment of the overall portfolio in order to get a comprehensive picture of program coverage.

As discussed, the amount of rebates received from the Residential Programs increases with household income. However, the amount of support provided by the low income program (by providing for 100 percent of the measure cost), decreases with income. This is as expected, since the low income program is designed to provide the majority of its support to low income households. When these two channels of program assistance are considered together, the amount of program assistance overall increases as household income decreases.

Table 11: Residential and Low Income Rebates and Measure Costs by Income

Percent Below 150% of Poverty (Quintiles)	Residential Programs (Rebate $/Household)	Low Income (Measure Cost $/Household)	Residential Programs and Low Income (Rebates + Measure Cost $/Household)
Least Poor (< 6% below poverty)	$10.08	$9.69	$19.77
Next least Poor (6-11% below poverty)	$6.62	$13.90	$20.52
Middle (11-19% below poverty)	$6.98	$21.49	$28.46
Next Most Poor (19-31% below poverty)	$6.47	$31.25	$37.72
Most Poor (>31% below poverty)	$4.28	$45.45	$49.78
Average	**$6.81**	**$24.88**	**$31.69**

Table 12 shows a similar breakdown of program support by areas containing multi-family housing. This table was created to determine if there are differences in the amount of program support received based on the amount of multi-family housing within the Census block. If there are large differences in the amount of program support received, this could indicate that the multi-family programs are missing a significant part of their target market.

As shown in the table, the average amount of program support (either through the general Residential Program rebates or low income program) is fairly consistent across areas with varying amounts of multi-family housing. Note that areas with more multi-family housing are receiving greater than average support from SDG&E through both the residential and low income programs. Also note that this analysis shows the rebate dollars going to areas with multi-family housing based on Census data, but the evaluation team was unable to determine if the rebate dollars actually went to multi-family residences within these Census blocks.

Table 12: Residential and Low Income Rebates and Measure Cost by Multi-family Areas

Multi-family Quintile Groups (Lowest and Highest Shown)	Residential Programs (Rebate $/Household)	Low Income (Measure Cost $/Household)	Residential Programs and Low Income (Rebates + Measure Cost $/Household)
Least Multi-family (No multi-family)	$7.87	$19.80	$27.67
Most Multi-family (>48% multi-family)	$7.74	$26.96	$34.71
Average (all households)	**$6.81**	**$24.88**	**$31.68**

The data used to create the preceding tables also were used to create detailed maps showing the amount of SDG&E program assistance going to various income classes across the service territory. The following maps present a summary of this analysis, while additional maps are provided in an appendix to the main report. As with the preceding tables, the evaluation team was unable to include rebate dollars provided for the upstream programs such as Lighting, BCE and HEER, because SDG&E generally does not track customer-level rebate data.

Map 1: This map shows the distribution of residential electric customer accounts per square mile within SDG&E's service territory. The pattern follows the normal population patterns, with more accounts located within San Diego and the northern communities near the coast. Note that low income areas (as determined by US Census data and defined as household income at 150 percent of the Federal Poverty guidelines) are marked with a crosshatch in the map.

Map 2: The second map shows the average electricity usage per low income accounts within the service territory, with low income accounts identified in the SDG&E CIS customer data. From this map it is apparent that there are some high-usage low income households, particularly in the eastern part of the service territory that presumably have a high air conditioning load.

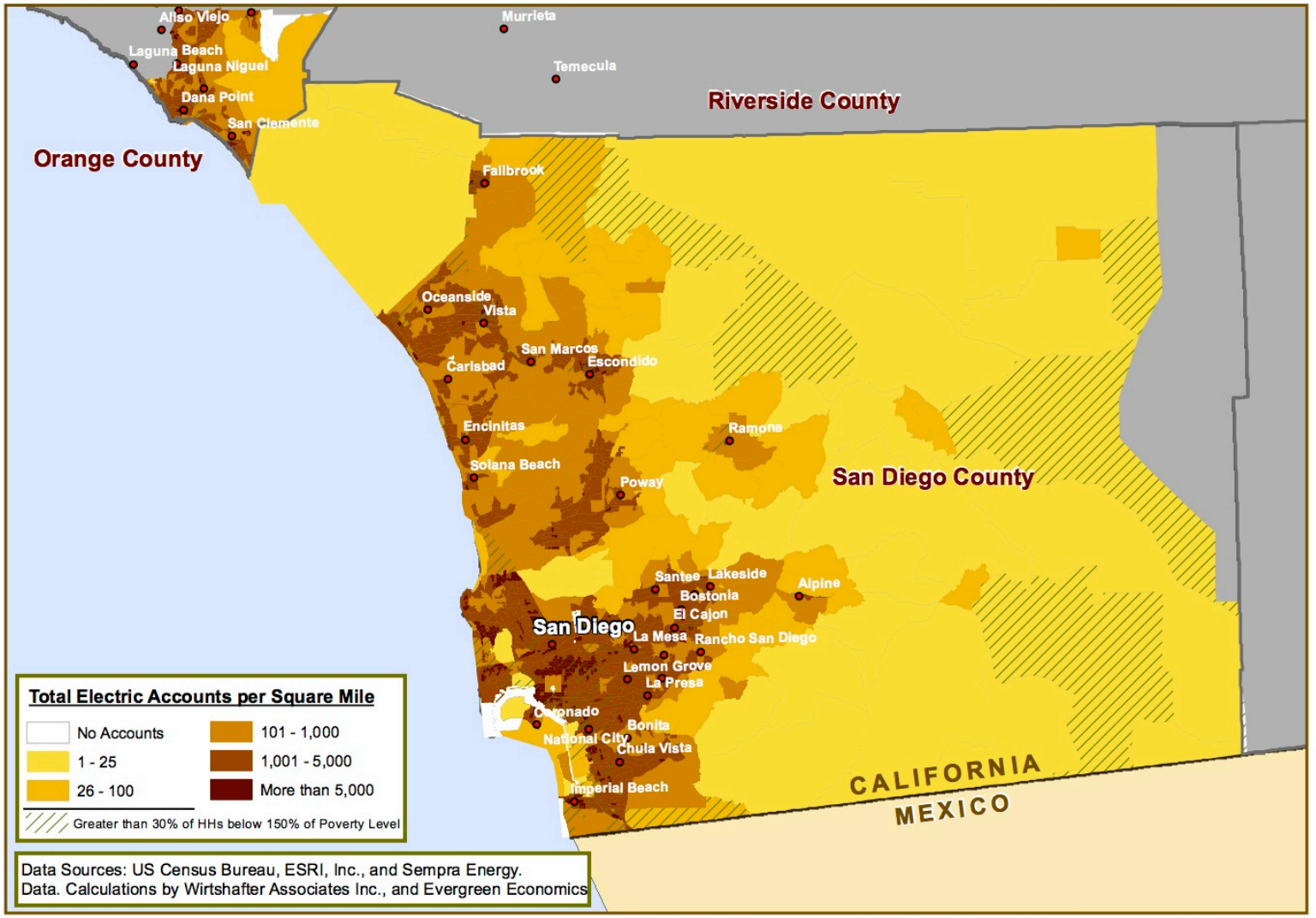
Map 3: The third map shows the distribution of SDG&E program rebate dollars to all residential households, with the distribution broken down by income quintile. This map is consistent with Table 10 above showing that the wealthier households are receiving a greater share of the rebate dollars from SDG&E. Again, this does not include rebate dollars provided through the Lighting Programs, BCE, or HEER, or where individual customers' participation is not tracked. Also note that this map does not reflect the share of the measure cost covered by the rebate. (As shown in Table 10 , the wealthier households also spend more of their own money on the program measures.)

Map 4: The final map shows the distribution of the residential program rebate dollars plus low income program assistance. For the low income program, SDG&E pays the entire measure cost, while the SDG&E rebate pays only a fraction of the measure cost for the residential Energy Efficiency programs. This map is consistent with the information in Table 11, which shows that the lower income areas receive a greater share of rebate dollars from SDG&E even when both the low income and Residential Program rebates are considered.

In summary, the standard residential program rebates, combined with the low income program assistance, appear to be doing a good job in smoothing out program support across income groups. SDG&E provides more rebate support to the lower income households. While some geographic areas may appear to be receiving lower levels of program support (particularly in multi-family areas), it is important to note that these maps do not show participation in prior years, and it may be that these areas were served in prior years. Doing the mapping exercise using participation data from the past five years would provide more comprehensive results. These maps also do not show participation in the lighting, BCE, and HEER programs, and in programs where customer-level participation data generally are not available.

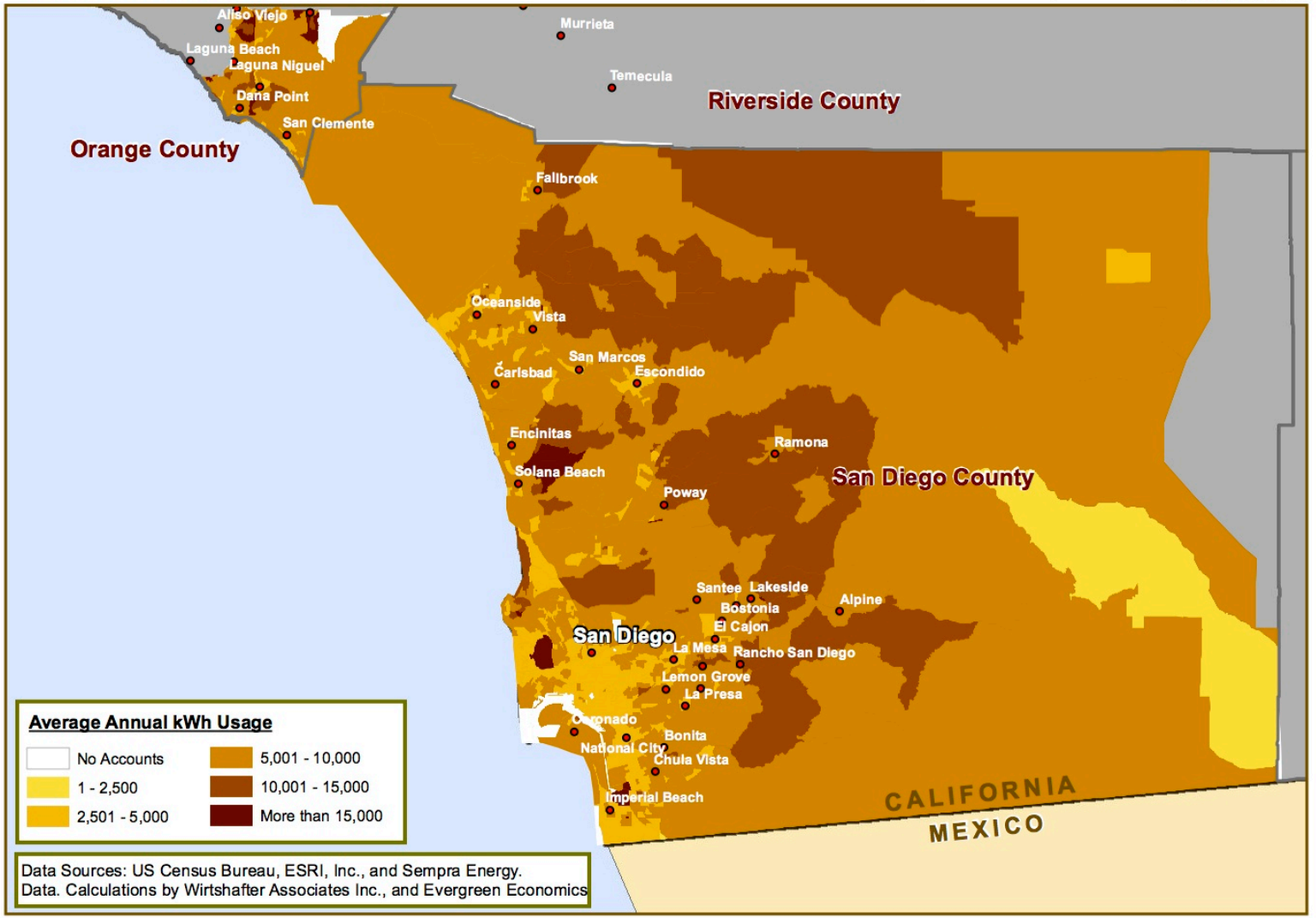
Map 1: Total Electric Accounts per Square Mile, 2011

By 2000 Census Block Group



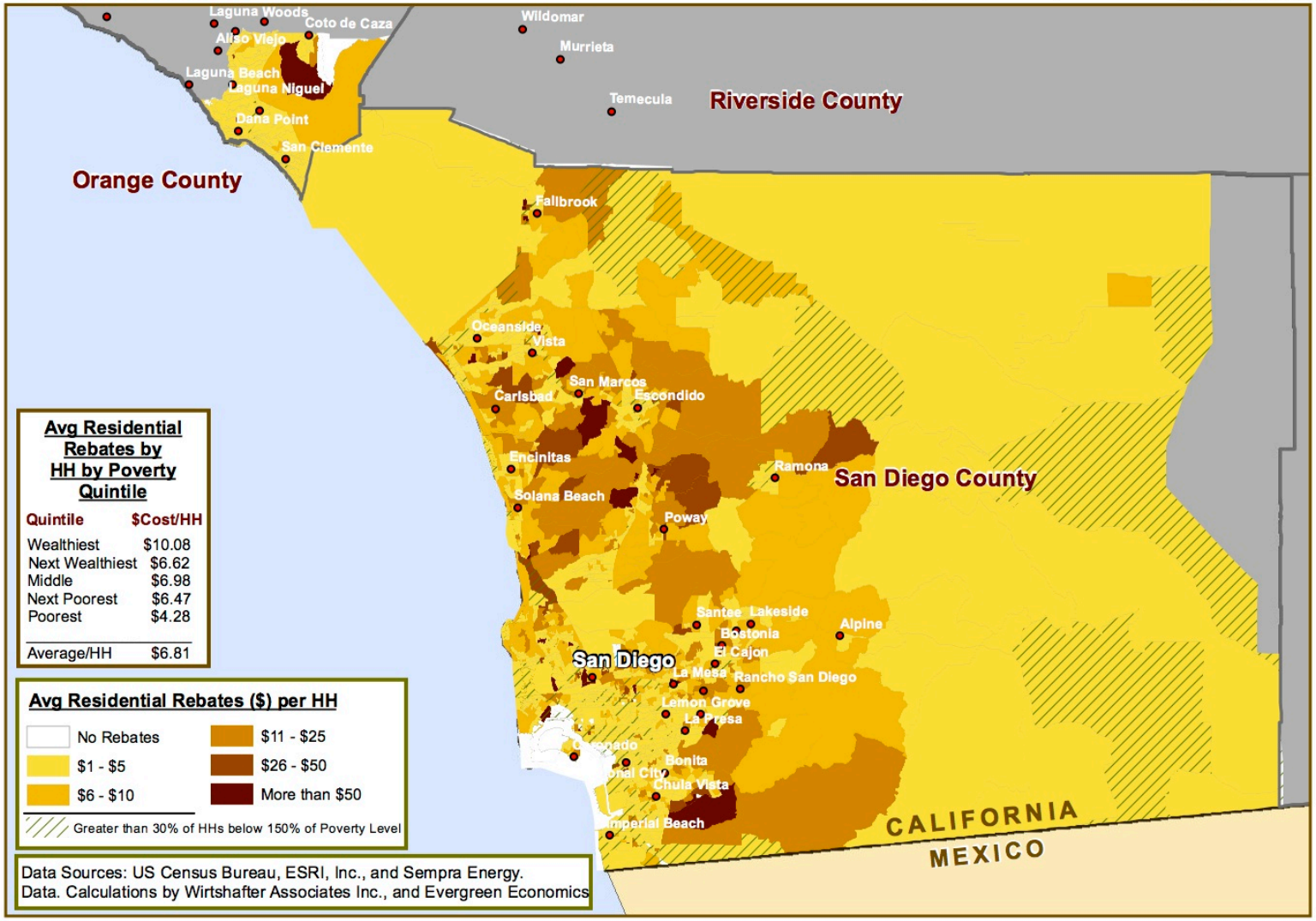
Map 2: Average Annual kWh Usage for Low Income Accounts, 2011

By 2000 Census Block Group



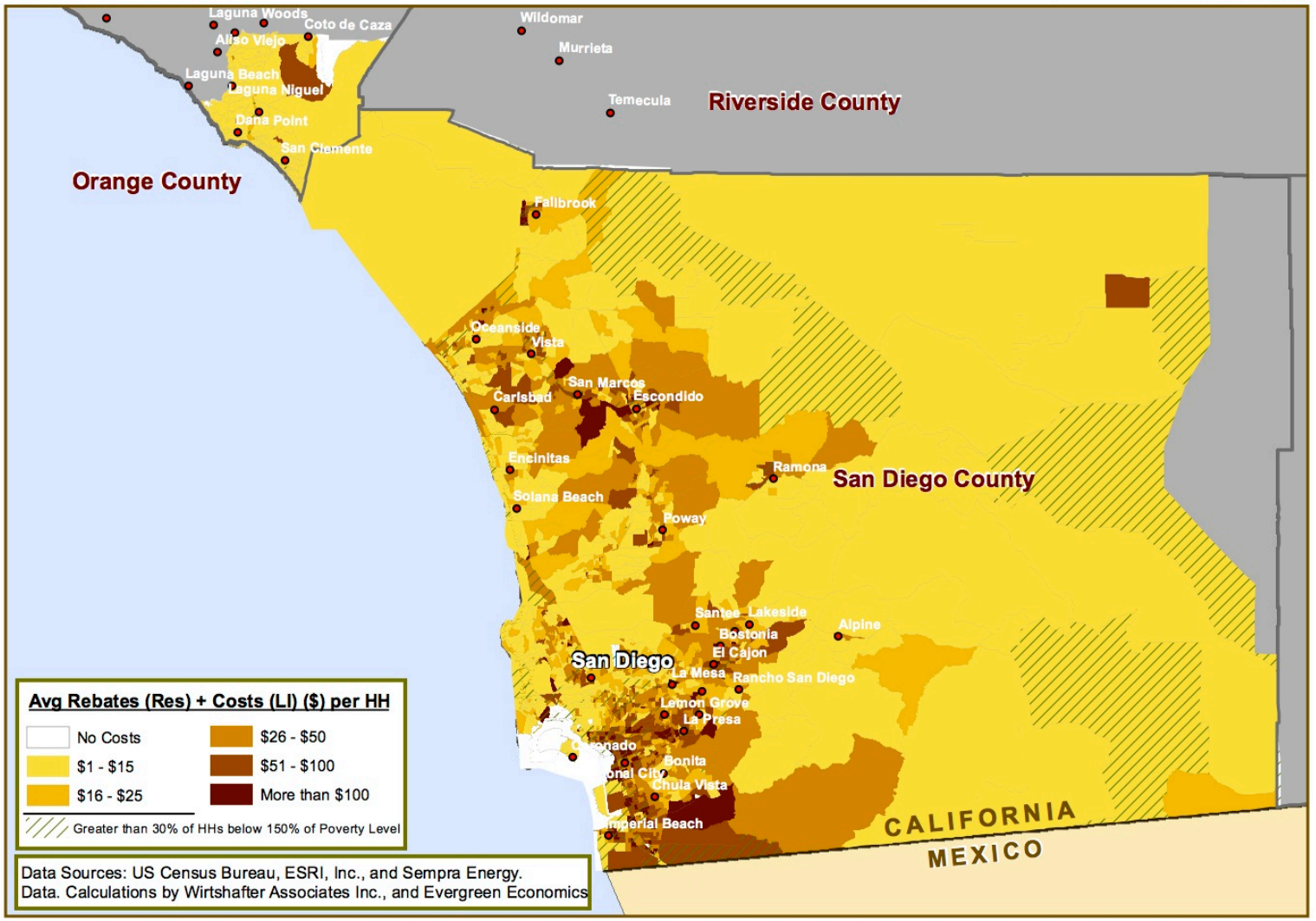
Map 3: Average Residential Rebates ($) per Household, 2011

By 2000 Census Block Group



Map 4: Average Residential Rebates + Low Income Measure Costs ($) per Household, 2011

By 2000 Census Block Group



3.5 Portfolio-Level Observations and Recommendations

The following are some general portfolio-level observations and recommendations for SDG&E's Residential Program portfolio. These observations are based in part on the analysis presented in this chapter, as well as findings from the program-specific analyses discussed in *Chapter 4.*

- **Programs generally are consistent with industry best practices.** In general, the SDG&E programs are mature programs that have been refined to follow industry best practices. These programs typically are clearly designed, with documented program theory and logic, and have well-defined areas of responsibilities between SDG&E program staff and others involved with program implementation. For some programs, there is room for improvement in terms of marketing, rebate payment turnaround, and the level of interaction and involvement with SDG&E. The phone surveys results also indicate that SDG&E customers generally are very satisfied with their program experience.
- **The Residential Program portfolio is providing good coverage of SDG&E's residential customer base.** As shown in the GIS analysis, SDG&E is providing good coverage both in terms of geography and household income. While the basic Residential Programs may appear to favor wealthier households, this discrepancy disappears when the cost of measures and the relative share covered by the SDG&E rebate is accounted for. Furthermore, when the support provided by the low income programs is considered, the level of support provided increases as household income decreases.
- **SDG&E customers generally are concerned about how their energy use affects the environment.** The results of the AKA survey questions clearly show that SDG&E customers have a high level of awareness of and concern about their energy use and how this may affect the environment. They are slightly less concerned about how energy use affects global warming. Other responses indicate a general willingness to take at least some actions to reduce energy use.
- **Increased regulatory burden widely perceived as an issue among program managers.** Program staff expressed that regulatory reporting generally was a burden, and that they did not understand the purpose of many of the reporting tasks. Specific issues included: 1) having to report savings values to the CPUC for savings goals that are different from the values used by SDG&E internally, and 2) inconsistent definitions of "Hard-to-Reach" areas. While the regulatory issues are unlikely to disappear, more communication from the Energy Division to SDG&E program staff on the purpose of these reporting requirements might help alleviate the frustration felt by program staff.
- **Program tracking and data access need to be improved.** Some of the programs do not track program data adequately. In particular, several programs do not have complete contact data for participating contractors and retailers, which makes evaluation and program follow-up difficult if not impossible. For instance, the tracking system for the Appliance Recycling Program often is down or unavailable and customer account records are out-of-date. This makes scheduling pickups and

confirming customer accounts difficult since these tasks must be done manually. Additionally, there is no simple way to track if HEES participants participate in other programs after taking the HEES survey. (At the time of this evaluation, the HEES program was being revamped, so this issue may be addressed in the future.)

- **Rebate payment times need to be shortened.** This evaluation found that slow rebate payment times are an issue with several programs. Some contractors said that they avoid working in SDG&E's territory because they can get paid faster for jobs done in other utility service areas. While the rebate process appears to have improved since the previous evaluation, additional progress in this area still is needed.

4 Program-Specific Evaluation Results

4.1 Upstream Residential Lighting Programs

This section describes SDG&E's Upstream Residential Lighting Program and the experiences of the program staff, retailers, and manufacturers participating in the program. This section covers both the Basic Lighting Program and the Advanced Lighting Program.

4.1.1 Background

The Residential Lighting Program is a mature program. While the core program has been operating for many years, the market and regulatory contexts have shifted significantly since its inception. In response to market shifts, the CPUC split the Residential Lighting Program into the Basic Lighting Program and Advanced Lighting Program.

According to SDG&E's Program Implementation Plans (PIP), the Basic Lighting Program is designed to provide certain discounted compact fluorescent lamps (CFLs) to consumers, rebated upstream of the end-user. The CFLs that are included in the Basic Lighting Program include all uncovered, single-wattage CFLs of 30 Watts or less. The Advanced Lighting Program relies on the same incentive model, and includes all energy-efficient lighting technologies not included in the Basic Lighting Program (e.g., specialty CFLs, LEDs, etc.).

Additionally, the California utility lighting programs are in a major transition from large-scale resource acquisition of cost-effective energy savings to market transformation programs focused on new technologies. As a result, there is much uncertainty regarding the future of CFL rebates and the design of residential lighting programs in general.

4.1.2 Research Overview

Upstream Lighting Program-specific research issues identified in the final research plan include:

- Do customers notice any of the marketing done in-store for lighting products?
- What are the implications for the lighting programs if CFLs are no longer being rebated beginning in 2014 (as currently expected)?
- What are the program's characteristics in terms of geography and demographics (GIS analysis)?[1]
- How is the program performing as determined by the PPMs?

[1] The Lighting Program GIS analysis will be delivered as a separate addendum to this report.

4.1.3 Data Collection Activities

The evaluation team designed the data collection activities in response to the researchable issues. As shown in Table 13, the evaluation team completed four qualitative and quantitative data collection activities for the Residential Lighting Program evaluation: program staff interviews, a general population survey, interviews with retailers, and interviews with manufacturers.

Table 13 shows which data collection activities aimed to answer each researchable issue.

Table 13: Residential Lighting Data Collection Activities

Tasks	Achieved Sample	Objective
Program staff in-depth interviews	2	Learn about the Residential Lighting Programs
General population consumer survey (CATI)	391 CFL purchasers	Identify participants and gauge their experience with and perceptions of the efficiency measures they purchased. Also to collect information on non-participant attitudes and program awareness
Participating retailer survey (CATI)	15	Learn about the Residential Lighting Programs
Lighting manufacturer in-depth interviews	9	Learn about the Residential Lighting Programs

4.1.4 Research Findings: Program Staff

This section presents the results of interviews conducted with program staff. Topics discussed include regulatory issues, supply and demand issues, and consumer education.

Regulatory Issues

Program staff reported that one of their most challenging tasks is balancing program goals for energy savings with the Energy Division's market transformation goals. Underpinning this issue are divergent perspectives on the relative saturation of CFLs in the lighting market; the Energy Division believes that the market is saturated with basic CFLs while SDG&E does not.

The program staff reported difficulties managing the competing goals. They noted that it is difficult to reach their energy savings targets within budget when they also are required to pursue PPMs related to market transformation and the strategic plan. Program staff cited two

issues in particular: 1) the goals in the PPMs do not align with the program goals, and 2) the PPM goals are difficult to track and require program staff to focusing time – and budget – on metrics that do not pertain to their program goals.

Program staff said that the portfolio relies on cost-effective savings from the Lighting Program in order to meet cost-effectiveness and overall energy savings goals. Staff commented that meeting their goals within their budget sometimes requires them to promote cost-effective measures that may not best satisfy their customers' wants and needs. Underperforming programs, particularly HEER and HVAC, amplify this issue.

Supply and Demand

Program staff mentioned two program issues related to supply and demand. First, the program is required to track linear monthly goals, which are at odds with non-linear supply from manufacturers. Most (if not all) CFL manufacturers are in China, so the supply is variable. Staff noted that Chinese New Year celebrations and other factors that impact trade with China directly affect the program's ability to produce monthly results. Additionally, sales consistently increase during the "lighting season," which is roughly the fourth quarter of the year. Despite non-linear monthly sales, program staff indicated that annual sales targets are reasonable and that they meet them regularly.

The other issue with supply and demand is that lighting products compete for shelf space with all products carried by retailers. Program staff said that, if the program reduces or removes incentives for products such as CFLs, some stores will replace them with higher sales/profit products. Program staff also noted that lighting rebate programs typically have a very minor effect on retailers' total sales and revenues. This indicates that convenience and competitive price points are essential to their participation.

Program staff emphasized that the evaluation team should speak with stores' lighting buyers about issues related to supply and demand. Unfortunately, the evaluation team had limited contact information for buyers at participating stores, and little success in engaging them in discussions.

Marketing and Education

Program staff mentioned a lack of consumer education as a barrier to participation in the program and satisfaction with lighting products. They said it is very important for consumers to understand that there is an equivalent CFL for every incandescent application. Additionally, while they believed that there is no substitute for marketing energy-efficient lighting products in the stores, the program also must educate consumers before they enter the store in order to help them make wise lighting choices.

4.1.5 Research Findings: Consumers

In 2011, the evaluation team hired CIC Research to conduct a general population survey of 600 SDG&E residential customers. The survey contained questions about recent CFL purchases and installations.

Of the 600 survey participants, 391 (65 percent) had purchased one or more CFLs since January 2010. Across the entire survey population, respondents had an average of 10.4 CFLs installed in their home. As shown in Table 14, this differed significantly among those who had and had not recently purchased CFLs, with almost twice as many CFLs installed by recent purchasers. However, survey respondents reported similar numbers of incandescent bulbs installed in their home with hours-of-use (HOU) greater than two hours per day. This may suggest that consumers have replaced most high-use incandescent bulbs with CFLs, although there other factors may contribute to this result, since self-reported HOUs and installed lamp quantities frequently are inaccurate.

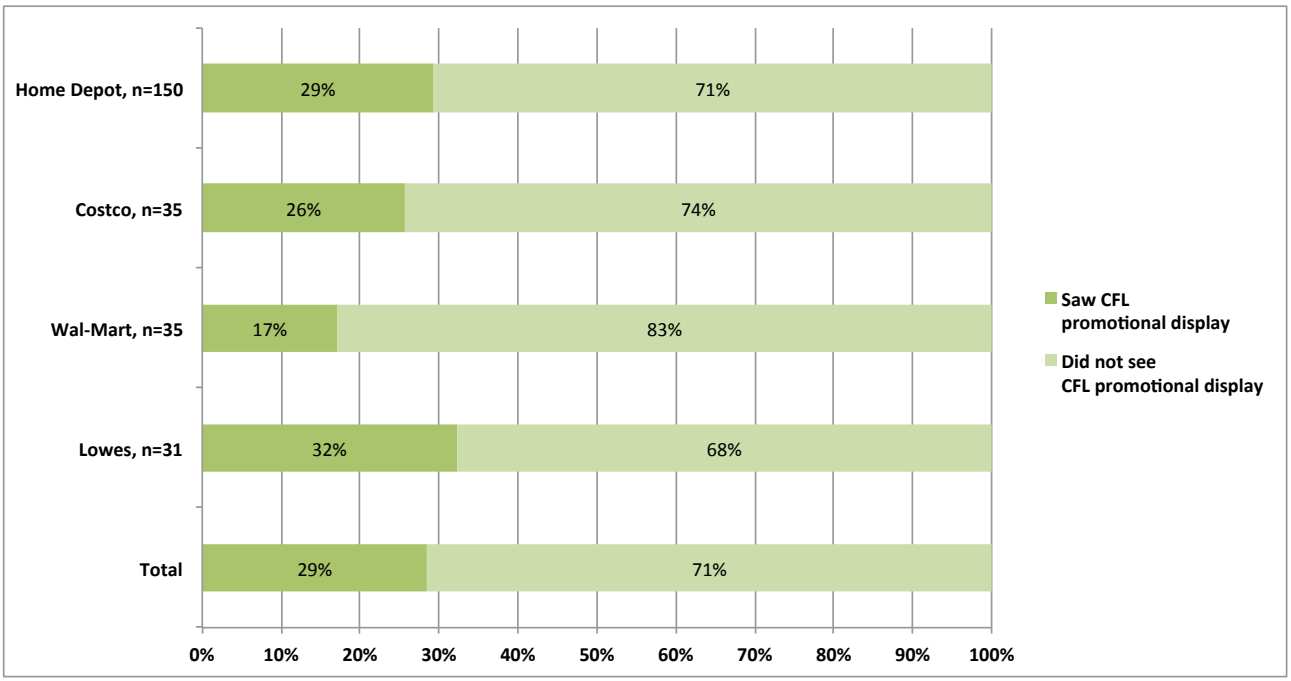
Table 14: Household Lighting Characteristics, General Population

Average	Recent Purchasers (n=391)	Non-Recent Purchasers (n=209)	Overall
Number of CFLs installed in household	12.3	6.6	10.4
Number of incandescents installed in household, with HOU > 2 hours/day	2.8	2.5	2.6

The similar averages of remaining high-use incandescent bulbs among recent and non-recent purchasers suggest that there are reasons why many, but not all, incandescent bulbs have been replaced by CFLs. Survey respondents cited the following primary reasons: 1) the bulbs have not burned out yet (30 percent), 2) they are not right for the fixture (20 percent), or 3) they are not compatible with dimmers (10 percent). This suggests that there is a high potential for consumer education about the availability of specialty CFLs that fit specific fixtures and are compatible with their dimmers. Another seven percent reported that CFLs offer poor light quality and are not physically appealing.

To understand what information is presented in-store to customers, the evaluation team asked all recent purchasers where they had bought their CFLs, and if they recalled any promotional displays. Figure 12 displays information for the top four most visited stores. As shown, just fewer than 30 percent of respondents noticed the promotional displays. Of those who remembered seeing display information, more than half (54 percent) recalled seeing signage explaining CFL energy savings. About one quarter (22 percent) of respondents recalled seeing a mention of the subsidies or discounts for the bulbs. Eight percent of recent purchasers remembered seeing a mention of SDG&E.

Figure 12: CFL Promotional Displays Seen by Consumers (n=305)



Among recent purchasers, half purchased 15-Watt CFLs, while approximately one quarter (26 percent) reported buying 13-Watt CFLs, and 21 percent reported buying 20- to 23-Watt CFLs. Most recent purchases involved at least one multipack (88 percent), while only 27 percent involved at least one single-pack; 18 percent of purchases involved both single and multipacks. On average, respondents reported that the multipacks they purchased contained four CFLs.

The high purchase rate of multipacks aligns with the survey finding that approximately 41 percent of recent purchasers had not installed all of the CFLs they had in their home. Those who had CFLs in storage reported an average of 4.7 uninstalled CFLs. Across all recent purchasers, the average number of CFLs in storage was 1.8 per household.

Respondents were asked their level of satisfaction on a one-to-four scale, with "4" being the highest level of satisfaction. Recent purchasers rated their satisfaction with CFLs at "3.4," on average. Respondents who did not rate their level of satisfaction as a "4" reported they would be more satisfied if CFLs were brighter (29 percent), if the light quality were better (18 percent), turned on more quickly (17 percent), lasted longer (16 percent), and had a better shape or fit (9 percent). Cost was an issue for only three percent of these respondents.

Survey respondents reportedly chose CFLs over standard incandescent bulbs for a variety of reasons. Most respondents chose CFLs to save energy (62 percent), while nearly equal proportions chose CFLs due to longer bulb life (21 percent) and in order to save money on their utility bills (18 percent). Approximately eight percent chose CFLs specifically to reduce their impacts on the environment.

4.1.6 Research Findings: Lighting Retailers

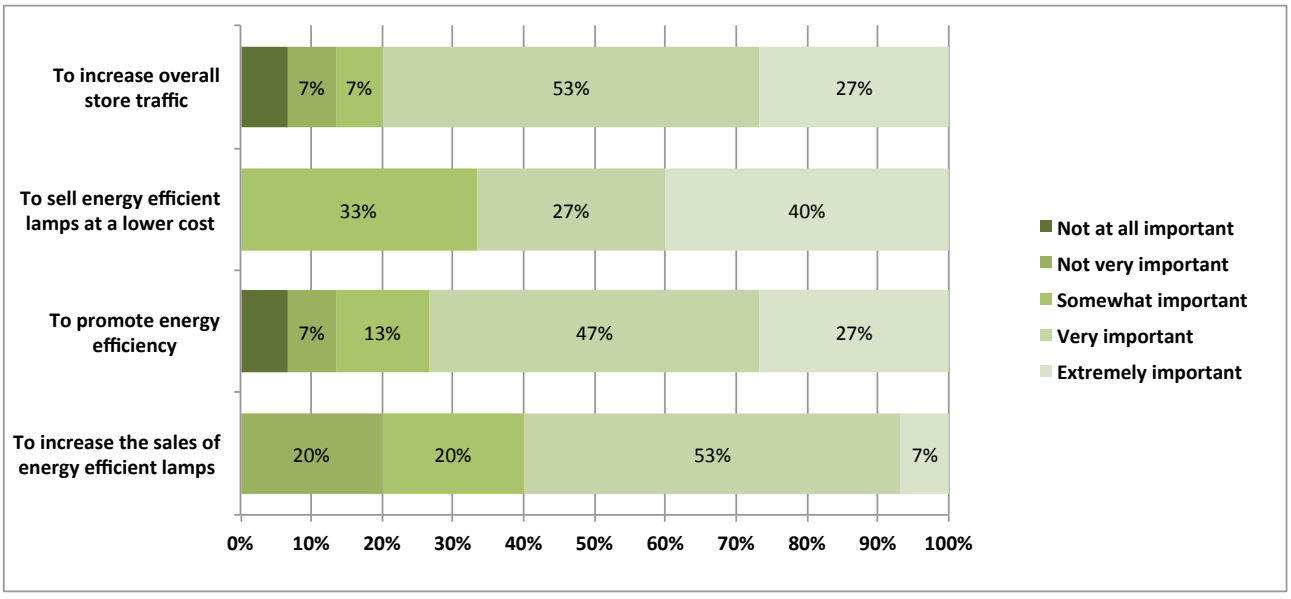
This section summarizes participating lighting retailers' assessments of SDG&E's Residential Lighting Program. In late-2011, the evaluation team hired CIC Research to conduct interviews with 15 lighting retailers that participate in the program. Interviews addressed the following topics:

- Reasons for participation
- Program lighting products carried (lamp types; multipack v. single-pack)
- Marketing activities
- Program satisfaction

Participation

In order to understand their motivations for participating in SDG&E's Residential Lighting Program, respondents were asked to rate the importance of various factors on a five-point scale, with "5" as "extremely important." As shown in Figure 13, 40 percent of respondents ranked selling energy-efficient lamps at a lower cost as "extremely" important. Increasing store traffic and promoting energy efficiency also were very important motivations, as 80 percent and 74 percent labeled these motivations as either "very" or "extremely" important, respectively. Just seven percent of the retailers rated these same factors as "not at all" important. One-third of the retailers said that selling lamps at a lower cost was only "somewhat" important, while 40 percent indicated that increasing the sales of such lamps was "somewhat" or "not very" important motivations for them.

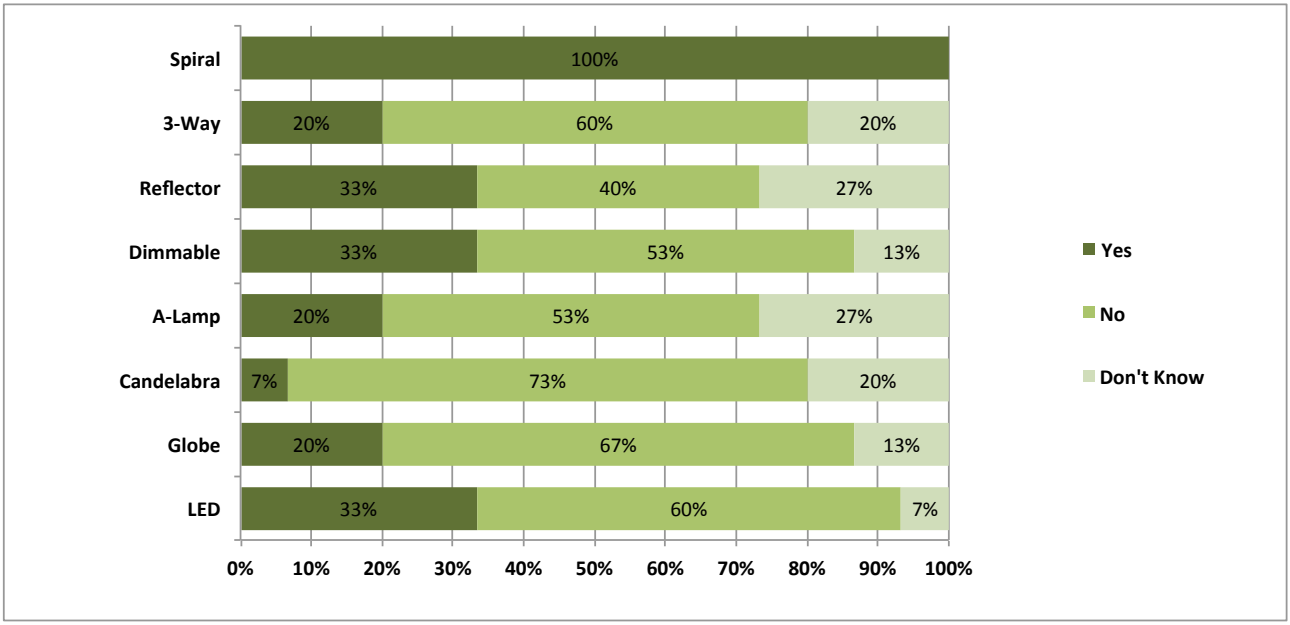
Figure 13: Motivations for Program Participation



Products

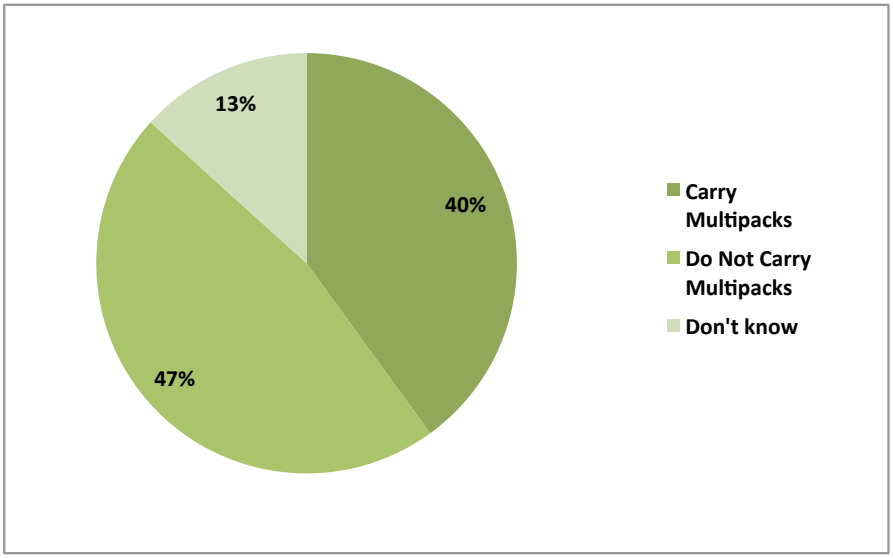
Figure 14 displays the percentage of retailers carrying various types of lighting products. All of the retailers reported having spiral CFLs. One third of the represented stores reported carrying reflectors, dimmable bulbs, and LEDs. One-fifth (20 percent) of these stores carried globes, 3-way CFLs, and A-lamp CFLs. Only seven percent of the stores carried candelabras.

Figure 14: Distribution of Retail Availability of Different Lamp Types



In order to further understand retailer stocking practices, participating retailers were asked if they had carried CFL multipacks incented by the program. As shown in Figure 15, nearly half (47 percent) of the retailers did not carry such multipacks. Interestingly, respondents to the general population survey reported buying more multipacks than single-packs (see Section 4.1.4, above).

Figure 15: Availability of CFL Multipacks



Marketing

Retailers were asked to consider the various sources of Residential Lighting Program marketing materials used in their store. As shown in Table 15, equal proportions (47 percent) of respondents claimed that they received materials from SDG&E, that they received materials from a manufacturer, and that they produced their own marketing materials. Of those that received marketing materials from manufacturers, 57 percent were responsible for placing the materials from the manufacturer in their store.

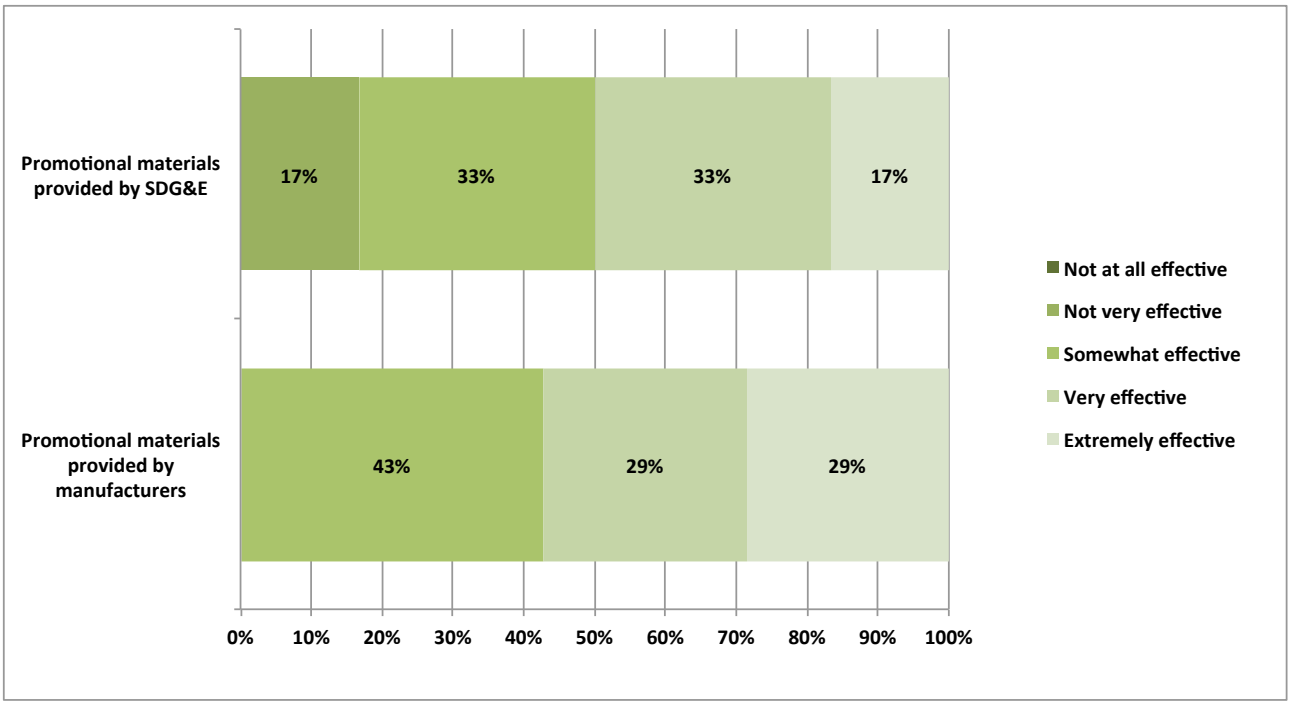
Table 15: Source of Residential Lighting Marketing Materials

Source of Marketing Materials	Percent of Retailers*
SDG&E	47%
Manufacturer	47%
Retailer	47%

*Responses not mutually exclusive; totals may not equal 100%

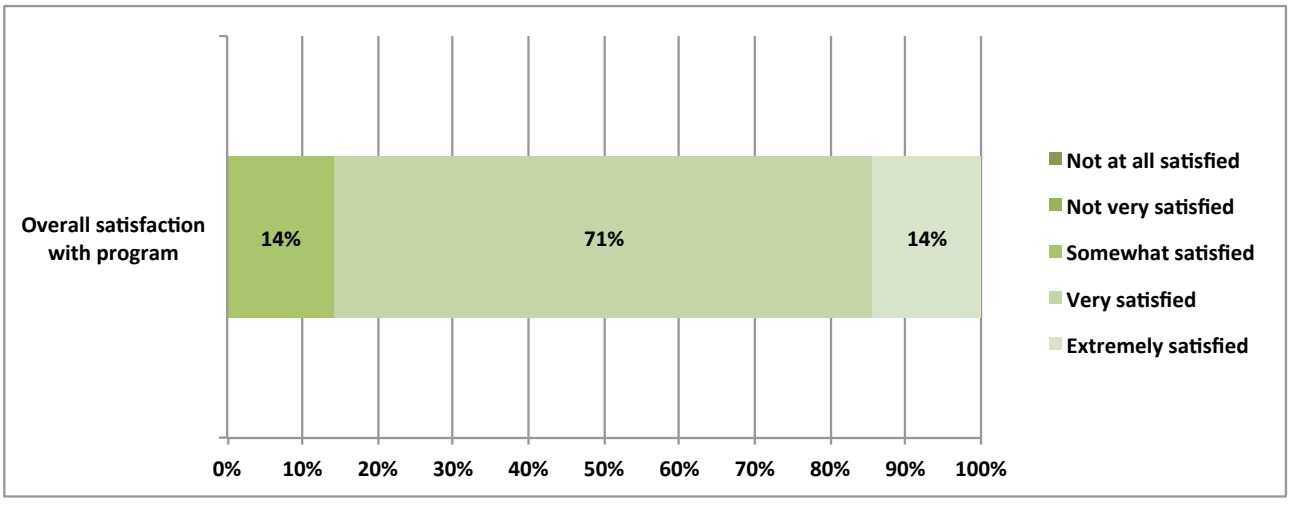
Retailers were asked to rate the efficacy of marketing materials they received from SDG&E and from manufacturers on a one-to-five scale, with "5" being "extremely effective" and "1" being "not at all effective." On average, they rated SDG&E marketing materials as "3.5" and those from manufacturers as "3.9." This may indicate that the materials are broadly effective, but are not effective at targeting retailers' unique customer bases.

Figure 16: Attitudes Towards the Efficacy of Promotional Materials Provided by SDG&E and by Manufacturers



Retailers were generally very satisfied with SDG&E's Residential Lighting Program. Respondents were asked to rate their overall satisfaction with the program on a one-to-five scale, with "5" being "extremely satisfied" and "1" being "not at all satisfied." As shown in Figure 17, the vast majority (85 percent) of retailers was "very" satisfied or "extremely" satisfied. Just 14 percent of respondents were "somewhat" satisfied with the program.

Figure 17: SDG&E Lighting Program Satisfaction



4.1.7 Research Findings: Lighting Manufacturers

In January 2012, Evergreen Economics interviewed lighting manufacturer representatives whose companies participated in the Residential Lighting Programs in order to help improve the program. Of the nine total respondents, eight where equally split between executives (President or Vice President) and positions tailored to overseeing marketing and implementation of energy efficiency programs, while the remaining respondent was a customer service manager. Overall, respondents said they were pleased with the program, indicating that it helps them increase sales of energy-efficient light bulbs.

Participation

Manufacturers reported a variety of reasons for participating in SDG&E's Residential Lighting Program. All eight respondents who gave reasons reported that they participate in order to increase sales. Other factors they mentioned include promoting energy efficiency and providing a reduced price to their customers (each mentioned by two respondents). Respondents also indicated that they participate in the program to bring value to customers, help customers get rid of old technology, help get products branded in areas they normally wouldn't be in, and uphold their company's commitment to being responsible (each mentioned by one respondent).

All of the manufacturer respondents who participated in the program at the time of the survey indicated that their sales had increased due to the program. They cited a broad range of increases, from 200-400 percent to 10 percent. On average the increase was approximately 81 percent; when respondents gave a range, the evaluation team took the middle value when calculating this average.

Seven out of the nine manufacturer respondents surveyed said the reason customers are buying energy-efficient lighting products is to save money (including any response that mentioned "lower price," "lower electric bill," or "pay for themselves over time"). Two respondents said the reason was to save energy. Additionally, one respondent mentioned that students, who tend to be more environmentally focused, probably have a big influence on these types of purchases, although the scale of this influence is unknown.

Manufacturer respondents reported that one percent to 95 percent of their energy-efficient lighting sales in the San Diego area consisted of products discounted through the program. An average of 34 percent of sales consisted of the discounted bulbs. Two respondents were unable to provide an answer as they were new to the program, and one representative was unable to provide an estimate. One representative who reported that the program accounted for approximately 3 percent of their company's regional sales believed that the company would have sold more energy-efficient lighting products in the area, but was limited by the program's cap of $1.5-million in rebates per company. One respondent who reported the 95 percent estimate said that lighting is not their company's primary product, and that most of the energy-efficient lighting products they sell are made through rebate programs. Another manufacturer indicated that the proportion of their sales consisting of discounted lighting

products had dropped from 90 percent to 10 percent (of overall sales) because the program had restricted the kinds of bulbs that could be discounted.

Manufacturer representatives were asked about any feedback about the program they had received from customers. All but one of the manufacturer representatives indicated that customers generally were satisfied with the program. Two indicated that customers appreciated SDG&E's efforts to help them save money on a responsible product. The one respondent who did not receive positive feedback from consumers believed that consumers would like more discounts on LED products rather than CFLs.

Four of the nine manufacturer representatives mentioned some issues with the program, including:

- Complicated program application process for manufacturers
- Program restrictiveness (e.g., requiring stickers on packaging)
- Lack of program funding
- Preferential treatment of certain manufacturers over others.

The other five respondents had had little to no trouble with the program.

Marketing

Seven out of the nine manufacturers provided information regarding program marketing. Three of the seven manufacturer respondents reported that their company received marketing materials from SDG&E to promote energy-efficient lighting; one of these respondents said they were offered marketing materials but declined them. Six of the seven respondents said their company provides marketing materials to the retailers that sell their discounted efficient lighting products. Four respondents indicated that the marketing materials had helped increase sales by an average of 50 percent. One larger manufacturer mentioned that promotional stickers placed on packages made distribution more complex, noting that it is difficult to ensure that stickered packages will be distributed in the intended region. Another respondent said that promotion materials that are tailored for the individual stores (e.g., featuring the store's typical colors) are more successful than general promotional materials. Additionally, one respondent would like to receive more educational pamphlets and also suggested having the program provide educational/promotional booths in the stores.

Effects of The Energy Independence and Security Act 2007

The Energy Independence and Security Act 2007 (EISA) includes new lighting standards that soon will affect the lighting market. In particular, EISA is stimulating active discussions regarding the appropriate extent of CFL market intervention in California and throughout the US.

The manufacturer representatives contacted for this evaluation reported a wide range of EISA-related effects on their business. While they disagreed about the short-term effects they

might experience, there is favorable consensus that long-term sales (or revenue) will remain constant or increase.

Two representatives said that consumers' storage of incandescents will negatively affect their short-term sales, but will have little effect in the long term. One reasoned that manufacturers will produce the right products – and enough of them – to replace the less-efficient technologies. The other claimed that the increase in sales of incandescents in the short term would be offset by CFLs in the long term as consumers exhaust their stockpiles of incandescents.

Four representatives indicated that EISA will have a positive effect on their business, particularly in the long term. All four said that their CFL sales will increase with the phase-out of incandescents. Three of these respondents said that their company produces CFLs primarily (as well as some LEDs), and foresaw an increase in overall sales of these products due to EISA. The fourth manufacturer produces CFLs and EISA-compliant halogens and LEDs. This manufacturer did not predict an increase in sales, since the purchase of a CFL effectively eliminates the purchase of another type of lighting product (e.g., halogen), but said that their revenues likely will increase because CFLs are more expensive than EISA-compliant halogens.

Two representatives indicated that EISA would have little to no effect on their business in both the short term and long term, but cited different reasons for their opinions. One said that consumers were educated on the issue of up-front cost versus payback period, and thus would readily switch to the more-efficient products when the phase-out takes effect. The other postulated that lighting is a relatively inelastic product; people must buy bulbs, and if they no longer can buy cheaper incandescent bulbs, they will have to choose other types (e.g., more expensive CFLs).

Three respondents contrasted their predictions of the effects of EISA on the lighting markets in the US, California, and San Diego. All imagined that the effects will be somewhat more pronounced nationally, due to California's AB 1109 and consumer education.

Effect of the Rebate Phase-Out Plan

Manufacturer representatives also were asked how California utilities' plans to remove rebates for basic CFLs from the utilities' energy efficiency portfolios would affect their business.

Five representatives indicated it would have little to no effect on their business. While one representative could not provide a rationale for this conclusion, the other four mentioned various reasons, including:

- A decrease in CFL sales will be offset by sales of other efficient lighting technologies. (mentioned by two representatives)
- Complicated program paperwork prompted a decision to forgo future funding. (mentioned by one representative)

- My company sells very few CFLs. (mentioned by one representative)

The other representatives indicated phasing out rebates for basic CFLs would decrease sales by an average of approximately 50 percent. Only one of the respondents explained why sales would decrease: Retailers will offer only the minimum amount of CFLs necessary, since shelf space is so valuable, and CFLs will be outcompeted by better performing products for that space. Note that – although this study is not an impact evaluation – this point highlights the complexity of determining net impacts and market effects. If the product is not on the shelf (i.e., the program interaction at the retail level is unsuccessful), then the customer will be unable to purchase CFLs (even if that customer might be classified as a free rider).

4.1.8 Comparison to Best Practices

The evaluation team compared SDG&E's Residential Lighting Programs with the best practices for residential lighting programs identified on the www.eebestpractices.com website and in the last evaluation. Where the best practices from the website and the last evaluation did not overlap, we addressed both. Note that, due to limited evaluation resources, the evaluation team was not able to address all the relevant best practices for this program; these have been denoted with a "NA" in the summary table below.

As with the 2006-2008 evaluation, the program generally is doing what it is intended to do: motivate consumers to buy and install energy-efficient lighting products in their homes. The upstream nature of the program – that rebates and buy-downs are handled at the manufacturer-level – ensures a relatively smooth participation process and high levels of satisfaction among consumers, manufacturers, and retailers (although the Program Manager has a very limited relationship with participating retailers). The relationship with manufacturers could be improved through better communication, as some manufacturers reported having issues with the program, such as program restrictions and a complicated application process.

Regardless of the minor issues mentioned above, manufacturers regard the program highly, as sales of rebated CFLs remain high, largely due to the discounted price. However, the program is required to balance program goals for sales, energy savings, and cost-effectiveness, with the Energy Division's market transformation goals. While staffing is adequate from a program delivery standpoint, the additional complexity of the current situation – and the increase in non-delivery activities – reduces the focus on consumer wants and needs for lighting products and tension between investor-owned utility (IOU) and Energy Division goals.

This mass-market program traditionally does not focus on specific customers or product manufacturers. However, unlike the programs in 2006-2008 and before, due to the separation of Basic and Advanced Lighting Programs, this program is required to focus on specific product types. Despite the increased attention to specific lighting products, there have been limited additional marketing and outreach activities related to the new technologies currently promoted by the program, although the program still appears to be leveraging customer

awareness of the national ENERGY STAR brand. Marketing largely is left up to the retail store, with some assistance from manufacturers and the program.

Table 16: Summary of Residential Lighting Program Best Practices

Category	Best Practice	Rating
Program Theory and Design	Develop sound program plan (Is the program design effective?)	Yes
	Conduct sufficient market research (Is the market well understood?)	**
	Link program tactics to the stated theory	**
Program Management: Project Management	Clearly define program management responsibilities to avoid confusion as to roles and responsibilities (Are responsibilities defined and understood?)	Yes
	Is there adequate staffing?	Yes
	Clearly articulate program changes and maintain flexibility in order to respond to market changes	**
	Clarify requirements for implementation through RFP and contracting processes	**
Program Management: Quality Control and Verification	Verify accuracy of rebates and invoices to ensure that the reporting system is recording actual lighting product purchases by the target market (Does the program verify reporting systems?)	**
	Assure quality of rebated bulbs through independent testing procedures, such as PEARL	**
	Assess customer satisfaction with lighting product quality through evaluation activities (Are customers satisfied with the product?)	Yes
Program Implementation: Participation Process	Develop participation strategies that are multi-pronged and inclusive	Yes
	Allow participation strategies to evolve with time and success	**
	Keep participation simple (Is participation simple / part of a routine transaction?)	Yes
	Are incentive levels well understood and appropriate?	**
	Choose program participation tactics that are clearly associated with the program theory and success indicators	Yes
Program Implementation: Marketing and Outreach	Leverage marketing dollars through cooperative marketing efforts, sponsorship by manufacturers and through coordination with national or regional efforts to promote similar products	Yes
	Does the program use targeted marketing strategies?	No
	Include adequate retail outreach and support to ensure that the product is stocked and advertised and that point of purchase (POP) materials are accurate and clear (Are products stocked and advertised?)	Yes

* Note: "**" means that a particular best practice was not addressed as part of this evaluation.

4.1.9 Conclusions and Recommendations

The Residential Lighting Program is in a period of transition from a resource acquisition model to a market transformation model. This transition is multifaceted, and has proven challenging for program staff. Despite the transition, the program continues to deliver a strong offering to consumers. As more advanced lighting technologies enter the Residential Lighting Program, there is and will be a need for increased focus on consumer education because consumers often are unaware of product availability, diversity, and application.

Conclusions

One of the most challenging tasks for program staff is balancing the program's energy savings goals with the Energy Division's market transformation goals. The program is having a difficult time reaching its energy savings targets within its budget while striving to comply with PPMs related to market transformation and the Strategic Plan. While the two competing definitions of program success are at odds, consumer needs also sometimes are overlooked.

Significant market barriers still exist for many product types incented by the Advanced Lighting Program. Consumers largely are unaware of the benefits of these CFLs (e.g., ability to dim and to fit into a variety of sockets, etc.). In addition, the price for many products remains high and their cost-effectiveness remains low. Furthermore, retailers must see the benefits of stocking each kind of residential lighting product (rebated or not). Lighting products must compete for each store's finite shelf space, so if a product doesn't sell well (due to low awareness, knowledge, high price, etc.), retailers will not carry the product. These barriers must be overcome in order to transform the market per the Strategic Plan.

Manufacturers expressed widely varying opinions regarding the effects of upcoming changes to the lighting market, due to EISA and the phase-out of rebates for CFLs in the Basic Lighting Program. Manufacturers predict that these changes will cause both increases and decreases in sales and revenues.

Recommendations

It is difficult to recommend how to address the competing interests of the Energy Division's market transformation goals and targets for energy savings and cost-effectiveness. SDG&E is a regulated utility and thus must comply with the regulator's requirements. It is essential to understand the purpose of these requirements and consider their long-term implications on the program and the market in order to comprehend their place in the current program cycle.

The evaluation team is able to make two major recommendations: 1) reconsider customers' wants and needs, and 2) remain patient, as the program seems to be in transition.

Furthermore, in order to reduce the impacts of Energy Division requirements on program operations, it is recommended that the program implement certain procedures to facilitate compliance with these requirements. Where possible, the

program could build data tracking and reporting systems so that reporting does not become an ad hoc, last-minute task that detracts from regular program processes. Some up-front planning may affect the program in the near-term, but the evaluation team believes that the program will have to report PPMs and other metrics at least through the mid-term (5-plus years), so the cost of implementing these measures up-front likely is warranted since it will reduce costs in the mid- and long-term.

Other recommendations concern program marketing. It is necessary to invest in significant marketing to raise consumer awareness of products with which consumers are not yet familiar. Where possible, the program can increase marketing regarding the qualities and availability of advanced residential lighting products. This is crucial to increasing the prevalence and market acceptance of high-efficiency products, and is especially important since the Basic Lighting Program likely will phase out CFLs. Program staff can work with manufacturers to plan for these upcoming changes, including this phase-out, and the potential impacts of EISA on the products that are available in the market. Manufacturers are valuable partners, and the program must use this connection to understand market conditions and to transition away from the "bread and butter" CFL of the Basic Lighting Program.

Table 17: Summary of Issues and Recommendations

Issue	Consequences	Steps Sempra Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
Balancing program goals for energy savings with Energy Division's market transformation goals	PPMs and the Strategic Plan are essentially ignored so the program can meet cost-effectiveness and overall savings goals	Strict CPUC-imposed budget splits for Basic and Advanced programs reinforce PPM goals	Improve process by building necessary tracking and reporting systems	H	H
Meeting their goals within their budgets	Requires sacrificing customer wants and needs	None	Consider customer wants and needs as part of the LMT program	H	M
Required to track linear monthly goals, which are at odds with non-linear supply from manufacturers	Monthly reports may suggest poor performance, while annual reports suggest adequate performance	None	Provide disclaimer with monthly reporting activities, if possible	M	L
Lack of education among consumers	Presents a barrier to participation and satisfaction with lighting products	Continued marketing	Increase marketing regarding the availability and qualities of advanced residential lighting products	M/H	H

4.2 Home Energy Efficiency Rebate (HEER) Program

The SDG&E Home Energy Efficiency Rebate (HEER) Program provides rebates to consumers for the purchase and installation of energy-efficient appliances and products. The purpose of the program is to influence consumers to make energy-efficient purchases, thereby contributing to electricity and natural gas savings. Customers receive the rebate immediately if the qualifying appliance or product is purchased at a retail location that participates in the point-of-sale (POS) portion of the program; otherwise, customers must submit an online or mail-in application form to receive the rebate. Rebate amounts for each measure incentivized by the program are listed in Table 18.

Table 18: Rebate Amounts by Measure Type

Measure	SDG&E Customer Incentive
Clothes washers	$35
Dishwashers	$30
Furnaces	$200
Insulation (attic or wall)	$0.15 / ft2
Pool pump and motor	$200 [a]
Refrigerators	$25
Room air conditioners	$50
Showerheads	$15
Water heaters (gas or electric)	$30
Water-saving kits [b]	No cost
Whole-house fan	$50

[a] There is also a $100 contractor incentive for pool pumps.

[b] Water-saving kits include three faucet aerators and a low-flow showerhead. These are available at no cost to customers at community events or through an online request submitted via the SDG&E website.

The rebates are marketed primarily through in-store marketing materials developed by SDG&E. In-store marketing materials include: fact sheets in both English and Spanish that list the rebated products, rebate application forms available in non-POS retail locations, and decals placed on qualifying appliances at POS stores. A display located at the counter or in the appliance aisle contains the facts sheets and rebate applications.

WSA Marketing is contracted by SDG&E to provide retailer management services. These include monthly phone calls to each store location and quarterly in-store visits. During the phone calls, WSA Marketing staff determines if the store needs additional marketing materials and then mails any needed materials to the store. During the in-store visits, WSA Marketing

staff replenishes promotional materials and conducts brief training with any new staff or those who need to refresh their information about the program.

WSA Marketing also conducts formal 30- to 45-minute retailer training annually. Topics include program incentives, procedures for filling out rebate forms, how to use the fact sheets, and cross-selling appliances (e.g., ensuring that appliance staff knows about the rebates for water heaters). Trainings are conducted in an interactive PowerPoint format. In addition to training store sales associates about the HEER Program, WSA Marketing staff also discusses a brochure about the Appliance Recycling Program. Field representatives explain the qualifying product criteria (size and in working order) and eligibility requirements (must be a SDG&E customer) for appliances to be recycled through SDG&E.

4.2.1 Background

The HEER Program is a mature program. Previously, it was known as the Single Family Rebate Program.

The HEER Program Manager noted that, although the program has savings goals, they represent a relatively small portion of the savings targets for SDG&E's residential portfolio, and the program is considered more of a "touch point" for the customer.

In addition to the measures listed in Table 18, the program offered incentives for a few additional measures briefly during 2009. These included rebates for ENERGY STAR televisions and computer monitors as part of a pilot. The program also briefly offered a POS rebate for cold-water laundry detergent at $2.50 per bottle.

Gas water heaters and furnaces were removed from the list of rebated measures mid-way through the 2011 program year, but are being rebated in 2012. Refrigerators and dishwashers were removed from the list of rebated appliances in 2012.

SDG&E began offering the option of submitting rebate applications online on September 31, 2011. In the first week of the online option, approximately 20 percent of all rebate applications was submitted online.

Upcoming Program Changes

There are no changes planned for the HEER Program in the near future. The Program is expecting to run out of rebate funds in September or October of 2012.

Key Research Questions

In addition to the overarching research issues that span all programs, the following key research questions specific to the 2010-2012 process evaluation of the SDG&E HEER Program were identified during initial interviews with program staff:

- Are retailers equipped to provide information about currently available rebates to customers, and do customers report learning about rebates from retail staff?
- Do marketing materials displayed at participating retail locations meet the guidelines and goals for marketing activities?
- Has discontinuation of ARRA-funded appliance rebates contributed to a decline in program participation?
- Are the program-tracking data effective in supporting the program objectives?

4.2.2 Data Collection Activities

Data collection activities for the evaluation of the SDG&E HEER Program included in-depth interviews with program staff, appliance retailers, and participating contractors, as well as telephone surveys with participating customers. These data collection activities are described in detail below.

The evaluation team conducted in-depth interviews with the SDG&E Program Manager and the Principal with WSA Marketing in order to document program delivery and gauge program successes and challenges.

The evaluation team conducted ten in-depth interviews with retailers participating in the program: eight with store-level staff and two with corporate-level contacts. These retailers ranged from large multi-national chains to local independent retailers. These interviews were designed to explicate the retailer experience with the program, including: promotion of the rebates to customers, the extent of promotional materials displayed in participating store locations, and general satisfaction with the program.

The evaluation team also conducted in-depth interviews with 15 contractors participating in the program. These interviews were conducted to gauge their satisfaction with the program, better understand program impacts to contractors' business and customer decisions, and identify which marketing strategies and promotional materials are used the most.

The evaluation team also conducted telephone surveys with 399 customers who had participated in the HEER Program. This included 350 participants whose contact information was known, and 49 participants who were identified through the general population survey. These surveys covered a variety of topics, including: program awareness, motivations for participation, satisfaction with program components, and participant awareness of other SDG&E programs.

4.2.3 Research Findings

This section describes detailed results of the process evaluation of the SDG&E HEER Program and includes a review of PPMs. This review is followed by findings gleaned from staff interviews, retailer interviews, and contractor interviews. Results of the participant surveys are provided last.

Review of Program Performance Metrics

Table 19 shows the status of the PPMs for the SDG&E HEER Program. This program has two PPMs: 1) tracking the percentage of rebates that are provided through the point-of-sale channel as opposed to the online and mail-in applications, and 2) the percentage of participating stores that are located in hard-to-reach ZIP codes. The program tracks both PPMs. However, numeric targets have not been set, and it is unclear how SDG&E should define "hard-to-reach," as program staff have not received feedback from the Energy Division.

Table 19: PPM Summary and Status

PPM	Tracked?	Comment
Percentage of program rebates made through the point-of-sale mode relative to all rebates	Yes	According to the PIP, numeric targets have not been set.
Percentage of participating stores located in hard-to-reach (HTR) ZIP codes relative to all program participating stores	Yes	The Program Manager reported that it is unclear how SDG&E should be tracking this metric. The SDG&E HTR definitions are different from the definitions used by the Energy Division, and the ED has not provided feedback.

Staff Interview Results

The following issues were identified from the in-depth interviews with SDG&E and WSA Marketing staff.

The program has been successful based on the number of POS rebates that have been submitted (approximately 40 percent of all rebates are through POS). A challenge with POS rebates, however, is that SDG&E receives less information about the customer and the installation of the appliance. One way of collecting customer information for POS is to hold raffles for gift cards; customers who purchase qualifying appliances and receive the POS rebate can fill out a form with their contact information for the chance to win a gift card.

The numerous changes to the rebate applications caused program marketing challenges in 2011. For instance, in January 2011, there were no application forms available to place in non-POS stores because the 2011 forms had not yet been printed. These stores received the forms in February, but the forms had to be revised because gas water heaters and furnaces were removed from the list of qualifying products.

The Program Manager reported that keeping in-store promotional materials displayed accurately was a challenge. Stores re-arrange their displays and change the location of

qualifying appliances or products. Therefore, products may be mislabeled or unlabeled. To address this, WSA Marketing conducts quarterly store visits to replenish marketing materials and ensure that they are properly displayed.

Retail staff turnover also is an issue. Retailer training must be conducted continually in order to keep up with turnover. This is especially important in stores that do not allow the display of program signage and where the promotion of rebates is more dependent on retail sales associates than marketing materials. WSA Marketing staff train retailer staff who are present during quarterly store visits, and conduct formal training with all staff on an annual basis.

Program staff sense that the rebates help "close the deal" but do not really drive sales. However, when there are other store promotions going on simultaneously, then the combined discount can be substantial enough to influence purchase decisions. In particular, staff identified the $25 rebate for refrigerators as too small to drive purchase decisions. Furthermore, since almost all dishwashers are ENERGY STAR-rated, one program staff said they were not sure that it is worth rebating them. However, staff considers it beneficial that the program offers a variety of rebates for different products, rather than just a few, because it provides more coverage and offers more opportunities for customer to participate.

In addition to the rebates available from SDG&E, rebates for home appliances were available from April through December 2010 through the ARRA (American Recovery and Reinvestment Act)-funded program "Cash for Appliances." Program staff expressed some sense that the discontinuation of the "Cash for Appliances" rebates may have inflated appliance sales (and thus SDG&E rebates) in 2010, and since "Cash for Appliances" ended in 2010, appliance sales and rebates may have dropped off substantially.

Retailer Interview Results

The evaluation team completed in-depth interviews with ten retail staff: eight with store-level staff and two with corporate-level staff. WSA Marketing provided contact information. WSA Marketing classified the interviewees according to the level of field services they had received. Five respondents had received store visits, training, and monthly communications; two respondents had received training and communications only; and three respondents had received communications only. Retailers interviewed for this evaluation stocked the following qualifying products: water heaters, furnaces, clothes washers, dishwashers, refrigerators, insulation, whole-house fans, and room air conditioners. Interviews were conducted in November and December 2011 and lasted approximately 30 minutes for corporate-level interviews and 15 minutes for store-level interviews.

These interviews were designed to explicate the retailer's experience with the program, including how they promote the rebates to customers, the extent of promotional materials displayed in participating store locations, and their general satisfaction with the program.

Retailer Satisfaction

Retail staff generally were satisfied with the HEER Program. Of the ten retail staff interviewed, eight were either "somewhat" or "very" satisfied. One retailer respondent was neither "satisfied" nor "dissatisfied" because he did not feel that his store had had enough activity with the program to support an opinion. One retailer was "somewhat" dissatisfied due to communication problems with program staff; this retailer is hopeful that the relationship with program staff will improve over the next year.

Training and Promotion of the HEER Program

Retail staff said they used the rebates to promote more efficient appliances, but only in certain situations. Ultimately, retailers said they were trying to meet customers' needs. As one respondent stated, "We are often dealing with a number of other needs for the customer and [the rebate] isn't always at the top of our list." Retailers might mention the rebates when a customer seems to be interested in an appliance type for which the retailer carries qualifying products; however, if the customer steers the conversation in a different direction, retail staff may not have an opportunity to mention the rebates. Customers often steer the conversation, and may or may not ask about energy efficiency. Because energy-efficient products tend to be more expensive initially than others, retailers let customers know about the rebate to help offset those higher first-costs.

Retailer respondents gave mixed responses when asked about the effectiveness of in-store materials. The two retailers that offered POS rebates took different approaches: one had "clings" on appliances that displayed the SDG&E logo and the rebate, while the other retailer offered forms and information with store-created appliance signage. The first retailer indicated that the clings on the appliances from WSA and the water utility help influence sales because they display the rebate right on the appliance. The POS retailer who did not have SDG&E clings said that the promotional materials (forms and rebate information) were not really effective at promoting the sale of ENERGY STAR appliances.

The eight retailer respondents who participated in the program by providing customers with rebate forms, rather than via POS, also had a mixed response to promotional materials. Two were not sure about the effectiveness of promotional materials, and two indicated that they did not have any promotional materials. Of the other four, two felt that the promotional materials were effective, while the other two said that the materials were not. Of the two respondents who felt that the materials were not effective, one reasoned that the products are not impulse buys that can be swayed by a rebate, while the other said that the forms and brochures[2] did not catch customer attention as effectively as stickers or clings on qualifying

[2] It is unclear what retailers were referencing when they used they were referring to the program fact sheets.

appliances. Of the two respondents who indicated that the promotional materials were effective, one said that the brochures and forms helped encourage customers to buy appliances, while the other respondent indicated that if the customers see the forms, the forms might influence their decision.

Respondents at non-POS retail stores said they would like to have more promotional materials placed in their stores. Only the POS stores had decals placed on qualifying appliances, while the non-POS stores were given only the Program fact sheet and paper applications to advertise the program. Three respondents specifically requested some kind of POP signage that could be attached directly to qualifying appliances or near them, but with more power than an application form or brochure/fact sheet. Additionally, two retailers specifically noted that they did not have enough brochures and forms to give customers, noting that they "always run out" and "not everyone is online."

None of the seven respondents whose stores were identified as having received training about the program recalled receiving it. However, with one exception, retailers did not seem to think that training about the program was necessary. They said the program was self-explanatory, and that they only needed to know which equipment qualified for the program incentives. Four respondents indicated that they receive training about the program within their organization, either when hired or on a routine basis, to ensure that sales staff understand the appliances' energy-efficient features. The remaining retailers did not indicate that training was provided on efficient appliances specifically, since they specialize in sales of appliances. One retailer who received only communication from program representatives, but no training or store visits, requested that WSA train their sales staff.

Effect of ARRA Rebates

None of the retailers noticed a large drop in sales when the statewide ARRA-funded "Cash for Appliances" rebates ended. Only one said that the ARRA rebates pushed a lot of product when they were first available. This respondent noted that, while current-year sales were down slightly, he would not characterize it as a drop in sales.

Contractor Interview Results

Other than contractors receiving incentives for pool pumps, the program does not systematically track contractors participating in the program. Even for pool pumps, the program tracking database contains only the name of the business, but not contact names or phone numbers. To identify contacts for contractor interviews, the evaluation team identified participating contractor business names in the program-tracking database and searched the web to locate phone numbers. Thus, 13 of the 15 interviews were completed with contractors receiving a pool pump incentive and only two were completed with contractors assisting customers with the remaining rebate offerings. Interviews were conducted in November and December 2011 and lasted approximately 10 minutes.

Contractor Satisfaction

Contractors generally were satisfied with the HEER Program. On a scale of "very dissatisfied" to "very satisfied," eight of the 15 respondents gave a rating of "very satisfied" and seven gave a rating of "somewhat satisfied."

Factors contributing to program satisfaction included the simplicity of the application forms and the submission process, timely rebate processing, and the contractor incentive for pool pumps. Contractors also noted that SDG&E had done a good job marketing the program to customers, and that the rebates were effective in influencing customers to buy energy-efficient pool pumps instead of less expensive, and often less efficient, models.

Program Awareness & Promotion

According to the Program Manager, the program did not market specifically to contractors. Almost half of the contractors interviewed (7 of 15) learned of the program through either a pool supplier or the Independent Pool and Spa Service Association (IPSSA). This indicates that increased program marketing efforts through these methods could be an effective approach for targeting additional pool contractors.

Contractors also learned about the program by attending training classes. Nine of the 15 contractors interviewed attended some form of training class for the HEER Program. The training classes were provided in a variety of formats including: contractors attending sponsored classes, program representatives providing hands-on training in contractors' shops, and training sessions provided by SDG&E representatives attending IPSSA meetings. All of the contractors who attended a training session stated that they were satisfied with the class and material covered.

Contractor respondents said that SDG&E had done a good job of marketing the program and increasing awareness of the HEER Program. All of the 15 contractors interviewed mentioned some level of customer awareness of the rebate program, and rated this awareness from "very aware" to "aware, but do not know the details." Contractors estimated that between 30 and 50 percent of customers had at least some awareness of the program before working with the contractor.

Contractors used a variety of methods to market the program to customers. More than half of the contractors interviewed (8 of 15) felt that the most effective strategy for increasing customer participation in the program was simply educating the customer on the energy and financial savings that energy-efficient products and services can provide. Contractors marketed the program to potential customers through their company website, mailers to existing customers, ads on Craigslist promoting the rebate, and displays in their company's storefront that show energy-efficient products' energy and financial savings.

Program Influence on Contractors' Business and Consumer Decisions

Contractor respondents reported mixed responses regarding the level of influence of the program had had on their business. Seven of the 15 respondents specifically reported that there had not been any noticeable increase in their client base as a result of the program. The five contractors who experienced an impact to their customer base reported "a slight increase," "a job or two," and "a lot more sales." The remaining three respondents did not directly answer this question.

All 15 contractors agreed that the availability of a rebate greatly impacts customers' decisions to purchase more energy-efficient products. The most widely stated outcome of the program rebates (reported by 12 of the contractors) is that with the rebates, there is a much higher conversion rate to energy efficient products. Several contractors reported that the rebate was the "deciding factor" for customers because it made the more expensive efficient models much more cost-competitive with entry-level models. This was especially true for customers who received the rebate for a variable speed pool pump. One contractor mentioned that the rebates also allowed him to compete with lower-priced, online products.

Participant Survey Results

In order to assess program performance from the participants' perspective, the evaluation team conducted structured telephone surveys with 399[3] program participants. Contact names were taken from the program-tracking data, with the exception of POS customers. Because the program does not track POS customers, contact information for these customers came from the gift card raffle entry forms completed by customers who bought appliances and received POS rebates. Some POS customers also were identified through the general population survey. These surveys covered a variety of topics including program awareness, motivations for participation, satisfaction with program components, and participant awareness of other SDG&E programs. The surveys were conducted in November and December 2011 and lasted approximately 15 minutes.

In order to evaluate the effectiveness of the different delivery mechanisms, the evaluation team stratified the participant survey sample by the method customers used to participate. These methods include participant-initiated non-POS rebates (e.g., refrigerators), contractor-initiated non-POS rebates (e.g., water heaters), POS rebates, and water-saving kits. A separate stratum was created for pool pumps, because of the unique group of contractors who service pools, and due to the relatively high proportion of savings attributed to pool pumps. As this stratification oversampled some groups and under-sampled others, all program-level data presented in this report are weighted (according to number of respective measures in the

[3] 350 interviews were conducted as part of the participant survey. An additional 49 interviews were collected as part of the General Population survey.

population for each of the five strata) to correct for disproportionate sampling. Table 20 lists the population, the number of surveys completed, and sampling weights for each stratum.

Table 20: Participant Survey Stratifaction

Strata	Number of Measures in Population	Percent of Total	Number of Measures in Sample	Percent of Total	Weight
Clothes washer, refrigerator, room AC, dishwasher (non-POS)	34,050	33%	73	18%	1.7923
Pool pumps (non-POS)	1,558	2%	72	18%	0.0831
Water heater, insulation (attic and wall), furnace, whole-house fan (non-POS)	7,247	7%	71	18%	0.3922
POS customers	34,559	33%	111 [a]	28%	1.1963
Water-saving kit	26,426	25%	72	18%	1.4103
Total	**103,840**	**100%**	**399**	**100%**	

Note: Measures not sampled included televisions, computer monitors, and cold-water laundry detergent, as rebates for these measures were offered only for a short time.

[a] POS survey respondents included 49 surveys conducted as part of the general population survey and 62 conducted as part of the participant survey. Rebated measures reported by POS respondents included refrigerators (n = 40), clothes washers (n = 23), dishwashers (n = 23), low-flow showerheads (n = 7), water heaters (n = 5), room air conditioners (n = 4), furnaces (n = 3), insulation (n = 2), and whole-house fan (n = 1).

Detailed findings are presented below. The survey instrument used for this study is included as an attachment.

Program Awareness

Program participants became aware of rebates offered by the SDG&E HEER program through a variety of channels. For many sources, the prevalence of awareness varied by the rebate method. Both POS customers and customers who likely completed the rebate application on their own most frequently reported that their main source of information about the program was the in-store salesperson at the retail location where the product was bought (36 percent). The second most frequently reported source overall was SDG&E bill inserts (20 percent). These inserts were the top source of program awareness for participants who likely had their contractor complete the rebate (e.g. water heaters, insulation, furnaces) and those who received a water saving-kit. Pool service companies were the most frequent source of

program awareness for participants who received rebates for pool pumps (22 percent), which were a small portion of program participants.

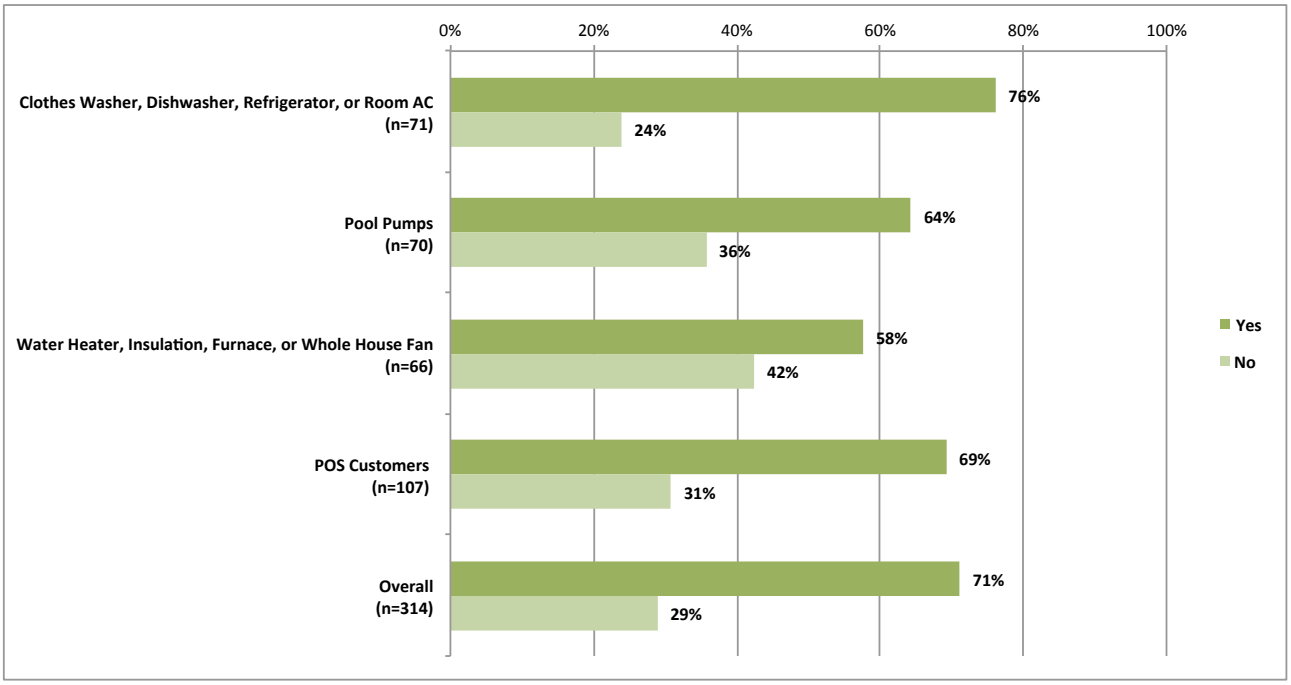
Other frequently reported sources include in-store advertising, newspaper advertising, and television advertising. Participants who received pool pumps and other home mechanical equipment (e.g., water heaters and furnaces) that usually requires installation by a licensed contractor frequently reported that the contractor was a source of program information (17 percent of pool pump participants and 20 percent of participants who bought home mechanical equipment). Table 21 displays the methods by which participants became aware of the program.

Table 21: How did you find out about the rebates available from SDG&E?

Source of Awareness	Clothes Washer, Refrigerator, Room AC, Dishwasher, or Showerhead (n=73)	Pool Pumps (n=72)	Water Heater, Insulation, Furnace, or Whole-house Fan (n=71)	Water-saving Kits (n =70)	POS Customers (n=108)	Overall (n=394)
Salesperson	58%	21%	13%	0%	48%	36%
SDG&E bill insert	14%	11%	24%	47%	5%	20%
Retail store, ad or display	11%	7%	14%	3%	36%	17%
Ad in the newspaper	10%	3%	18%	10%	8%	10%
Ad on TV	12%	6%	18%	11%	2%	9%
Ad on Web	12%	17%	17%	0%	6%	7%
Friend or family	10%	7%	7%	10%	3%	7%
Don't know	6%	10%	6%	11%	5%	7%
SDG&E website	0%	0%	0%	13%	0%	3%
Community event	0%	0%	0%	11%	0%	3%
Contractor	0%	17%	20%	0%	1%	2%
Pool company	0%	22%	0%	0%	0%	0%
Other	8%	7%	7%	3%	2%	5%

However, a majority of participants (71 percent overall) reported that they had already decided to purchase an ENERGY STAR or energy-efficient product before they became aware of the program. This pattern was strongest among participants who likely completed the application on their own and POS participants (76 percent and 69 percent, respectively). While participants in these groups also frequently heard about the program from in-store staff, this finding may indicate that the program may not be strongly affecting the participants' purchase decisions by educating customers at the store. This pattern was less pronounced among those participants who likely worked with a contractor to install the equipment (58 percent). This may be due to the influence contractors can have on participants' decision-making process. Figure 18 compares the percentage of participants who had already decided to buy an energy-efficient product to those who had not yet made a decision.

Figure 18. Had you already decided to buy an energy-efficient model before hearing about the program?



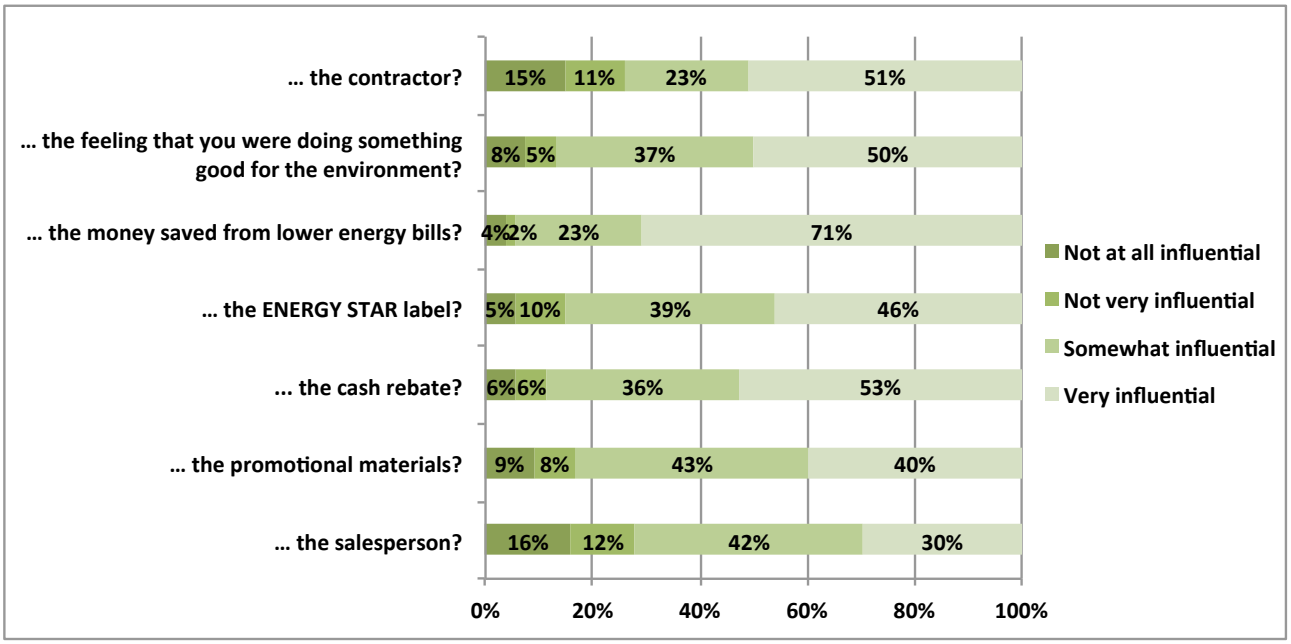
Motivations for Participation

Figure 19 illustrates the level of influence participants reported from a variety of factors. Overall, participants reported that many factors influenced their decision to buy the ENERGY STAR-rated or energy-efficient product. Expected energy savings and the program's cash rebate were the most influential.

The money participants expected to save on their energy bill was the most influential factor; 94 percent of participants reported that these expected savings were at least "somewhat"

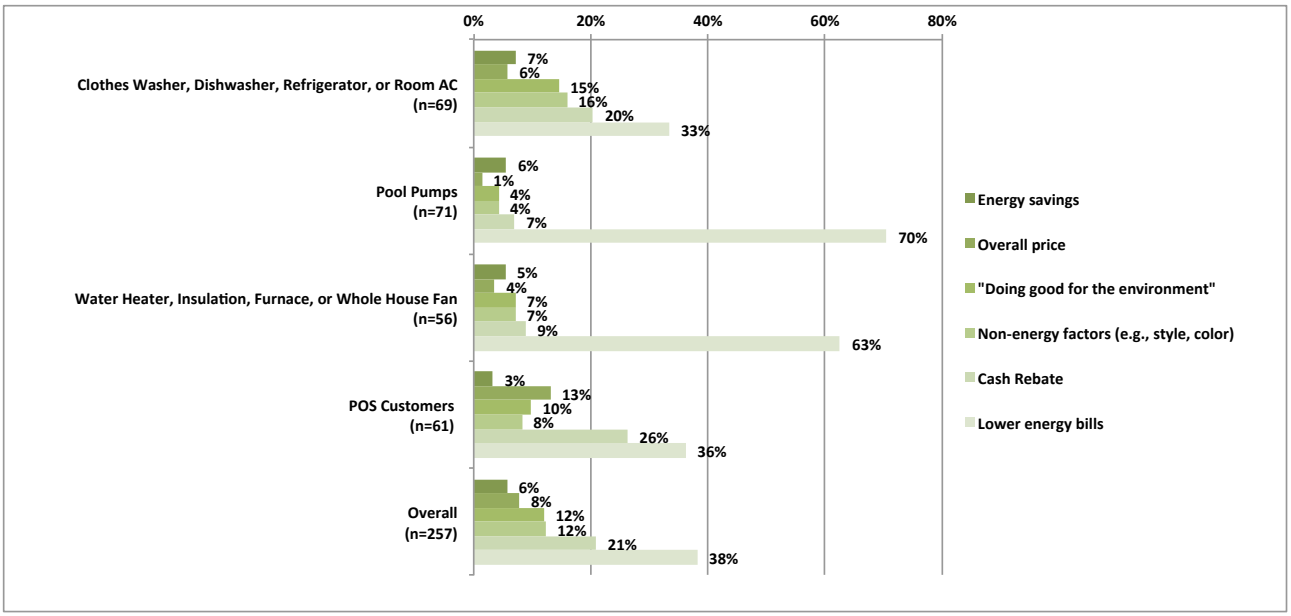
influential. Other factors participants reported as influential included the cash rebate, the ENERGY STAR label, and their contractors (where applicable). In-store sales staff were the least influential – only 72 percent of participants reported that they were at least "somewhat" influential.

Figure 19: In your decision to buy the efficient product, how influential was …



Likewise, when respondents were asked to pick the most influential factor in their decision to buy an energy-efficient product, they mentioned lower energy bills and the cash rebate most frequently (38 percent and 21 percent, respectively). Other frequently reported responses were non-energy factors, a desire to "do good for the environment," and overall price. While lower energy bills consistently were the most influential factor, that motivation was particularly strong for participants who bought pool pumps and mechanical equipment such as water heaters and furnaces. These findings corroborate the influence ratings discussed previously. Figure 20 shows the percentage of participants who reported each factor by survey stratum.

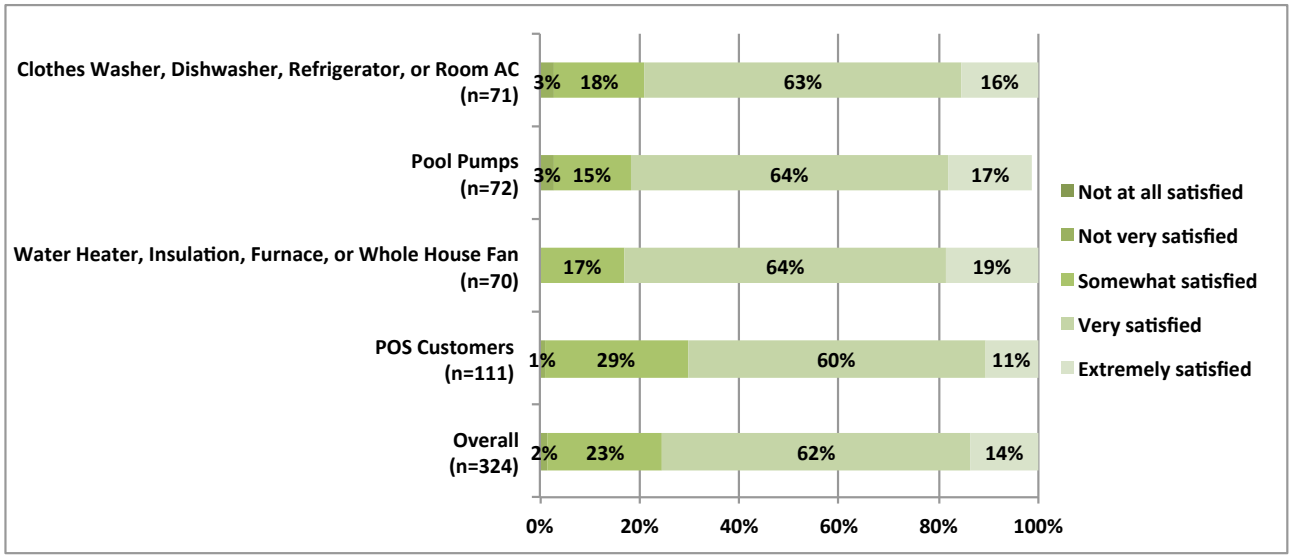
Figure 20: What was the most influential factor in the decision to buy an energy efficient product?



Program Satisfaction

Overall, 75 percent of participants reported that they were either "very satisfied" or "extremely satisfied" with the SDG&E HEER Program. Only two percent of participants reported that they were either "not very satisfied" or "not at all satisfied." Those few participants who were less than "very satisfied" recommended several changes to the program that might have increased their satisfaction with it. The two most frequently requested changes included offering a larger rebate and streamlining the application process. Figure 21 illustrates the overall reported satisfaction with the program by survey stratum.

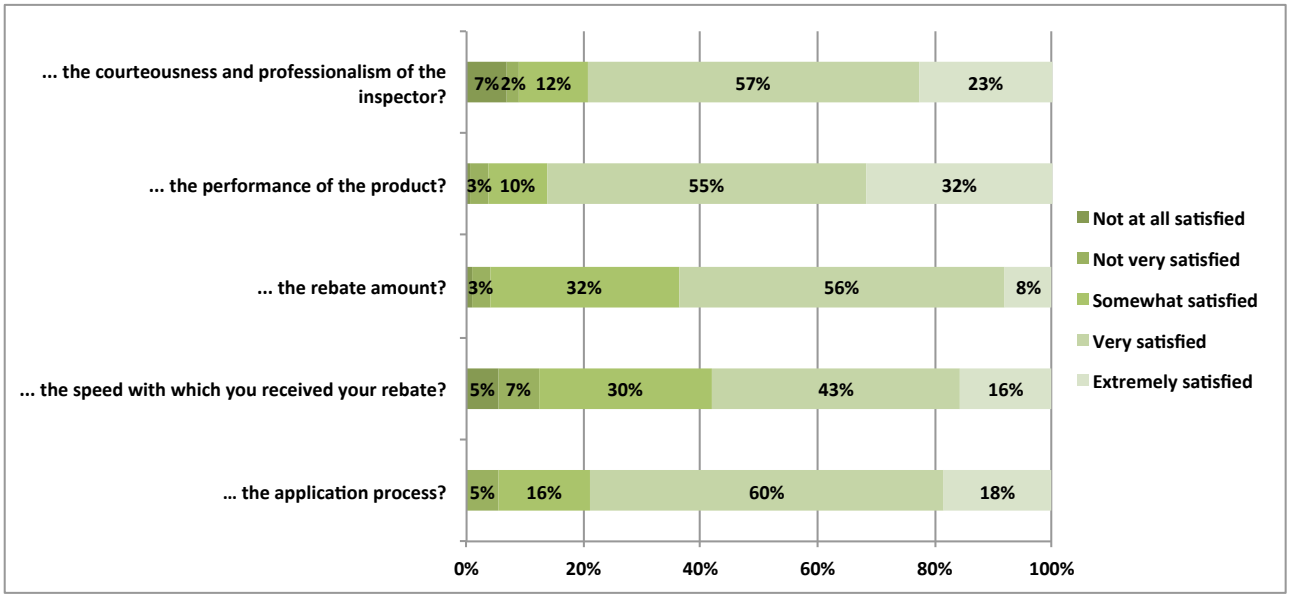
Figure 21: How satisfied are you with the program overall?



Participants also were very satisfied with the performance of the purchased product (86 percent). Since only 54 percent reported seeing a reduction in their energy bills, participants likely considered "performance" to include aspects beyond the equipment's energy efficiency.

In addition, participants were very satisfied with SDG&E's inspection teams and the application process (80 percent and 79 percent respectively were at least "very satisfied"). Though still reporting high levels of satisfaction, participants were comparatively less satisfied with the rebate amount (64 percent) and the speed with which they received the rebate (58 percent). When asked what they felt would have been an appropriate turn-around time, participants most frequently suggested three to four weeks. Figure 22 illustrates the reported satisfaction with each of the program components.

Figure 22: How satisfied were you with ...



Overall, when asked what changes they would make to the SDG&E rebate program, participants most frequently responded that they would not make any changes (39 percent). Participants who would make changes frequently requested that the program increase program awareness through additional advertising (18 percent - desired channels were not specified) and increase the rebate amounts (9 percent).

In addition to the factors such as equipment performance, energy savings, and the program post-inspection, obtaining the necessary permits is a concern unique to those participants working with contractors. Of those who were likely to work with contractors (about 9 percent of the program population), 59 percent reported that they were required to certify that the necessary permits were filed and that a certified contractor was used. Of those, a majority (92 percent) did not have any concerns about this process.

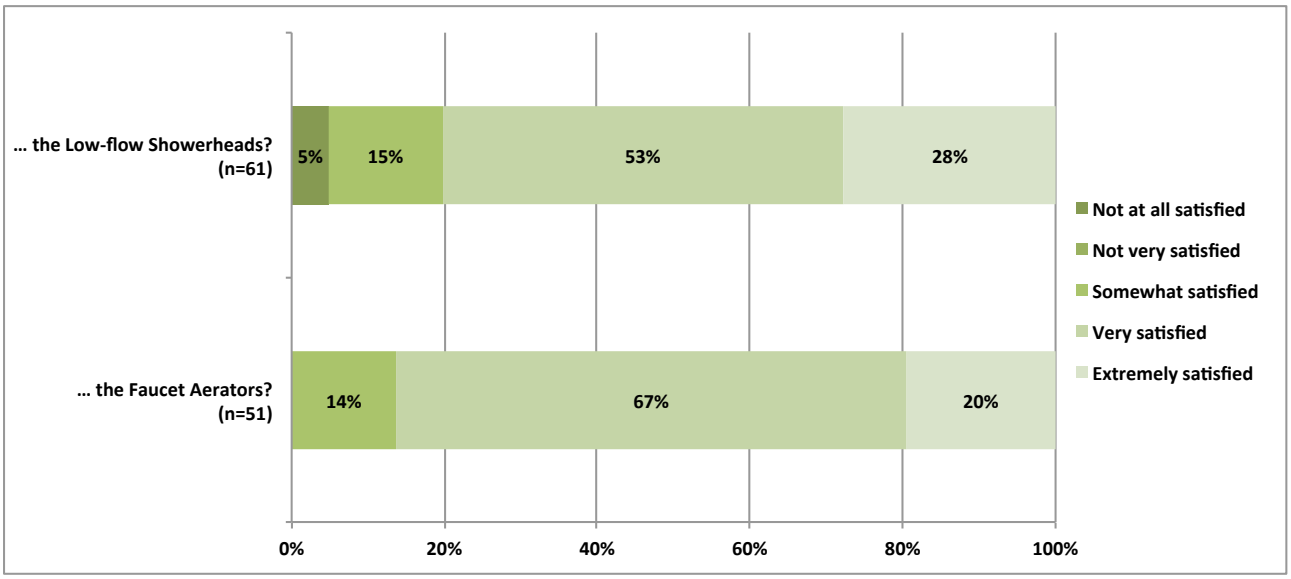
Water-saving Kit

Of participants who received the water-saving kits, 85 percent had installed the low-flow showerhead, and of these, 87 percent still had it installed at the time of the survey.

Seventy-three percent of customers who received the water-saving kit installed at least one faucet aerator, with 26 percent installing one aerator, 21 percent installing two aerators, and 26 percent installing all three faucet aerators. Twenty-three percent of customers who received the water-saving kit did not install any faucet aerators (the remaining four percent could not recall if they had installed the aerators). Their reasons for not installing the aerators included: they didn't fit, they lost them, they didn't think they were necessary, they weren't included in the kit, or they did not have time to install them. Of the 73 percent who installed at least one aerator, 90 percent still had at least one installed at the time of the survey.

Participants who received a water-saving kit were asked about their satisfaction with the low-flow showerheads and faucet aerators included in the kit. Overall, participants were almost equally "very satisfied" with the low-flow showerheads and faucet aerators (81 percent and 87 percent, respectively). Figure 23 illustrates the reported satisfaction with the showerheads and aerators.

Figure 23: How satisfied are you with the performance of the ...



4.2.4 Comparison to Best Practices

Program processes were compared to best practices as outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool.[4] As described below, the evaluation team evaluated the SDG&E HEER Program with respect to best practices in Program Theory and Design, Program Management, and PIP.

Program Theory and Design

The program plan is well-articulated in the PIP, and customers are satisfied with their participation in the program. Seventy-five percent of participants were either "very satisfied" or "extremely satisfied" with the program overall. However, surveys with participating customers suggest that 71 percent of participants already had decided to buy an energy-efficient model before hearing about the program, which suggests that the program may not be influencing purchase decisions for most customers participating in the program.

[4] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

Program Management

Project Management

Management responsibilities for the HEER Program are very well-defined. At the time of this evaluation, SDG&E developed marketing materials, processed rebates, and mailed the incentive checks. WSA Marketing conducted in-store field services, including placement of promotional materials and retailer training.

Reporting and Tracking

While the tracking system is useful for tracking the *number of units* and *characteristics* associated with rebated appliances, the program- tracking data did not contain contractor names, except for contractors that received incentives for pool pumps. However, for pool pumps, only the name of the business was available; the tracking data do not include contact names or phone numbers. It is important for the program to consider tracking contractors that assist their customers with rebates, since they also can be leveraged to market the program to their customers.

The program has two PPMs. For the first PPM, the program tracks the percentage of rebates made through the POS method. However, the program- tracking data do not contain a simple way of identifying POS rebates. The program-tracking data show either: 1) a single rebate (non-POS) application submitted by a customer, or 2) a POS retailer's invoice for all of the rebates they provided in a single month for a particular measure. There is no separate field indicating whether the record is POS or non-POS, which therefore requires an examination of several fields to determine if they contain a retailer name or a customer name.

The program also is tracking a second PPM (measuring the percentage of participating stores located in HTR ZIP codes), but SDG&E and the Energy Division use different lists of zip codes to define HTR. The Program Manager stated that it is therefore unclear which zip codes should be used to track this metric.

The program recently implemented an electronic application process, and online forms are readily accessible. This is a recommended best practice that speeds the participation process and improves the convenience of participation for non-POS customers.

Quality Control and Verification

According to the PIP, the program verifies 10% of installations before issuing rebate checks. SDG&E also performs random program record inspections to verify the accuracy and completeness of program-tracking data according to program guidelines. The evaluation team did not verify the execution of quality control and verification activities.

Products rebated by the program appeared to be high-quality, as 86 percent of participants were either "very satisfied" or "extremely satisfied" with the performance of the appliance or product.

Program Implementation

Participation Process

Participation in the program is relatively simple. This is especially true for POS customers, as they receive the rebate instantly at the cash register. Customers also may apply for rebates online. The program involves both larger retailers that can comply with the POS sales reporting requirements, and also allows smaller retailer to participate by providing paper rebate applications in their stores.

Marketing and Outreach

The program capitalizes on the ENERGY STAR brand recognition as part of the criteria for qualifying appliances. The program conducts training and provides rebate applications and promotional decals for qualifying appliances to participating retailers. While retailers disagreed on the effectiveness of the promotional materials, retailer respondents at non-POS stores expressed a desire for more promotional materials, such as appliance decals. Interestingly none of the retailers interviewed recalled receiving training on the program, but they felt that that training was not necessary. Pool contractors appeared to be taking advantage of training sessions that provide program information, and roughly half of the contractors interviewed actively promoted the program rebates to their customers.

4.2.5 Conclusions and Recommendations

Conclusions

Primary research findings stemming from this process evaluation of the SDG&E HEER Program are outlined below. Overall, customers, retailers, and contractors were satisfied with the program. However, the influence of the rebate on purchase decisions may have been limited, as the majority of participants reported that they decided to purchase an energy-efficient appliance or product prior to hearing about the program.

- **Overall satisfaction with the program was quite high.** Customers were "very satisfied" with the SDG&E HEER program overall. Customers who received rebates generally were satisfied with the various program components, including the rebate amount, inspection process, application process, and performance of the rebated product. Likewise, participants who received water-saving kits were satisfied with the low-flow showerheads and faucet aerators. Participating retailers and contractors also were generally satisfied with the program.

- **Most retailer respondents reported that some form of promotional materials were being used in the stores** – typically application forms and fact sheets –with the addition of appliance decals at POS retailers only. Non-POS retailers participating in the program reported that they would like to be able to use appliance decals to promote the rebates.
- **Retailers had no awareness of any training for the HEER Program.** This could be due to staff turnover, or the fact that not all staff were present during quarterly store visits conducted by WSA Marketing. While retailers reported that they had not received training, they also noted that they did not think training was necessary. Retailers reported that they used the rebates to promote energy-efficient products, but this was not consistent and depended on the particular customer interaction.
- **Retailers generally did not notice a drop in sales following the end of the statewide ARRA-funded "Cash for Appliances" rebates.** Only one retailer reported a small decrease in sales when the rebates ended. This suggests that the discontinuation of the ARRA-funded appliance rebates may not have adversely affected the program.
- **In-store sales staff were the most frequent source of program awareness reported by SDG&E HEER participants,** particularly for equipment selected by the participant (e.g., POS rebates and white good, such as home appliances). However, when asked to rate the influence of various factors on their decision to buy an energy-efficient product, participants reported that the salesperson's recommendation was the least influential factor.
- **The SDG&E HEER program may be having limited influence on participants' purchase decision**. Overall, 71 percent of the participants reported that they already had decided to buy an energy-efficient product before they were aware of the rebates offered by SDG&E. This was especially the case for POS customers and those buying appliances such as refrigerators, dishwashers, and clothes washers. This finding was echoed by one program staff person who felt that the rebates did not necessarily drive sales, as well as by some retailer respondents who reported that the marketing materials were not very effective because customers already had made their decision before entering the store. While contractors reported that rebates for pool pumps were effective in motivating customers to buy higher efficiency equipment, 64 percent of customers who received a rebate for pool pumps had decided to purchase an energy-efficient model before hearing about the program.

Recommendations

Recommendations stemming from these findings are as follows.

- **If the purpose of the program is to act as a touch point for the customer, update the logic model accordingly.** Because the in-store promotion of qualifying products, including marketing materials and promotion by retail sales staff, appears to be an effective means of increasing awareness of the availability of the rebates, consider

increasing the in-store visits in order to ensure that qualifying appliances are properly labeled and retail staff are trained.

- **However, if the purpose of the program is to influence consumers to buy more energy-efficient products, SDG&E may want to consider redirecting the emphasis of program promotion away from retail stores.** The results of this evaluation suggest that customers often learn about the rebates inside the store, but a majority of customers make the decision to buy energy-efficient appliances and products before learning about the rebates. This was especially the case for customers who received POS rebates and those who purchased white goods such as refrigerators, clothes washers, and dishwashers. Because customers may conduct product research online and make much of their decision before entering the store to purchase an appliance, one way to influence the purchase decision is through online banner ads or Google-sponsored links. Then the utility would get credit for influencing customers who report they learned of the program online or through the utility website, before making their purchase decision. The program also could consider leveraging contractors to promote the program to their customers.

Table 22 shows detailed recommendations, and includes a status update on the recommendation from the 2006-2008 evaluation.

Table 22: Summary of Issues and Recommendations for the SDG&E HEER Program

Issue	Consequences	Steps SDG&E Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
06-08 Evalutation Finding: Application processing takes too long.	Rebate processing is inefficient and wait times discourage participation.	SDG&E has developed an online application and increased the number of POS stores. SDG&E has reduced processing time for rebates to three to four weeks.	None	-	-
Most participating customers had decided to buy an efficient appliance or product prior to learning about the program.	If the goal of the program is to promote the rebates as a "goodwill" gesture, then the program appears to be successful. However, if the purpose of the program is to influence consumers to buy more efficient products, then the program may be less successful.	None	Determine the primary purpose of the HEER Program. If it is "goodwill," update the logic model and increase the frequency of retailer store visits. If the goal is influencing purchase decisions, redirect the emphasis of program promotion away from retail stores.	H	H

4.3 Multi-family Rebate Program

4.3.1 Background

The Multi-family Rebate Program (MFRP) is offered to all gas and electric multi-family buildings (consisting of two or more dwellings) in SDG&E service territory. Rebates are available for lighting, hot water, space heating and cooling, and clothes washing technologies. Rebates are provided on a first-come, first-serve basis. MFRP instituted a reservation system to hold money for 45 days after notification of acceptance by SDG&E. Contractors who serve the multi-family sector often are responsible for recruiting participants, selecting and installing the equipment, and processing the rebate check. For most lighting and water-saving measures, the rebate covers the cost of the equipment so that the multi-family property gets the equipment installed for free.

4.3.2 Data Collection Activities

This evaluation includes a telephone survey of 30 participants and 50 non-participants. In addition, the evaluation team conducted in-depth interviews with SDG&E staff and ten current and former contractors serving the program, and ride-along observations with the Quality Assurance/Quality Control (QA/QC) inspector.

The evaluation team also conducted an analysis of the program-tracking database (CRM) to compare the survey sample with all multi-family program participants.

4.3.3 Research Findings

SDG&E's multi-family programs target multi-family tenants through property owners and managers of residential apartments, and mobile home parks. Rebates and direct-install measures are available for eligible multi-family property owners/managers with the long-term goal of saving energy in these properties.

This section of this chapter summarizes the information collected from the telephone surveys and in-depth interviews. Key findings and program information are summarized at the end of the chapter and are followed by recommendations for program improvements.

Survey of Building Owners and Managers

Surveys were conducted with 30 participant and 50 non-participant building owners and managers. The survey instruments are shown in an appendix to the main report. Table 23 shows the activity for the participant sample and the entire program.

Table 23: Comparison of Measures Installed By Sample and Program

Measure	Percent of Sample Who Installed Measure	Percent of All Participants Who Installed Measure
Hardwired fluorescent fixtures	37%	29%
Hardwired fluorescent porch/outdoor lights	3%	1%
Screw-in compact fluorescent lamps (CFLs)	15%	11%
High-efficiency exit signs	0%	1%
Occupancy sensors	1%	<1%
ENERGY STAR dishwashers	1%	3%
ENERGY STAR clothes washers	0%	<1%
Attic or wall insulation	3%	1%
High-efficiency water heaters	0%	<1%
High-efficiency air conditioners or heat pumps	0%	<1%
Natural gas water heater or boiler controllers	0%	8%
High-efficiency boilers	0%	2%
Low-flow showerheads or faucet aerators	27%	31%
Lighting (T-8 or T-5)	13%	12%

As Table 24 shows, virtually all of the respondents in this sample were either owners or managers of rental properties. The tracking database does not provide ownership type, so

there is no way to know if condominiums were participating, but were missed in the sample selection.

Table 24: Types of Multi-family Buildings Interviewed

	Sample of Participants	Sample of Non-Participants
Rental property	30	48
Condominium	0	0
Owner-occupied	0	1
Public housing	0	1
Total	**30**	**50**

One of the confusing elements of this survey is that many of the participant and non-participant buildings either already had been served by the MFRP or other utility efforts, including the Energy Saving Assistance Program. Because of this, it is difficult for respondents to isolate participation in MFRP. Confounding this issue, many MFRP participants said they were not aware of the MFRP, and did not attribute the services they had received to SDG&E. Only five of the 30 respondents mentioned SDG&E as the supplier of the measures they received, and only four of them had used an SDG&E mailing or the SDG&E website to find out about the program.

Figure 24 shows the lighting-related measures respondents reported installing in the last two years. It appears that most non-participants installed measures eligible for incentives offered through the Multifamily Rebate Program but did so without any utility assistance. Conversely, MFRP participants indicated some form of utility assistance for most measures installed.

Figure 24: Lighting Measure Installation by Participant and Non-participant Buildings

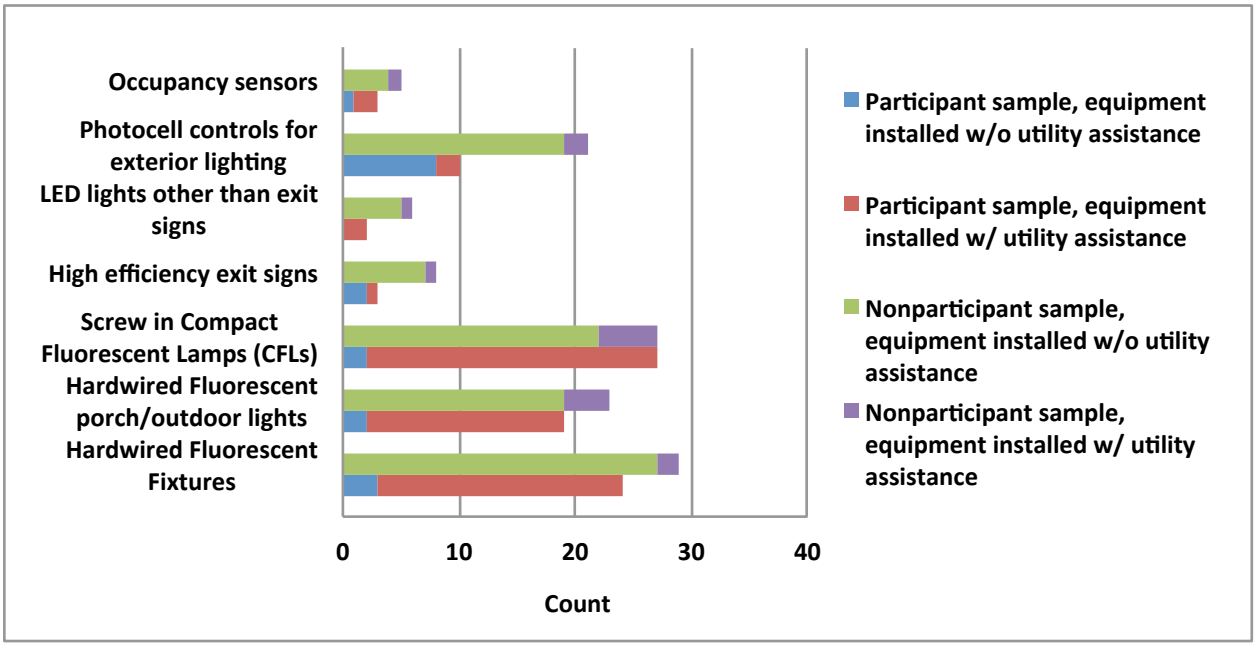


Figure 25 shows the kinds of space and water heating measures taken in multi-family buildings. Both participants and non-participants took far fewer of these measures than the lighting measures. Again, the non-program activity is greater than the program activity.

Figure 25: Space and Water Heating Measures by Participant and Non-participant Buildings

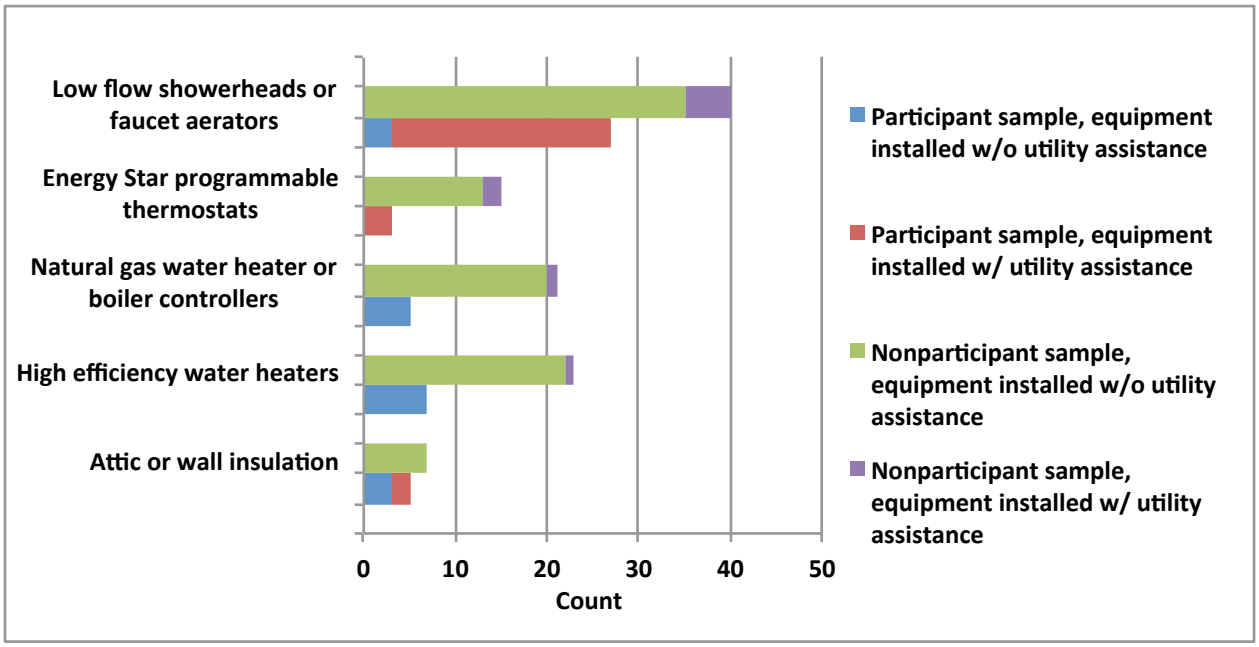


Table 25 shows the location of those measures that could be installed in either the common areas or the tenant spaces. The program does penetrate into tenant spaces for some measures.

Table 25: Location of Measures

	Tenant Spaces	Common Spaces	Both
Hardwired fluorescent fixtures	9	4	10
Hardwired fluorescent porch/outdoor lights	6	7	6
Screw-in compact fluorescent lamps (CFLs)	16	2	10
LED lights other than exit signs	0	2	0
ENERGY STAR clothes washers	3	2	5
High-efficiency water heaters	1	4	1
High-efficiency air conditioners or heat pumps	6	0	0

Participant respondents were asked if they used a contractor. Two-thirds said they did; the other third said they did the work themselves. Of those using contractors, 88 percent said the contractor first approached them about participating in the program. Most respondents were pleased with the work the contractors did, although 25 percent were unsatisfied with the work. Almost half (14 of 30) of the participant respondents reported some problem with the equipment installed. Of those, 11 reported CFLs that burned out, six reported difficulty in finding lamp replacements, three noted the high cost of those replacements, one said the aerators "spray water all over the place," and one felt that the CFLs were not bright enough. Three of the 30 respondents noted that they had had problems with the contractors. One respondent said their contractor left trash on the premises. Another said the contractor did not show up to do the work. A third said their contractor had failed to return to correct a problem.

Table 26 shows the measures respondents said they plan to install in the next two to three years. Non-participants appear to be planning measures with more substantial potential energy savings. Of the 15 participant respondents who planned to make energy efficiency improvements, 12 said that participation in the program made them more likely to install these planned measures. Only one respondent said that the MFRP experience made them less likely to take these actions.

Table 26: Future Energy Efficiency Plans

Measure	Participants	Non-participants
Hardwired fluorescent fixtures	2	
Hardwired fluorescent porch/outdoor lights	1	
Screw-in compact fluorescent lamps (CFLs)	2	8
High-efficiency exit signs		
LED lights other than exit signs		
Photocell controls for exterior lighting		
Occupancy sensors		
ENERGY STAR dishwashers	2	5
ENERGY STAR clothes washers		1
ENERGY STAR refrigerators	4	8
Attic or wall insulation	1	1
High-performance dual-paned windows		2
Cool or green roofs		1
High-efficiency water heaters	2	2
High-efficiency air conditioners or heat pumps		3
Natural gas water heater or boiler controllers		
High-efficiency boilers		
ENERGY STAR programmable thermostats		
Energy management system		
ENERGY STAR ceiling fans		

Measure	Participants	Non-participants
Low-flow showerheads or faucet aerators		2
Pool heaters		2
Solar photovoltaic (PV) panels		2
Solar water heating system	1	
On-demand intelligent pump		

Respondents were asked how interested they would be in replacing old refrigerators. Interviewers first asked participants this question without mentioning a rebate amount, and then asked both groups the same question and mentioned a $300 rebate. Table 27 shows the responses. Responses indicate that these respondents were very interested in replacing old refrigerators, and the $300 rebate did not have a major effect on participants' opinions.

Table 27: Interest in Replacing Refrigerators

	No Mention of Rebate		Mention of $300 Rebate			
	Participant		Participant		Non-participant	
	n	Percent	n	Percent	n	Percent
Not at all interested	1	4%	0		4	9%
Not very interested	2	7%	0		1	2%
Somewhat interested	4	14%	3	11%	10	21%
Very interested	13	46%	17	63%	17	36%
Extremely interested	8	29%	7	26%	15	32%
Total	**28**		**27**		**47**	

Respondents were asked whether their properties have coin-operated clothes washers. They also were asked who owns the machines. Table 28 shows that half of the buildings have coin-operated machines owned by outside firms.

Table 28: Ownership of Coin-Operated Washing Machines

	Participant		Non-participant	
	n	Percent	n	Percent
Do not have coin-operated machines	5	25%	12	24%
Owned by property	4	20%	15	30%
Owned by outside firm	11	55%	22	44%
Some of each	0	0%	1	2%
Total Known	**20**		**50**	

Table 29 shows respondents' interest in replacing old coin-operated clothes washers they own with new energy-efficient, water-saving machines. The level of interest is lower than the interest respondents expressed in replacing old refrigerators, although building owners pay the electricity, hot water, and water bills associated with the clothes washers. It appears that respondents are not fully aware of how much money they could save by replacing their old clothes washers.

Table 29: Interest in Replacing Clothes Washers

	Participant		Non-participant	
	n	Percent	n	Percent
Not at all interested	3	21%	3	20%
Not very interested	1	7%	2	13%
Somewhat interested	3	21%	3	20%
Very interested	5	36%	6	40%
Extremely interested	2	14%	1	6%
Total	**14**		**15**	

Observations and Feedback from Contractor

This section combines discussions with staff, ride-along observations, and interviews with contractors. Two days of ride-alongs were conducted with QA/QC verification staff that were doing pre and post inspections. Contact was made with ten contractors who now supply or provided services to the SDG&E and SoCal Gas MFRPs. A summary of the issues discussed follows.

The Compartmentalization of Measures

Most of the contractors contacted for this evaluation said they specialize in installing one type of measure. Most of them focus on lighting. At least two install aerators and showerheads when they install lamps in the tenant spaces. These arrangements address the easiest measures: all common-area lighting and hot water boiler controllers. Respondents said they install measures in tenant spaces only if they can do so for less than the amount of the rebates.

As a result, each product has its own salesperson. Due to this specialization, building owners are approached by a variety salespeople who want them to install a specific product(s). This is bothersome for the building managers and inefficient for the contractors.

The evaluation team spoke with several contractors who no longer work in the SDG&E MFRP. The phone numbers for about one-third of the contractors listed the MFRP contractor list were either non-working or disconnected.

Most of the contractor respondents said they had stopped working for the program because they cannot work for the program profitably. They offered several reasons for this. The main reason is that all of the larger buildings already have had some measures installed, which leaves a pool of smaller buildings or those that already have been served. Also, respondents said their sales costs have gone up, but profits have gone down, because the number of installations per sale and the incentive amounts have decreased.

Respondents expressed frustration that the program does not provide comprehensive multi-family solutions. Each salesperson promotes only the products they provide instead of addressing the buildings' overall needs or SDG&E's concerns about finding deeper savings. There are no incentives for service providers who provide advice to multi-family owners/managers. Because the contractor receives rebates only for equipment installed, they receive no benefit for design assistance or for implementing behavioral changes, such as changes to operations and maintenance procedures.

Interaction with Energy Savings Assistance Program

The contractors and SDG&E staff both mentioned having issues with integration of MFRP and ESAP. Contractors complained that they recruited a multi-family property for MFRP services, and then had to wait to deliver those services while SDG&E determined if there were any

ESAP-qualified households within the property. In some cases, the contractor was required to skip the units occupied by low-income households.

Because the two program tracking systems are independent of each other, there is no way to track which services have been provided to which units. Given the programs' overlapping missions, contractors may install energy-saving measures through one program that replace a measure installed under the other program. This is most common with smaller measures, such as aerators and showerheads, since the existing systems' efficiency levels often are not tested before a measure is replaced. Contractors trying to replace as many lamps as possible in a building may replace an existing efficient product with another, similar one. Post inspections only will not reveal this. One ride-along observation revealed that the outdoor lighting that was installed replaced existing compact fluorescent lamps. The inspector noticed this only because the installers left one of the old lamps in place.[5]

Verification and Payment Issues

During one verification ride-along at a multi-family complex, the evaluation team checked the three boilers that had been installed and noted on the inspector's work order. However, after the inspection, the building manager said that four boilers had been installed through the program, and wondered why the inspector had not had to look at the fourth one. The inspector said that his work order covered only three of the boilers and that he likely would return soon to verify the fourth. After leaving the complex, the inspector said this kind of occurrence was fairly common.

Several contractors also said that their payments for jobs were similarly fractured. For instance, they would receive partial payments for a job at a single complex. These partial payments were difficult to track because they did not receive an itemized description of which job elements were included in the payment, and therefore had to spend time tracking payments without knowing if they were being paid fully for completed jobs.

Several of the contractors also said that SDG&E took significantly longer to pay contractors than did PG&E and SCE. One contractor noted that the profit margin for these projects was not large enough to cover these delays and therefore no longer did SDG&E jobs. Instead, he was concentrating his efforts in the PG&E MFRP because PG&E paid more quickly, even though PG&E's rebates were lower than SDG&E's or SCE's.

[5] In this case, the old lamps were installed as part of the MFRP, but the tracking system did not show this history.

4.3.4 Opportunities

The MFRP has been offered for many years. Many of the easier measures already have been installed across the service territory. Going forward, the program must identify new measures to include. Some possibilities are discussed below.

Refrigerators

The surveys revealed that a large number of refrigerators in tenant spaces are more than ten years old. The general population survey determined that 23 percent of the multi-family respondent households have refrigerators that are more than ten years old. The building owner/manager surveys indicated that 91 percent of them supply all of the refrigerators in their unit, while eight percent supply some of the refrigerators, and only one percent of these respondents do not supply refrigerators to any units. Participating building managers said that approximately 29 percent of the refrigerators supplied by landlords are more than ten years old.

While low income programs have cost-effectively replaced these old machines, they still remain in market-based units. Seventy-one percent of building owners/managers would be extremely or very interested in replacing older refrigerators if offered a $300 incentive.

Clothes Washers

Most of the properties surveyed (79 percent) have coin-operated clothes washers on the premises. Survey results indicate that most apartment complexes with coin-operated machines (63 percent) do not own these coin-operated washing machines in their laundry facilities. The evaluation team called several companies that advertise supplying laundry machines to apartments in California. Contacts with these companies suggested that it is common for the supply company to lease the space and own the machines. A smaller percentage of these companies lease the machines to the building, which shifts responsibility for maintenance from the apartment owner and managers to the equipment owner.

The on-site observations and subsequent calls to laundry suppliers revealed that machines maintained under leased-space arrangements seldom are energy-efficient or water-saving. One respondent stated, “Most of the machines we install are older variety top loaders.”

The leased-space arrangement is a major barrier to energy efficiency in apartments, where energy and water savings can be substantial. The owners of the machines have little incentive to install new machines, since they do not pay water, electricity, or hot water bills, and the small rebates are not enough to convince these laundry supply firms to install the more efficient units.

One way to get more efficient machines installed is to educate building managers about how much operating the older machines costs them. SDG&E could implement an education program to put pressure on these suppliers to install the more efficient machines. SDG&E also

could distribute detailed reports to apartment owners about the value of signing leases with laundry firms that offer only high-efficiency units.

An alternative option might be attractive for owners, suppliers, and tenants: using cold-water-only washing machines. The alternate program design is described below.

- The owner of the machine (either the building management or the laundry-leasing company) is given one cold water-only machine for free.
- The owner of the machine has to agree to charge $0.25 less per load for this washer than for the other washers in the facility[6].
- The facility must post a large sign explaining the benefits of cold water washing, including the reduced wear on clothes because the more-efficient machine does not use an agitator.

Although manufacturers are experimenting with cold-water-only machines, they are both uncommon and more expensive than the usual washers. As a simple and cost-effective solution to test this program option, installers can connect only the cold water line on a regular machine.

Pilot program staff/participants can post signs in multi-family laundry rooms with a phone number tenants can call if the machine is in such demand that tenants want a second one installed. The program should monitor some laundries to see how much the cold-water-only machines are used. Many suppliers operate via card machines instead of coins. These should be able to provide use data quite easily, as long as data are kept confidential.

Because the machine uses only cold water, it will cost substantially less to operate than a regular energy-efficient machine. It is difficult to predict the savings, as some loads would have been washed in cold water anyway. In fact, people needing to wash multiple loads still could use the other machines for their hot water loads. This is why the education component is essential to the program. Part of the justification for the free unit is the educational benefit of promoting cold water washing. People need to experience the benefits of cold water washing, and laundries should differentiate by charging more for loads done in hot water. Tenants have a choice: wash their clothes in a new unit that treats their clothes more gently and costs less to operate or use the old unit and pay more.

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6 $0.25 is about the savings the EPA estimates a typical household will save per load by switching to an energy-efficient washer. Actual savings to laundries could be higher in SDG&E territory because rates for electricity, gas, and water are higher than average, and because the EPA estimate does not include savings from using only cold water for washing.

Dishwashers

SoCal Gas offers rebates for dishwasher replacements and SDG&E should consider doing so. The evaluation team discovered one issue related to the SoCal Gas program that SDG&E should address if it were to provide rebates for energy-efficient dishwashers. One contractor who is installing dishwashers in SoCal Gas territory said that SoCal Gas does not check to ensure dishwasher is working. This means that SoCal Gas may be incenting some units that would have been replaced anyway. A bigger issue is that the installer does not handle removal and recycling of the old units. If the replaced units are re-installed, the assumed savings are not realized. If SDG&E implements this program, it should have a mandatory recycling component.

Condensing Water Heaters

Current program requirements allow gas water boilers that achieve 82 percent efficiency. Newer condensing water heaters achieve 94 percent efficiency. The program should consider discontinuing the promotion of conventional boilers and instead qualify only condensing units.

LED Lights

There has been a major change in the quality and availability of LED lights. LEDs can replace all types of incandescent lamps. The dimmability of the lights makes them particularly suited to outdoor security lighting. The LED is slightly more efficient than a fluorescent, but when attached to a motion sensor, the LED can be powered down so that it uses about 40 percent of the energy used by a fluorescent when no motion is detected.

4.3.5 Comparison to Best Practices

Of all of the residential sectors, multi-family is the most difficult for which to provide energy efficiency services. The split incentive represents a barrier that programs have found nearly impossible to address. Existing programs have picked at the edges of multi-family potential by offering incentives that generally attract interest from building management for common areas where the management pays the utility bills and benefits directly from any energy savings that are generated. Any measures that are done in tenant spaces generally are limited to those that can be offered to owners for free. These efforts capture the "low-hanging fruit," but make it much more difficult to obtain investments in the bigger-ticket items.

The California IOUs have not published a best practice report for the multi-family sector in several years. Since then, several new programs have been developed that surpass SDG&E's program offering. The elements of a best practice multi-family program generally contain the following features.

- **Whole building assessment.** Current programs tend to address one, or at best, two, building elements. The better programs recognize the costs in repeated marketing to

building management and provide services that can address all cost-effective measures in one intervention.

- **Incentives for plan implementation.** Current incentives are attached to equipment only. This means that only equipment sales generate incentives. Services that seek to develop a whole building plan will not be covered. This strategy reduces the likelihood that opportunities to capture changes related to behavior change will be implemented. The better programs have found that some of these incentives must be paid up-front to encourage the building owner to engage in the process. The balance of the incentives is tied to performance, and incentives are graduated based on percentage of energy saved.
- **Incentives to go deeper.** Programs recognize the lost opportunities when programs incent only the most cost-effective measures/approaches and leave less cost-effective measures undone. These programs offer graduated incentive levels in order to encourage projects to increase the percentage of savings they achieve.
- **Program requirements or boosted incentives for measures installed in tenant spaces.** The real challenge for multi-family programs is to generate substantial investments in the tenant spaces where owners usually do not directly benefit from energy savings. Programs either need to offer higher incentives for measures done in tenant spaces or tie the incentives for common-area measures to a commensurate level of investment in tenant-space measures.
- **Best practices also can include more novel approaches, including: targeting rehab opportunities, supporting social marketing campaigns, and driving the market by recognizing the most-efficient buildings.** While most programs allow rehabs to qualify for program services/incentives, they do not look for these types of projects. A building owner or manager planning a remodeling project will be able to consider a broader range of measures if the project is identified before major design decisions have been made. Programs also can increase interest by creating a buzz about exceptional buildings.

The Multi-family Energy Upgrade California program (EUC) that is under development addresses some of these features. EUC seeks to establish a comprehensive approach, with incentives for an audit and project design and other incentives that increase as savings percentages increase. The movement to EUC is a positive step.

4.3.6 Conclusions and Recommendations

Conclusions

The Multi-family program has been in existence for a number of years, and according to the contractors serving the program, most of the prime locations have been treated with at least some of the eligible measures. Contractors are finding it harder to participate and earn a profit for their services due to shrinking opportunities, smaller projects that still require the same amount of marketing, reduced rebates amounts, and continued payment issues. Those

still participating generally are not pursuing comprehensive solutions, especially ones that maximize the savings in tenant spaces.

Primary research recommendations stemming from this process evaluation of the SDG&E Multi-family Programs are outlined below.

- **Provide support for Energy Upgrade California.** The EUC Multi-family Program features most of the best practices for a multi-family program. It will need support while the service provider infrastructure is developed and more comprehensive solutions to saving energy in multi-family buildings are perfected.
- **Develop a system for designating buildings, not units, as low income.** The fracturing of buildings between low income and market-based units is problematic for programs, building owners/managers, tenants, and service providers. The programs should adopt the definition that is used in New York and elsewhere that defines a building as low income if 50 percent of the tenants qualify as low income. Addressing this will offer a medium to high level of value for a medium level of difficulty in addressing.
- **Implement a cold water washer program.** As described above, this could entail providing one machine to willing owners and laundry-machine leasing companies.
- **Consider adding other new technologies such as refrigerators, dishwashers, LED lighting, and condensing water heaters.** Addressing this will offer a high level of value for a medium to high level of difficulty in addressing.
- **Fix payment system and tracking systems so that building verification and payment are at the same time, and shorten the payment process.**

4.4 Appliance Recycling Program

The Appliance Recycling Program collects residential and small commercial customers' working refrigerators, freezers, and room air conditioners (RACs) for recycling. The purpose of the program is to contribute to demand and energy savings by removing older, less efficient, appliances from use. The program enrolls only customers who live in single-family, multi-family, and mobile home residences and the resident generally has to own the appliance to participate.[7] The program pays customers an incentive for each appliance they recycle; in 2010 and 2011, the incentives were $50 for refrigerators and freezers, and $25 for RACs. A RAC must be recycled alongside at least one refrigerator or freezer, and customers are limited to recycling a total of two refrigerators and/or freezers (i.e., two refrigerators, two freezers, or one refrigerator and one freezer) and two RACs. The program is implemented by Appliance Recycling Centers of America, Inc. (ARCA).

[7] Currently, bulk pick-ups from multifamily units where the resident does not own the appliance are considered on a case-by-case basis.

ARCA is responsible for marketing the program, enrolling customers, and scheduling pickups. The program is marketed to customers via a variety of methods, including: cable television advertisements, cable bill inserts, direct mail postcards, print ads, web banner ads, and ads displayed above gasoline pumps at gas stations. WSA Marketing also educates new appliance retailers about the program. Retailers display brochures promoting the program at point-of-sale locations. WSA Marketing trains retailers about the Appliance Recycling Program as part of the overall retailer field services it provides to HEER Program retailers.

Customers enroll either online or via telephone; about 85 percent of enrollments occurring over the phone. Pickup dates normally are scheduled at the time of enrollment. A confirmation letter indicating the pickup date and eligibility requirements is mailed to the customer, unless the pickup will occur within the subsequent two days. The day before the scheduled pickup, the dispatcher calls the customer to inform them of a 4-hour window in which the pickup will occur. The driver calls the customer about 15 to 30 minutes before they will arrive. Pickups are conducted by ARCA and Herrera Trucking, a subcontractor to ARCA.

Before removing the appliance from the customer's home, the collection team verifies that the appliance is working and meets the size requirements. The collection team disables the appliances before leaving the customer's site by cutting the power cords and disabling the cold controls. Appliances are decommissioned in a warehouse before they are recycled. The program mails incentive checks to the customer within three to five weeks of the pickup.

4.4.1 Background

The Appliance Recycling Program is a mature program that has existed since 2000. Several program elements changed or were added during the program cycle studied for this evaluation. Most notably, the program began offering next-day pickup service at the end of 2009. The program also began collecting RACs in 2006 and offered a $25 incentive for them. Incentive levels were increased from $35 to $50 for refrigerators and freezers in late 2007. However, in February 2012, incentives for refrigerator and freezers were decreased from $50 to $35.

Responsibility for marketing the program has changed over the course of the program. Prior to April 2010, ARCA handled the marketing. From April 2010 until December 2010, SDG&E marketed the program. ARCA resumed marketing the program in January 2011.

Upcoming Program Changes

SDG&E has planned a few changes to the Appliance Recycling Program. ARCA and SDG&E are developing a pilot or sub-program to partner with retailers to pick up old working appliances when they deliver newly purchased appliances to customers' homes. ARCA already has tested one approach with a different utility, and the CPUC is currently reviewing the results of the trial program before SDG&E can proceed with the retail partnership.

The program is planning to add the multi-family sector to the list of eligible customers. This would allow ARCA to work with property managers or individuals who own multi-family dwellings, and could remove many inefficient appliances from large multi-family complexes.

The program also is considering sending email confirmations instead of mailing letter confirmations to customers who want to participate; however, securing email addresses for all participants may be a barrier to this change.

Key Research Questions

In addition to the overarching research issues that span all programs, key research questions specific to the 2010-2012 process evaluation of the SDG&E Appliance Recycling Program were identified during initial interviews with program staff. The key research questions that were identified include:

- What are the reasons that customers cancel their participation in the program?
- Does the higher incentive level contribute to an increased likelihood of program participation?
- Does offering next-day pickup service contribute to an increased likelihood of program participation?
- Do customers view the confirmation letter as beneficial or unnecessary?
- Are the program-tracking data effective in supporting the program objectives?

4.4.2 Data Collection Activities

Data collection tasks for the evaluation of the Appliance Recycling Program included in-depth interviews with program staff and appliance retailers, as well as telephone surveys with participating customers and "near-participants" (i.e., customers who enrolled in the program but cancelled their pickup or had their pickup cancelled by ARCA). These data collection activities are described in detail below.

The evaluation team conducted in-depth interviews with program staff at SDG&E and ARCA in order to document program delivery and gauge program successes and challenges. The following staff-persons were interviewed:

- SDG&E – Program Manager
- ARCA – Senior Client Support Coordinator
- ARCA – Marketing and Advertising Manager
- ARCA – VP/General Manager
- ARCA – Customer Service Manager

The evaluation team also conducted in-depth interviews with store-level staff at five retail locations that received program training to promote the service to individuals buying new refrigerators or freezers. The purpose of the retailer interviews was to provide insight as to

whether retailers were promoting the program and to determine retailers' haul-away practices for old appliances outside of the program. Assessing retailers' standard haul-away practices can help determine if focused partnerships between the program and appliance retailers are warranted.

The evaluation team also conducted a telephone survey with 100 customers who had participated in the program. The goal of the surveys was to determine customer satisfaction with program processes, the likelihood of participation if incentive levels were decreased, whether those who received next-day pickup would have participated if next-day pickup had been unavailable,[8] and whether customers viewed the confirmation letter as beneficial or unnecessary.

The evaluation team also completed a telephone survey with 101 "near-participants." The purpose of these surveys was to determine why customers cancelled pick-ups, what happened to the appliances that were to be picked up, and what, if anything, could have prevented these customers from cancelling the pickup.

4.4.3 Research Findings

This section describes detailed results of the process evaluation of the Appliance Recycling Program and includes a review of Program Performance Metrics (PPM) and status regarding program goals. This review is followed by findings gleaned from staff interviews and results of retailer interviews. Results of the participant surveys are provided next, followed by a summary of findings from surveys with near-participants.

Review of Program Performance Metrics and Savings Goals

Table 30 shows the status of the PPMs for the Appliance Recycling Program. This program has two PPMs: 1) tracking the number of appliances collected, and 2) assessing participants' attitudes, knowledge, and awareness of the program. The program tracks the first PPM is and was on track to exceed goals. The second PPM, measuring participants' attitudes, knowledge, and awareness, is not required to be reported until the end of the program cycle and was being partially tracked by ARCA. Furthermore, a requirement to track these concepts was being developed for all evaluations of investor-owned utility (IOU) programs in California.

[8] The evaluation was unable to answer this question, as only one survey respondent reported next-day pickup. It should also be noted that the survey was written with the understanding that same-day pickups are offered for the program, but this is not the case. Rather, the program offers next-day pickup.

Table 30: PPM Summary and Status

PPM	Tracked?	Status Relative to Goal	Comment
Number of program appliance units by year, appliance type, model # (as available), age (estimated), and size	Yes.	As of November 2011, the program was exceeding unit goals. Goals for the two-year period over 2010 to 2011 were 31,444 units, and as of November 10, the program had collected 31,600 appliances.	Quantitative annual program targets are: 14,198 refrigerators, 1,430 freezers, and 94 room air conditioners recycled each year over the 2010-2012 program cycle.
Level of program participants' AKA ("Awareness, Knowledge, Attitude") toward the appliance recycling subprogram.	Partially.	ARCA tracks participants' awareness, but does not track knowledge or attitudes. The current evaluation measured participants' sources of awareness and program satisfaction.	IOUs are to report on this PPM at the end of the program cycle. AKA questions are being developed that will be required of all evaluations of IOU programs in California.

As of November 2011, the program was on track to meet unit goals, with 31,600 appliances collected between January 1, 2010 and November 10, 2011. The goal for each year is 15,722 appliances collected annually, and 31,444 appliances over the two-year period.

Staff Interview Results

The following issues were identified from the in-depth interviews with SDG&E and ARCA staff. It should be noted that while ARCA staff suggested room for program improvements, ARCA staff were very pleased with the program overall.

The greatest program challenge, mentioned by every staff person interviewed, was that the customer data had not been released to ARCA since 2008 due to confidentiality concerns. While ARCA had real-time customer data from other IOUs, the SDG&E database they used to verify customer account numbers was over three years old. This outdated customer database prevented ARCA from scheduling next-day pickups and generally slowed down the scheduling process since the 2008 database was missing names and/or account numbers for about 40% of customers that called to enroll. The Program Manager had to look up customer accounts that were not in the 2008 database. Program staff agreed that the program processes would be quicker, and more customers likely would participate, if the customer database were up-to-date. ARCA staff and the Program Manager were working with the SDG&E Legal and IT departments to resolve this issue so ARCA could access current customer data.

One ARCA staff person noted that the energy savings goals outlined in the contract with ARCA were not being met and explained that per-unit energy savings had been reduced two or three times over the course of their contract. This staff person hypothesized that a 2010 DEER study cut estimated energy savings in half by reducing the average years of remaining life for refrigerators and freezers from 10 years to five. In addition, the Program Manager stated that savings recorded in the program-tracking data were not always accurate and tended to underestimate savings. This manager also explained that the per-unit energy savings stored in SMART were incorrectly based on the 2008 DEER savings and should have been updated with the 2010 figures. Savings goals will need to be adjusted based on the new per-unit energy savings figures. At the time of this evaluation, SDG&E was developing a work paper to submit to the Energy Division so that the per-unit savings can be updated.

A high rate (40 percent) of cancelled appointments occurred during the 2006-2008 program cycle. Understandably, the Program Manager wanted to learn if program changes, such as the increased incentive and availability of next-day pickups, had reduced this cancellation rate. During interviews, ARCA staff reported that the cancellation rate (the number of cancelled orders divided by the total number of orders) had decreased to just 18.45 percent. More than one ARCA staff person reported that, while that cancellation rate was in line with industry standards, there still was room for improvement. The evaluation team asked ARCA staff to identify contributors to the higher cancellation rates. Reasons mentioned included: (1) The requirement that customers be present during the pickup may cause customers to cancel if they cannot be there during the pickup. (2) The outdated customer database could contribute to cancellations because customers may not want to wait for verification of their account information. (3) Approximately 20 percent of customers do not have their appliances plugged in when the driver arrives, and the driver may not have time to plug it in to check that it is working, which may require the appointment to be cancelled/rescheduled. In addition to these issues related to cancellations, customers may call to enroll and find that they do not qualify because their appliance is the wrong size, is not working, or is the wrong type of appliance. Staff reported that customers were confused about the program requirements, even though customers were notified about the program requirements during enrollment, in the confirmation letter, and during the day-before call and the call 15 to 30 minutes prior to the pickup driver's arrival at the customer's home.

In addition, the recent decrease in the incentive amount described in Section 4.4.1 above could be a risk to the success of the program. One ARCA staff person explained that, since the program is implemented statewide, when Southern California Edison decreased their incentives due to budget constraints, SDG&E followed suit in order to maintain consistency between the utilities. One ARCA staff person noted that other utilities that had *increased* the incentive from $35 to $50 had noticed a doubling of pickups over the same period in previous years.

Finally, ARCA staff noted several challenges regarding program marketing. In particular, they reported that SDG&E had rebranded their logo, and required that all marketing materials contain the new logo. This meant that ARCA could not broadcast a prepared, paid television

commercial in 2012 because the commercial had the old logo, and ARCA could not afford to produce a commercial with the new logo. ARCA planned instead to try paid segments on morning TV shows (e.g., the "Today Show"), which could cover a story on the Appliance Recycling Program without displaying the utility logo.

In addition, one ARCA staff person reported that they had not been able to advertise the program in SDG&E bill inserts or newsletters and suggested that being able to do so would help increase program participation. This staff person added, however, that SDG&E prioritizes space in bill inserts to promote programs that are not meeting their goals (unlike ARCA) and for regulatory announcements. ARCA contacts said they would try to advertise the program through cable bill inserts, even though they were not advertising through cable in 2012. Normally, the cable company requires paid television advertising before allowing cable bill insert advertising. ARCA had heard from SDG&E that the utility would be receptive to placing program information in its bill inserts in 2012 in order to compensate for the lack of television ads, but this ARCA staff person said that securing that space is somewhat unreliable because regulatory announcements always must take precedence over program advertising.

Retailer Interviews

The evaluation team completed five interviews with retail staff: four with contacts at participating locations of national corporate retailers, and one with a regional appliance retailer. Retailers represented by the completed interviews included Best Buy, Home Depot, Pacific Sales, Fry's Electronics, and Lowe's. WSA Marketing, which provides brief training to retailers for the program, provided contact information.

For all retailer interviews, the evaluation team asked to speak with the appliance department manager, but in two instances, the manager referred interviewers to another individual in the store. In one case, the requested contact no longer worked at the store, so the evaluation team interviewed the person at the store who was most knowledgeable about the HEER Program and the Appliance Recycling Program. The store-level retail staff interviewed held the following positions:

- Appliance Department Manager (n = 2)
- Customer Specialist (sales staff specializing in appliances, n = 1)
- Customer Service Representative (assists customers with utility programs, n = 1)
- Assistant Store Manager (n = 1)

The objectives of the retailer interviews were to determine if retailers who received training for the Appliance Recycling Program were promoting the program to their customers, and to determine what the retailers normally did with old appliances they collected.

Because only five interviews were conducted, results should not be generalized to all retailers participating in the HEER Program who received training for the Appliance Recycling Program. However, the responses do provide a snapshot and suggest areas where more

research may be needed. In the case of the second objective, responses are perhaps more generalizable, as haul-away practices are likely homogenous across the different locations for a particular retailer within the SDG&E service territory.

Retailer Training and Promotion of the Appliance Recycling Program

Four respondents were most familiar with the HEER Program, and were aware of the Appliance Recycling Program. Only one respondent was unaware of the Appliance Recycling Program, although he was familiar with and enthusiastic about the HEER Program. This respondent said he had not seen brochures advertising the Appliance Recycling Program, and was unsure if his company's sales associates had received any training regarding the Appliance Recycling Program.

Most retailer respondents reported displaying the Appliance Recycling Program brochures in their stores. Two respondents reported that the brochures were displayed at the appliance department desk or counter. Another two respondents said that their store had used the brochures but that they were out of stock; one of these respondents stated that they had not had any brochures for approximately two months. This is at least partially due to the fact that interviews were conducted in December; and WSA removed all the marketing materials from stores in December; this was in preparation for new marketing materials to be produced due to a change in the incentive amount in 2012. The final respondent was not aware of the Appliance Recycling Program or any program brochures.

Only two respondents reported receiving training for the Appliance Recycling Program. One reported that an SDG&E representative provided regular updates on the program as well as applications for HEER and brochures for the Appliance Recycling Program, and one respondent reported that they had received a 15- to 20-minute training on the HEER Program that included information on the Appliance Recycling Program. None of the remaining respondents was aware of having received any in-store training on the Appliance Recycling Program.

Most retailer respondents said that sales associates generally mentioned the Appliance Recycling Program to customers who were buying new refrigerators and/or freezers. Of the four respondents who were aware of the program, three were able to estimate the percentage of time that sales associates mentioned the program to customers shopping for new appliances: 85 percent, 90 percent, and 100 percent. This implies that sales associates generally were aware of the program and made a consistent effort to mention the program to customers.

Retailer "Haul-Away" Practices

All five retailer respondents indicated that they offered pickup or "haul-away" of old appliances when new ones were delivered to the customer's home. Four of the five

respondents said that they offered the pickup service free of charge, while the other one said his company charged a $14.95 haul-away fee.

Retailers offered haul-away service on a one-for-one basis (e.g., if the customer buys one refrigerator, the retailer will remove only one refrigerator). Retailers said they had very few requirements regarding the appliances they haul away. For instance, appliances did not have to be in working order. One respondent mentioned that they would not haul away a built-in appliance, and another said that they did not pick up freezers, because freezers were an in-stock item that they did not deliver. Two respondents indicated that they offered next-day delivery and haul-away, while one said his company offered same-day delivery and haul-away. In addition, one respondent mentioned that their service can come to the customer's home on evenings or weekends – times when the Appliance Recycling Program may not be able to schedule pickup appointments. Extended haul-away hours could mean that retailer haul-away is more attractive to a customer than participating in the SDG&E program.

Respondents stated that most customers chose to use the retailer's haul-away program rather than that offered by the SDG&E Appliance Recycling Program. Even though store sales associates tended to promote the SDG&E program and the associated $50 incentive to customers, retailer respondents emphasized that most customers liked the convenience of having their appliance picked up when the new one was delivered. According to these respondents, customers may not want to store the appliance or may consider it inconvenient to schedule a separate appointment with SDG&E to have their appliance picked up. As one respondent said, "It's not about money savings [e.g., the Appliance Recycling Program incentive], it's about time. Ninety-nine percent of customers just want it [the old appliance] gone." These respondents said that, even though customers could receive a $50 incentive for recycling their appliance through the program, they consider the retailer haul-away "instantaneous" and appreciated that it often was free of charge. The exception to this was for the retailer that charged a pickup fee; in this case, the respondent reported that their customers usually had the program remove the old appliance.

Three retailer respondents reported that the refrigerators and freezers they hauled away were recycled. The remaining two respondents were not sure what happened to the appliances after they were hauled away. Two respondents indicated that customers were aware that the appliances were recycled, and one indicated that customers were made aware of this if they asked about it.

Participant Survey Results

This section describes key findings of the participant survey.

Frequency and Characteristics of Recycled Appliances

Table 31 shows the frequency of appliances picked up for the Appliance Recycling Program and how the participant survey was stratified by appliance type. The vast majority (87

percent) of appliances picked up for the program were refrigerators. Rather than selecting the survey sample proportionally by appliance type, freezers and RACs were oversampled. This is because a proportional survey sample would have had very few freezer and RAC responses, and such small samples would have been more likely to be unrepresentative.

Table 31: Participant Population and Sample by Type of Appliance Recycled

Stratum	Population Frequency (Jan 2010 – June 2011)	Population Percent	Survey Sample Frequency	Survey Sample Percent	Sample Weight[9]
Refrigerator	22,332	87.4%	50	50.0%	1.747281
Freezer	2,584	10.1%	30	30.0%	0.336959
Room air conditioner	646	2.5%	20	20.0%	0.126359
Total	**25,562**	**100%**	**100**	**100.0%**	

Out of the 100 participant respondents, 81 were able to report the age of their recycled appliance. Recycled appliances ranged from two to 50 years old, with a mean age of 12.7 years. The average age of freezers was 18.3 years, while refrigerators and freezers each had a mean age of 12.2 years.

Reasons for Program Participation and Sources of Program Awareness

As shown in Table 32, respondents were asked why they got rid of their appliance.

Almost half (48 percent) of appliances recycled through the program were working units being replaced by another appliance. In addition, participants reported that 21 percent of picked-up appliances were "broken." This is an interesting finding, as appliances are required to be working order to qualify for the program. For these broken appliances, respondents reported that the compressor didn't work, the freezer didn't work, or that the appliance no longer cooled. It is possible that these appliances worked well enough to qualify for the program but not enough to satisfy the customer.

[9] All survey results are weighted to account for disproportionate sampling, with the exception of results reported separately by appliance type, which are un-weighted.

Table 32. Reasons for Disposing of the Appliance That Was Recycled

Reason	Percent (n = 100)
Unit was being replaced	48.4%
Broken	21.3%
Secondary unit that was used occasionally	13.1%
No longer used	8.6%
Moved and unit was too big / too small / not needed	5.7%
Wanted to save energy / too expensive to use	1.1%
Not sure / Don't know	1.7%
Total	**100.0%**

Reasons why the appliance was recycled appear to vary across appliance types. Respondents indicated that they often were replacing refrigerators and freezers (50 percent and 40 percent, respectively). Only 25 percent of those who recycled an RAC said they were replacing the unit, while 40 percent said it simply was no longer being used.

Table 33 shows the sources of participant survey respondents' awareness of the program. The three most frequently cited sources were bill inserts, word-of-mouth, and television ads. Roughly 30 percent of participants heard about the program from a retail store sales associate, while almost 19 percent heard of the program via promotional material in a retail store. These percentages are surprising, since retailer training and placement of promotional materials for the Appliance Recycling Program are a small supplement to the training for the HEER Program.

The largest percentage of participants (30 percent) said they first learned about the program in their cable bill insert. Word-of-mouth was the original source for 18 percent of participants, as was the television advertisement.

Table 33: Sources of Program Awareness

Source	Ever Heard Percent (N=100)	First Heard Percent (N=80)
Cable bill insert	64.3%	30.0%
Word-of-mouth	46.5%	18.0%
TV ad	40.6%	17.5%

Source	Ever Heard Percent (N=100)	First Heard Percent (N=80)
Store sales associate	29.7%	8.9%
SDG&E website	25.6%	4.6%
Store postings	18.7%	2.2%
Mailed postcard	17.0%	0.0%
Radio ad	15.4%	0.0%
TV news story	15.2%	4.4%
SDG&E representative	7.9%	2.4%
Other	2.5%	2.7%
Newspaper	2.4%	2.2%
Don't Know	0.3%	7.1%
Total	**N/A**	**100.0%**

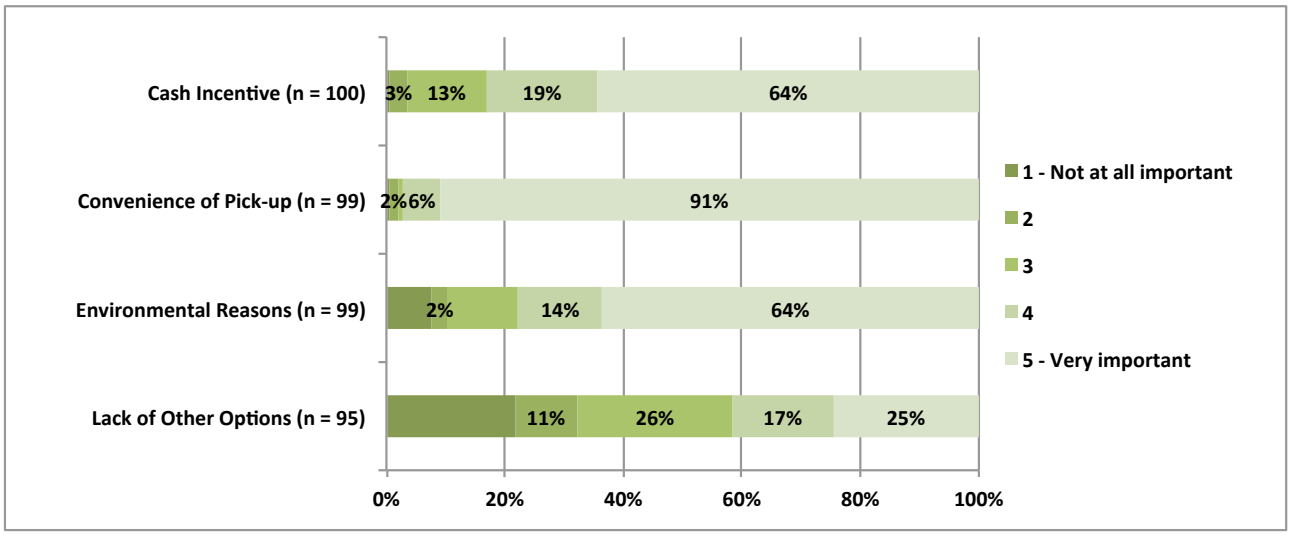
Note: Multiple responses were accepted for "ever heard," thus responses total to greater than 100%. Only respondents who cited more than one source were asked where they first heard of the program.

Customers were asked to rate the importance of the four following factors in their decision to participate: the cash incentive, the convenience of the pickup, environmental reasons, and the lack of other options. Respondents rated how important each factor was in their decision to recycle their appliance through the SDG&E program, on a scale from "1" ("not at all important" to "5" ("very important").

As shown in Figure 26, the convenience of the pickup was a "very important" part of the decision to participate for over 90 percent of participants. The majority of participants also considered environmental reasons and the incentive payment to be "very important." Although a "lack of other options" was a less important factor for most respondents, one quarter (26 percent) of participants stated that a lack of other options for disposal was a "very important" reason for participating in the SDG&E program.

Sixty-eight percent of those who recycled a refrigerator cited the incentive as "very important, compared to 60 percent of those who recycled an air conditioner and only 33 percent of those who recycled a freezer.

Figure 26: Importance of Various Factors in Participants' Decision to Recycle Appliance with SDG&E



Note: Any total number of responses less than 100 percent is due to "Don't Know" responses.

When asked which of the above reasons was their "main reason" for participation, respondents most frequently cited convenience of pickup (44 percent); the cash incentive was second (30 percent) and environmental reasons third (18 percent). Only two percent of respondents cited "no other option" as the main reason. The remaining six percent said they were unsure of the main reason why they chose to participate.

Participant Actions in Absence of the Program

Table 34 shows what participants would have done with their recycled appliances in the absence of the program. Compared to refrigerators or freezers, participant survey respondents were more likely to bring air conditioners to the landfill or another recycler in the absence of the program. Altogether, 26.6 percent of participants would have removed their appliance from service by bringing it to a landfill or scrap metal facility or recycling it in the absence of the program. An additional 16.7 percent would have had their appliance removed by the retailer from which they purchased a new appliance. The remaining 56.6 percent of participants would not have taken direct actions to remove their appliance from service, which means that it could have remained in use without the program. This appears to vary somewhat by appliance type; 60 percent of RAC respondents said that the appliance would have been removed from use in some way, while respondents said that 44 percent of refrigerators and 33 percent of freezers would have been removed from use in the absence of the program.

Table 34: Use or Removal of Appliance if Program Were not Available

Action	Refrigerator (n = 50)	Freezer (n = 30)	RAC (n = 20)	Weighted Overall Percent (N=100)
Appliance Could Have Remained in Use				
Donated it to a charity	20.0%	26.7%	20.0%	20.7%
Sold it	20.0%	3.3%	5.0%	17.9%
Given it to a friend, family member or neighbor	14.0%	30.0%	15.0%	15.6%
Kept it as a spare or backup	2.0%	6.7%	0.0%	2.4%
Subtotal – Remained in Use	**56.0%**	**66.7%**	**40.0%**	**56.6%**
Appliance Likely Would Have Been Removed From Use				
Had it removed by the retailer where you purchased a new appliance	18.0%	10.0%	0.0%	16.7%
Had it taken to another recycler	14.0%	3.3%	25.0%	13.2%
Had it taken to a dump or landfill	12.0%	16.7%	35.0%	13.1%
Had it taken to a scrap metal facility	0.0%	3.3%	0.0%	0.3%
Subtotal – Removed from Use	**44.0%**	**33.3%**	**60.0%**	**43.3%**
Total	100.0%	100.0%	100.0%	100.0%

Participant Experience with Program Processes

The vast majority (85 percent) of participants surveyed reported that they enrolled in the program over the phone. Less than ten percent signed up online. Curiously, roughly three percent of participants said that they signed up at a retail store, despite the lack of any formal arrangement for customers to do so.

Respondents were asked to rate how convenient the pickup time was on a scale from "1" ("not at all convenient") to "5" ("very convenient"). The pick-up time was very convenient for the vast majority (79 percent) of participants. Only two percent of participants rated the convenience of the pick-up time as less than a "3" on the 5-point scale.

Slightly less than half (44 percent) of participants recalled receiving a letter in the mail reminding them of their scheduled pick-up day. Of these, 83 percent reported finding the letter "very useful," and only 8 percent rated the usefulness of the letter as less than a "3" on a five-point scale, where "1" was "not at all useful" and "5" "very useful." Those who did not find

the letter useful suggested it was redundant, as they already knew the date of the scheduled pickup.

Respondents said it took an average of 6.5 days from the time they scheduled their appliance pickup appointment to the actual pickup. One respondent reported the longest length of time: one month. It is unknown why this pickup took so long to schedule, although this respondent indicated dissatisfaction, as discussed in section 4.4.3.4.5. Only one participant recalled a next-day pickup, while three others reported the pickup occurred in one or two days.

More than three-quarters (78 percent) of participants reported receiving a phone call the day before pickup, and just over one-half (54 percent) of participants recalled receiving a phone call the day of the pickup.

Participants received their incentive payments an average of 3.15 weeks after pickup, with the earliest payment in two weeks and the latest in six weeks.[10] At the time of the survey, one participant reported that they had not received their payment and had been waiting three or four months.

Participant Satisfaction with Program Processes

As shown in Figure 27, participants were quite satisfied with the various aspects of the program. For instance, 95 percent reported being "very satisfied" with the overall enrollment experience of signing up, scheduling, and arranging pickup.

Participants also were "very satisfied" with the amount of time between scheduling the pickup and the pickup; all but three respondents reported a rating of at least "3" on a five-point scale, where "1" was "not at all satisfied" and "5" was "very satisfied." Among the three dissatisfied respondents was the customer who waited one month between scheduling and pickup.

Participants were also very satisfied with the pickup itself; 98 respondents reported that the collection team arrived on time, while two respondents were unable to recall. No respondents were less than satisfied with the collection team.

Participants were quite satisfied with the amount of time it took to receive their payment, with 97 percent of participants providing a rating of "3" or higher on a five-point scale, where "1" was "not at all satisfied" and "5" was "very satisfied." Fifteen percent of participants reported that they would have preferred receiving a credit to their bill rather than an incentive check in the mail.

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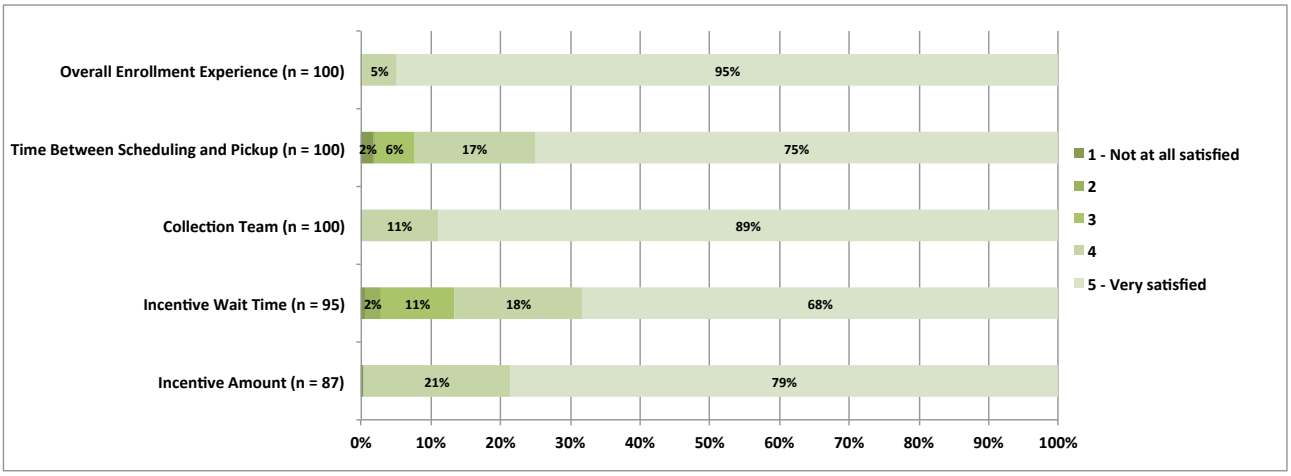
[10] Mean calculated by taking the upper limit of any data range in order to provide a conservative estimate. For example, if the respondent stated two to three weeks, this was coded as three weeks.

All but one of the participants who could recall the amount of incentive they received reported being "satisfied" or "very satisfied" with the amount of the incentive. The sole dissatisfied customer recycled a freezer and reported receiving a $25 incentive payment.

Figure 27: Satisfaction with Program Processes



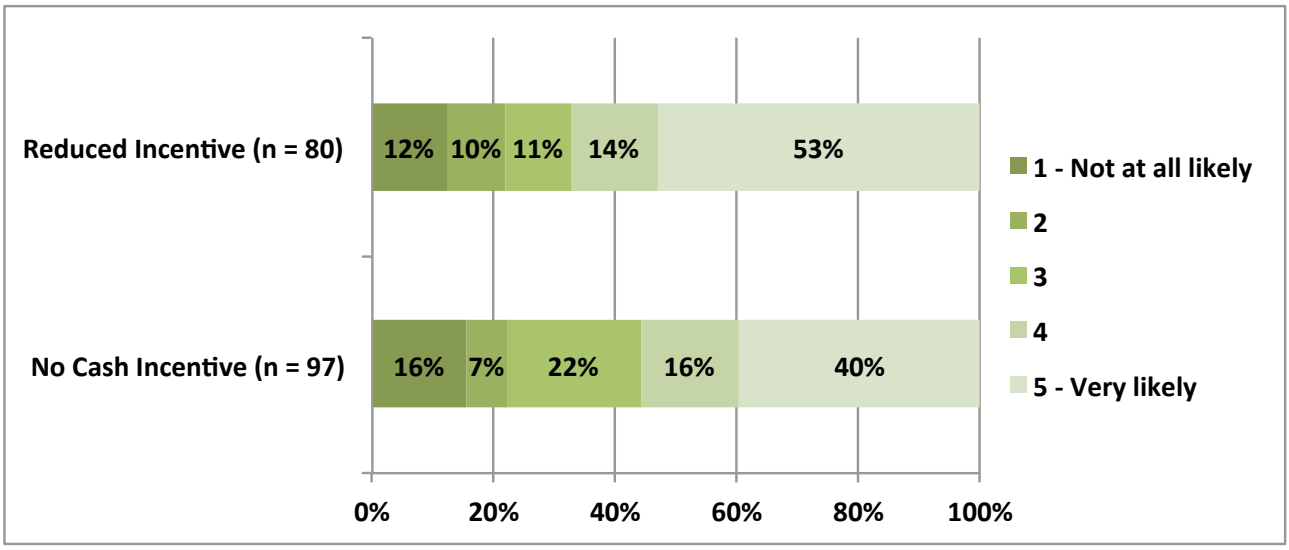
Note: Thirteen respondents could not recall the amount of incentive they had received, and five respondents could not recall how long it had taken to receive their incentive check.

Likelihood of Participating with Reduced Incentives

At the time of this evaluation, the program offered $50 incentives for refrigerators and freezers and $25 for RACs. The 81 respondents who reported receiving the 2011 incentive amount were asked to report the likelihood that they would have participated if the cash incentive had been $25 for refrigerators and freezers and $10 for RACs, Using a five-point scale, where "1" was "not at all likely" and "5" was "very likely," 22 percent of participants rated their likelihood of participation in the program as less than a "3" with the reduced incentive levels.

All respondents were asked the likelihood of their participation in the program if there were no financial incentive. Again, 22 percent rated their likelihood of participation as less than a "3," while 56 percent gave a rating of either "4" or "5." These results suggest that reducing or removing the incentive could have a substantial effect on program participation; however, the majority of customers likely would participate with no incentive at all.

Figure 28: Likelihood of Participating with Reduced or no Cash Incentive



Note: One participant of the 81 who reported receiving the 2011 incentive amount was unable to rate their likelihood of participating with the reduced incentive. Three participants were unable to rate their likelihood of participating with no incentive.

Near-Participant Survey Results

Table 35 shows the proportion of appliance types that near-participants originally scheduled to be picked up for the SDG&E Appliance Recycling Program. Near-participants are customers who enrolled in the program but then cancelled their appointment. As with the participant survey, sample weighting was conducted in order to increase the likelihood that aggregated survey responses are representative of the responses of the population of near-participants and the types of appliances they originally had scheduled for pickup.

Table 35: Near-Participant Population and Sample by Type of Appliance Originally Scheduled for Recycling

Stratum	Population Frequency	Population Percent	Survey Sample Frequency	Survey Sample Percent	Sample Weight[11]
Refrigerator	4,674	88.5%	63	62.4%	1.418269
Freezer	423	8.0%	33	32.7%	0.244648
Room air	183	3.5%	5	5.0%	0.700000

[11] All results are weighted to account for disproportionate sampling, with the exception of results reported separately by appliance type, which are un-weighted.

Stratum	Population Frequency	Population Percent	Survey Sample Frequency	Survey Sample Percent	Sample Weight[11]
conditioner					
Total	5,280	100%	101	100.0%	

Why Near-Participants' Appliances Were Not Picked Up for the Program

Non-participant respondents said that the most common reason they did not have their appliance picked up was that they decided to sell or give it away. An additional 8 percent of these customers decided to keep using the appliance.

Over 20 percent of near-participants had appliances that did not qualify for pickup, and 6 percent of near-participants had a retailer pick up the appliance rather than recycle it through the program. Altogether 21 percent of near-participants had difficulty scheduling the appointment; nine percent said they could not be home for the appointment.

Table 36: Why appliance was not picked up for the SDG&E program

Reason	Percent (n = 101)
Customer decided to sell/give away the appliance	35.7%
Appliance did not qualify for pickup	21.6%
Took too long /scheduling problems	11.9%
Customer could not be home for the appointment (customer cancelled)	9.4%
Customer decided to keep using the appliance	7.8%
Retailer/delivery driver picked it up	5.9%
Collection team cancelled appointment	1.6%
Collection team did not show up	0.5%
Other	2.8%
Not sure / Don't know	2.8%
Total	100.0%

Scheduling Issues

Of the 33 customers who experienced scheduling-related issues, only five attempted to reschedule the appointment. One customer was able to successfully reschedule, while four are still experiencing scheduling problems at the time of the survey.

Of the 26 customers who chose not to reschedule, 25 were able to recall a reason. Approximately half (46 percent) of these customers found someone else to pick up the appliance, and 28 percent said they were out of town, busy, or simply had forgotten about it.

Destination of Near-Participant Appliances

As shown in Table 37, nearly 70 percent of all near-participants' appliances still could be in use.

Near-participant customers were asked what happened to the appliance they had intended to recycle through the SDG&E program. Slightly more than one-fifth (23 percent) of these customers still had their appliances at the time of the survey, while over three-quarters (77 percent) no longer had the appliance.

The most common ways that near-participants disposed of appliances included: giving it away (41 percent), selling it (9 percent), and having an appliance retailer pick it up (9 percent). It is unclear if appliances picked up by retailers would return to use or be recycled, although retailer interviews suggested that these appliances likely were recycled.

Eight percent of near-participants recycled the appliance, while seven percent reported that they planned to continue to use the appliance. Seven percent reported that someone had picked up the appliance, and were unclear where the appliance would end up. Six percent said they planned to reschedule the pickup appointment with SDG&E.

Table 37: What Happened to the Appliance Originally Scheduled for Pickup by SDG&E?

Action	Percent (N=101)
Appliance Remained or Possibly Remained in Use	
Gave it away	41.1%
Sold it	9.4%
Still have appliance - plan to continue using it	7.0%
Someone picked it up	6.6%
Still have appliance - plan to give it away	2.8%
Had to leave it at previous house when moved	1.6%
Still have appliance - plan to have someone else pick it up to refurbish	1.4%
Subtotal – Appliance Remained or Possibly Remained in Use	69.9%
Appliance Has Been or Likely Will Be Removed from Use	
An appliance retailer (e.g., Sears, Best Buy) picked it up	9.2%

Action	Percent (N=101)
Took it to a recycling center	8.4%
Still have appliance - plan to schedule another appointment with SDG&E	5.7%
Took it to a dump	2.1%
Still have appliance - plan to take it to a scrap yard	0.2%
Subtotal – Appliance Removed or Likely Will Be Removed from Use	25.6%
Don't Know	
Have appliance - Not sure what planning to do with it	4.2%
No longer have appliance - Not sure what happened to it	0.2%
Subtotal – Don't Know	4.5%
Total	100.0%

Near-participant respondents were asked to explain why they had decided not to participate in the SDG&E Appliance Recycling Program. As shown in Table 38, almost one-fifth (19 percent) of near-participants cited the need for the appliance to be running as their reason for not participating in the program. As the most frequently cited reason, this suggests that program requirements had not been communicated effectively to all customers, although customers were notified of the program requirements at enrollment, in the confirmation letter, and during the day-before and day-of-pickup telephone calls.

The customers who gave the appliance away (18 percent) represent potential missed opportunities for the program, as do the customers who found someone else to pick up the appliance (15 percent). A substantial portion of customers were displeased with scheduling issues (8 percent). Another eight percent reported that they could get more money for their appliance somewhere else.

Table 38: Why Did You Decide not to Participate in the SDG&E Appliance Recycling Program?

Reason for Not Participating	Weighted Percent (N=101)
Had to be running/couldn't prove it was running	18.6%
Gave it to somebody else who needed it	18.1%
Took too long to pick up/found somebody to come sooner	14.5%
Scheduling issues	8.4%
Could get same or more money elsewhere	8.4%
Decided to keep the old appliance	8.4%
Would not take without other appliances, too	4.2%
Retailer/delivery driver took it	3.1%
Takes too long to receive incentives	0.5%
Other	2.6%
Not sure / Don't know	7.5%
Not applicable – plan to schedule another appointment with SDG&E	5.7%
Total	100.0%

When asked what would have encouraged them to participate, over one quarter (27 percent) of respondents did not believe anything would have changed their mind or made them able to participate. The most widely cited suggestion, cited by 15 percent of near-participants, was to increase the incentive. Twelve percent suggested picking up appliances faster, and nine percent suggested better scheduling. In addition to the six percent who said they plan to reschedule their appointment with SDG&E, seven percent said they would use the program in the future.

When asked for suggestions to improve the program, near-participants had similar responses to the prior question about what would have encouraged them to participate. Roughly 38 percent of near-participants had no suggestions for improvement. The most common suggestion (19 percent) was related to scheduling issues, followed by the suggestion to advertise more (9 percent) and pick up broken appliances (6 percent). About six percent of near-participants suggested that customer service be improved, and another six percent suggested including the requirement that the appliance be in working order in program advertising.

4.4.4 Comparison to Best Practices

Program processes were compared to best practices as outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool.[12] As described below, the evaluation team evaluated the SDG&E Appliance Recycling Program with respect to best practices in Program Theory and Design, Program Management, and Program Implementation.

Program Theory and Design

The program plan is well-articulated in the PIP, and the program design is effective. Ninety-five percent of participants were "very satisfied" with the enrollment experience, 89 percent were "very satisfied" with the collection team picking up the appliances, and 79 percent were "very satisfied" with the time between the appliance pickup and the arrival of their incentive check.

The program is also flexible; staff is willing to make changes mid-stream, such as increasing incentives and promoting the program via new appliance retailers. This is in line with best practices.

Program Management

Project Management

Management responsibilities for the Appliance Recycling Program are very well-defined. ARCA handles all aspects of the program, including marketing, enrollment, picking up appliances, and mailing incentive checks.

Reporting and Tracking

The program has two PPMs. For the PPM, the program tracks the number of each appliance type recycled, along with model number, age, and size. The second PPM – measuring participants' attitudes, knowledge, and awareness (AKA) – does not have to be reported until the end of the program cycle and is partially tracked by ARCA. Survey questions measuring these AKA concepts were being developed at the time of this evaluation and will be required of all evaluations of investor-owned utility programs in California. The current evaluation measured participants' sources of awareness and program satisfaction.

While the tracking system is useful for tracking the number of units and characteristics associated with recycled appliances, it is less effective at tracking savings. This is because the

[12] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

per-unit savings are outdated in the program tracking system, SMART. At the time of this evaluation, SDG&E was developing a work paper to the Energy Division to update the per-unit savings.

Best practices recommend automating reporting and tracking functions where possible. Some reporting and tracking functions, such as the mailing of confirmation letters, were automated, but the evaluation did not systematically assess whether all routine functions were automated.

Quality Control and Verification

SDG&E conducts inspections to ensure that the pickups ARCA reports actually occur. SDG&E calls customers who are scheduled for appointments before the pickup takes place and again after the pickup has occurred. SDG&E holds a 12 percent retention of each invoice until all inspections have occurred. To date, ARCA has passed all inspections.

Program Implementation

Participation Process

Participation in the program is relatively simple. Customers can enroll via phone or through the program website. In addition, appliance retailers promote the program to capture customers buying a new appliance who likely may want to dispose of an old appliance. Customers have a single point of contact for enrolling in the program: ARCA. However, appointments are not always scheduled instantaneously, because the dated customer database that ARCA accesses requires account verification for 40% of customers before ARCA can schedule the appointment. Account verification takes at least 24 hours.

Marketing and Outreach

Best practices include retail outreach and support to ensure that products are well-stocked and advertised. The program conducts training and provides promotional collateral to new appliance retailers. Interviews indicated that some retailers run out of program brochures, particularly during the holiday season when WSA Marketing typically is not allowed to make retailer visits. The program could consider developing a mechanism for retailers to order more brochures when supplies run low.

Targeted marketing strategies have been used to promote the program via a direct-mail postcard. ARCA also has advertised the program on cable television stations targeted to particular ZIP codes.

4.4.5 Conclusions and Recommendations

Conclusions

Primary research findings stemming from this process evaluation of the SDG&E Appliance Recycling Program are outlined below. Overall, the program has been very successful.

- **The program was on track to meet unit goals.** As of November 2011, the program had picked up and recycled 31,600 units – 156 more than the goal for the two-year (2010-2011) period of 31,444 units.
- **It is difficult for the program to track progress toward savings goals because the per-unit savings in SMART are outdated.** SDG&E is developing a work paper to submit to the Energy Division to allow an update of the per-unit savings.
- **Participating customers were very satisfied with all aspects of the program**, including enrollment, the time between scheduling and pickup, the collection team, the incentive amount, and the time it took to receive their incentive.
- **The program successfully removes appliances that otherwise would remain in use.** Fifty-seven percent of participants reported that if the program had not been available, the appliance likely would have remained in use, because they would have donated it, sold it, given it away, or kept it as a backup.
- **ARCA's lack of access to an up-to-date customer database made scheduling appointments and next-day pickups more cumbersome, for ARCA and customers.** ARCA staff felt that more customers would participate if they could schedule the appointment when they first call to enroll, instead of having to go through an account verification process. ARCA and the Program Manager were working with the SDG&E Legal and IT departments to be able to resolve this issue and provide current customer data to ARCA.
- **The cancellation rate appears to have decreased dramatically, from the 40% reported in the 2006-2008 evaluation to around 18%.** Those who cancel appointments are a lost opportunity.
- **It appears that having new appliance retailers promote the program has been successful.** The retail staff interviewed by the evaluation team generally were aware of the program, and promoted it to their customers.
- **Retailer respondents indicated that customers usually chose free and simultaneous pickup by the retailer rather than paying the program $50 to pick up the old appliance at a later date.** It appears that retailers may be recycling picked-up appliances.
- **Most program participants learned about the program through cable bill inserts and television ads.** The program will not be advertised on television in 2012 because the SDG&E logo has changed and the program cannot afford to re-produce the existing television commercial. ARCA has not been able to advertise the program in utility bill inserts, but SDG&E appears to be more receptive to allowing that advertising in 2012

to make up for the lack of television advertising. ARCA also was considering running paid ads on television news shows in lieu of the commercial.

- **Despite efforts to educate customers about program participation requirements at enrollment, via the confirmation letter, and during the day-before and day-of phone calls, customers' lack of or incomplete awareness of program requirements was still a substantial barrier.**
- **Reducing or removing the incentive could have a substantial negative effect on program participation.**
- **The confirmation letter appears to be useful for confirming customer's pickup date, although less than half of participants surveyed recalled receiving the letter.** Of these, 83 percent reported finding the letter "very useful." SDG&E plans to transition to email confirmations in 2012.

Recommendations

Recommendations stemming from these findings are as follows.

- **Continue working to update SMART to include current per-unit savings goals.** This will allow program staff to track progress toward goals more easily.
- **Continue to work to provide ARCA access to a current customer database.** This will allow ARCA to schedule appointments more quickly, and customers likely will be more satisfied with the process and may be less likely to cancel their appointments.
- **Continue to have new appliance retailers promote the program.** Consider providing a mechanism for retail staff to order more brochures when supplies run low.
- **Continue to work to advertise the program through SDG&E bill inserts.**
- **Continue to monitor the cancellation rate, as well as the participation rate**, because the reduced incentive in 2012 could affect participation adversely. If participation decreases substantially, consider increasing the incentive, or varying the incentives seasonally. Communicate these incentives clearly, since the program is statewide and other investor-owned utilities (IOU) provide a lower incentive.
- **Continue to develop retailer partnerships that allow the program to pick up old appliances when new appliances are delivered.** Consider prioritizing partnerships with retailers that do not already recycle picked-up appliances.

Table 39 shows detailed recommendations.

Table 39: Summary of Issues and Recommendations for the SDG&E Appliance Recycling Program

Issue	Consequences	Steps SDG&E is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
06-08 Evaluation Finding: The program experienced a high cancellation rate (40%)	There is a missed opportunity with customers who indicated a willingness to participate.	The program began offering next-day pickup service, and increased the incentive until December 2011. The cancellation rate is now 18%.	Continue to monitor the cancellation rate, since the incentives decreased for 2012.	L	M
06-08 Evaluation Finding: The program did not recruit customers when they purchased new appliances.	New appliance purchases are a key decision point for customers who also may be disposing of an older appliance. Not promoting the program to new appliance purchasers is a missed opportunity.	Appliance retailers participating in HEER receive brief training and point-of-sale brochures on the Appliance Recycling Program.	Continue to have new appliance retailers promote the program. Make sure brochures are well-stocked. Provide a way for retail staff to order more brochures when supplies run low.	L	M
06-08 Evaluation Finding: Incentive levels may have been too low.	Customers may be unwilling to schedule an appointment, and/or consider it inconvenient, if the incentive level is too low.	SDG&E increased the incentives for refrigerators and freezers from $35 to $50. The incentive for each was reduced to $35 in January, 2012.	Monitor participation rates in 2012. If participation decreases substantially, consider increasing the incentive, or perhaps varying the incentives seasonally. This must be balanced with the possibility that different incentives may introduce complexity or confusion, given that the program is statewide and other	H	H

Issue	Consequences	Steps SDG&E is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
			IOUs offer a lower incentive.		
The per-unit savings in SMART are outdated.	It is difficult for the program to track progress toward savings goals.	SDG&E is developing a work paper to change the per-unit savings.	Continue to encourage the update of SMART to include current per-unit savings goals.	L	H
ARCA does not have access to a current customer database and is instead using a database from 2008.	Customers may not enroll in the program if they have to wait for ARCA to call them back to schedule a pick-up date. ARCA cannot schedule next-day pickups with customers who are not in the 2008 database.	ARCA and the Program Manager are working with the SDG&E Legal and IT departments to resolve this issue.	Continue to work to ensure that ARCA has access to a current customer database.	L	H
ARCA will be unable to air television commercials in 2012, and has been unable to advertise the program in SDG&E bill inserts.	Program participation may decrease, since television ads are a common source of program awareness.	SDG&E is considering advertising the Appliance Recycling Program through bill inserts in 2012 to offset the lack of television advertising. ARCA also is considering running paid ads on television news shows.	Work to advertise the program through SDG&E bill inserts. Continue to promote the program via cable bill inserts if possible.	M	M
Customers buying new appliances must make a separate appointment to	New appliance purchasers may use a non-program option to dispose of their old appliance quickly.	ARCA is working to develop a retail partnership. However, all retail partnerships are on hold until the CPUC	Continue to develop a retailer partnership so that the program can pick up old appliances when new appliances are delivered.	M	M

Issue	Consequences	Steps SDG&E is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
have the program pick up their old appliance.		reviews a report evaluating such programs.	Consider prioritizing partnerships with retailers that do not already recycle picked-up appliances.		

4.5 Business and Consumer Electronics Program

The SDG&E Business and Consumer Electronics (BCE) Program provides mid-stream incentives to retailers to increase the stocking, promotion, and sales of high-efficiency televisions, monitors, and desktop computers.[13] The program aims to reduce electronics plug load by influencing retailers to stock and promote more efficient electronics products, and thereby influence manufacturers to produce more high-efficiency products. The program pays participating retailers an incentive for each qualifying unit they sell; the incentives are shown in Table 40.

Table 40: BCE Program 2011 Incentive Levels

Product Type	Specification Level	Incentive
Televisions	ENERGY STAR 5.0	$10.00
Televisions	ENERGY STAR 5.0 + 20%	$25.00
Computer Monitors	ENERGY STAR 5.0 + 10%	$6.50
Desktop Computers	ENERGY STAR 5.0	$7.00

Navitas Partners (Navitas),[14] a third party program implementer, is responsible for recruiting participating retailers and managing retailer relationships.

BDS Marketing provides field support services: visiting participating retail locations to place promotional materials on qualifying products and educating retail staff about the program. Promotional materials consist of 3" x 5" and 4" x 5" stickers on qualifying products and magnets placed on shelving below these products. In-store education consists of one-on-one conversations with the department manager or store manager and the sales associates who are in the store at the time of the visit. The primary goals of the sales associate education are to: explain that SDG&E funds the program, identify the program signage so sales associates can distinguish the qualifying products and promote them, and refer sales associates to program websites for more information.

[13] As of January 2012, the BCE Program only provides incentives for televisions and no longer incentivizes monitors or desktop computers.

[14] QDI Strategies, Inc. (QDI) was initially the third-party implementer for this program. The primary contact at QDI subsequently formed a separate firm, called Navitas Partners. All California IOUs participating in the BCE Program now contract with Navitas rather than QDI in order to capitalize on the experience of the primary contact formerly at QDI, now Navitas, and to maintain consistency of the retailer relationships that have been formed through the program.

Navitas also manages the collection of retailer sales data by Energy Solutions. Energy Solutions also calculates sales of qualifying units, and submits the qualifying sales data and retailer invoices to SDG&E.

4.5.1 Background

The BCE Program is a California statewide initiative that began as a pilot program in 2009. In 2010, BCE launched as a full-scale program. In July 2011, BDS Marketing took over the provision of field services for the program from the SDG&E Program Manager.

It is important to note that the BCE Program is operated by SDG&E, Southern California Edison (SCE), Pacific Gas & Electric (PG&E), Nevada Energy, and the Northwest Energy Efficiency Alliance (NEEA). NEEA oversees the program throughout Idaho, Montana, Oregon, Washington, and Wyoming. These entities implement the programs similarly. Together, they are affecting the consumer electronics market.

New specifications for televisions are to take effect in April 2012. These incentives will depend on the screen size of the television. For televisions meeting ENERGY STAR 6.0 specifications (equivalent to 5.0 + 20%), the incentives will range from $4.50 to $17. For those at the ENERGY STAR 6.0 + 15% level, the incentives will range from $9 to $29.

Key Research Questions

In addition to the overarching research issues that span all programs, the evaluation team identified the following key research questions specific to the 2010-2012 process evaluation during initial interviews with program staff.

- Do marketing materials displayed at participating retail locations meet the goals and guidelines for marketing activities?
- Are retail staff equipped to identify and sell qualifying units?
- Are retailers changing their stocking practices as a result of the program?
- Does the program influence the manufacturing of energy-efficient electronics?
- Are the program-tracking data effective in supporting the program objectives?

4.5.2 Data Collection Activities

Data collection tasks for the evaluation of the BCE Program included in-depth interviews with program staff, electronics retailers, and electronics manufacturers.

The evaluation team interviewed program staff at SDG&E, Navitas, and BDS Marketing to document program delivery and gauge program successes and challenges. The following staff were interviewed:

- SDG&E – Program Manager
- Navitas – Managing Partner

- BDS Marketing – Client Services Manager

The evaluation team also conducted in-depth interviews with nine retailers, including three at the corporate level and six at the store level, and five manufacturers that produce electronics that qualify for program incentives. These interviews were conducted to determine retail sales associates' knowledge of the program and point-of-sale marketing materials; examine the program's influence on manufacturing and stocking of high-efficiency televisions, computer monitors, and desktop computers; examine retailer and manufacturer satisfaction with the program; and identify any suggestions for program improvements.

4.5.3 Research Findings

This section describes detailed results of the process evaluation of the BCE Program and includes a review of Program Performance Metrics (PPMs) and status regarding program goals. This review is followed by findings interviews with staff, retailers, and manufacturers.

Review of Program Performance Metrics and Savings Goals

This program has two PPMs: 1) tracking the number of participating retailers and retail locations, and 2) tracking the number of participating retailers receiving detailing. Detailing refers to placing promotional signage on all qualifying products at participating retail locations. SDG&E is tracking both PPMs. Table 41 shows the status of these PPMs for the BCE Program.

Table 41: PPM Summary and Status

PPM	Tracked?	Status Relative to Goal	Comment
Number of participating retailers, number of retail store locations by retailer, and other resellers receiving training.	Yes.	Four retailers participate in the program: Costco, Best Buy, Sears, and Kmart. There are 48 participating retail locations.	Program activity target for the 2010-2012 program cycle is a minimum of five participating retailers. Budget constraints limit the number of retailers that can be added.
Number of participating retailers receiving detailing.	Yes.	BDS Marketing has conducted detailing at all participating retail locations.	Program activity target for the 2010-2012 program cycle is to visit or contact each participating retailer once per year to deliver program information.

Staff Interview Results

The following issues were identified from the in-depth interviews with SDG&E, Navitas, and BDS Marketing staff.

According to the Program Manager, the biggest challenge was getting work papers approved by the Energy Division. In 2011, this staff person worked to have specifications for televisions increased to 20 percent above the ENERGY STAR 5.0 specification level. According to this contact, it is difficult to stay "ahead of the curve" and promote the most efficient electronics because ENERGY STAR specifications can increase without much notice, and obtaining the Energy Division's approval of work papers can cause delays.

The program also struggled with quantifying market transformation effects and program impacts. According to the Program Manager and Navitas, the program seemed to be having an impact with national retail buyers, and comparative data from Best Buy suggested that the program was having nationwide impacts. But the Program Manager explained that the energy efficiency of electronics would improve without the program. Program staff felt that quantifying the program's effect on the manufacturing and stocking of high-efficiency electronics was difficult.

SDG&E has a smaller budget for the BCE Program than do the other California investor-owned utilities, and therefore partners with fewer retailers. This can limit the SDG&E program's impacts. The SDG&E Program partners only with Costco, Best Buy, Sears, and Kmart, while the other utilities' BCE programs have been able to partner with additional retailers, including Walmart, Sam's Club, Target, Fry's Electronics, and independent small retailer buying groups.

According to a Navitas respondent, some utilities outside of the West Coast are not coordinating their BCE programs with the West Coast utilities that offer the program. The Navitas contact said retailers would participate in the program more easily if all of the utilities that offer BCE would develop a unified program with one set of specifications and a coordinated implementation strategy.

The Client Services Manager at BDS Marketing provided insight into the effectiveness of the marketing materials and training activities. She said that the point-of-purchase (POP) signage for the program effectively helps customers and sales associate distinguish qualifying, higher-efficiency units from non-qualifying units. However, she suggested increasing the frequency of POP detailing; for the 2011 program year, BDS Marketing conducted detailing only during in-store visits in July, September, and November. This is important because products can be disqualified on a monthly basis, and retailers often move products within a store and sometimes do not ensure that the program stickers are relocated with the products.

The BDS Marketing respondent also recommended a more formal training for all sales associates. This person estimated that of the three visits conducted in 2011, BDS reached roughly half of the sales associates at each store. It is challenging to train all the associates because of high turnover and because not all associates are present during each store visit.

Retailer and Manufacturer Interview Results

The evaluation team completed in-depth interviews with nine retail staff and five manufacturer staff. Navitas Partners provided the retailer and manufacturer contact information. When possible, the evaluation team asked respondents to focus their comments specifically on the SDG&E program; however, respondents often commented on the entire California market, and in some cases, the BCE Program as offered throughout California and the Northwest. Interviews were conducted from late October to early December 2011.

The nine retailer interviews included six with store-level staff and three with corporate-level staff. Corporate-level contacts included staff knowledgeable of the program at Best Buy, Costco, and Sears/Kmart. All store-level retail staff interviewed held management positions, either in the electronics department or at the store level, at Costco, Kmart, and Sears. The evaluation team made repeated attempts to interview Best Buy store-level staff, but was unable to reach a store-level manager willing or able to complete an interview.

Navitas provided the evaluation team with contacts for eight manufacturers whose products are incentivized by the program. The evaluation team attempted to contact all of these manufacturers during approximately two months in the fall of 2011. The evaluation team was able to complete interviews with five manufacturers: Samsung, Sharp, Panasonic, PNF (Philips), and Dell. The evaluation team was unable to reach contacts with Vizio, HP, and Fry's Electronics (which is primarily a retailer but also produces some products).

Program Satisfaction

Corporate-level retail staff were satisfied with their participation in the BCE Program. These retailers were particularly satisfied that the role that Navitas and Energy Solutions played in improving the process for submitting sales data and receiving incentives, so that incentives are disbursed within about six weeks after sales data are submitted. Two of the corporate-level retail respondents also said that they appreciated being part of an innovative, industry-shaping process to improve the energy efficiency of electronic products.

Manufacturers and retailers agreed that a key strength of the BCE Program is that it raises the visibility of energy efficiency throughout the industry. This fosters the continued adoption of high-efficiency electronics and helps key players in the retail chain speak to a common framework. One corporate-level retail respondent said that other utilities across the country view the California BCE Program as the leader in the electronics field.

Retailers generally were satisfied with the program implementer, Navitas. They perceived Navitas as an advocate on behalf of retailers with all of the utilities that offer BCE programs. They also considered it a plus that all of the utilities offering BCE programs use the same program implementer, in part because it helps facilitate information sharing across constituents. Furthermore, retailers said that having multiple utility partners is advantageous economically and effectively raises awareness of the program. Corporate-level retail staff also commended Navitas for having open channels of communication and facilitating

conversations between retailers and their utility partners. One retailer said he would like to know more about Navitas' efforts to expand the program to additional utilities.

Retailers generally were satisfied with the implementation subcontractor, Energy Solutions. Corporate-level retailer respondents appreciated Energy Solutions' assistance in simplifying sales data processing. One corporate retailer said that Energy Solutions has been a flexible partner that has tried to accommodate retailer data needs. However, another corporate retailer felt that Energy Solutions should expand its partnerships with ENERGY STAR and manufacturers to solidify Energy Solutions' understanding of all the models that qualify for the program. In many instances, model numbers in the ENERGY STAR database might differ from those that the manufacturers or retailers use. As a result, the program may deny a retailer's claim for a rebate on a qualifying product, and the retailer must prove that the SKUs or model numbers actually qualify for the program.

Store-level retailer respondents generally were unfamiliar with the BCE Program. Of the six store-level retailers interviewed, only one was familiar with the BCE Program and had worked with its representatives (from BDS Marketing). The remaining five store-level retailer respondents were unaware of the program or any program marketing materials in the store, although BDS Marketing staff reported that detailing had been conducted at all store locations. It is unclear why these five store-level interviewees were unfamiliar with the program. One possible explanation for this finding is staff turnover. High turnover is common in retail. One fourth of the contact names for store managers and department managers Navitas provided to the evaluation team were not current. It is also possible that some, but not all, store electronics staff had been educated about the program. As one manager noted, "Just because I didn't talk to them [field services staff] does not mean they did not come in. My guys might not have told me."

In-Store Marketing Materials

While corporate-level retail staff were familiar with BCE promotional materials and POP detailing, store-level staff generally were unfamiliar with marketing materials. All three corporate-level retail respondents could provide in-depth responses to questions about BCE marketing materials. However, only one store-level respondent out of six was familiar with the program and had seen associated marketing materials.

Retail sales associates do not always promote energy efficiency when selling electronics to customers. Of the six store-level respondents interviewed for this evaluation, two felt that most of their staff were knowledgeable about energy-efficient electronics and could use this knowledge to drive sales of those products. The other four store-level respondents thought that 10 percent or fewer of their staff could use this information to drive sales. This somewhat reflects sales force training. Only one respondent recalled that training had taken place at their store. While contacts at four other stores said that their store provides manufacturer and in-house training, the frequency of the training varies, and the training does not focus on the BCE Program.

The newly-required Federal Trade Commission (FTC) Energy Guide labels[15] may be reducing the influence of the BCE marketing stickers on consumer buying decisions. The FTC requires that TVs manufactured after May 10, 2011 display Energy Guide labels to inform consumers about each model's energy use. These removable yellow and black labels are posted on the front of televisions and provide information such as estimated yearly energy cost and the cost range compared to other, similar models. One manufacturer stated that, "The FTC has taken some of the marketing out of the game for us. With the labels, it is already out there. You don't have to market necessarily that your TV is 10 percent more efficient than a competitor because consumers can see that."

Program Influence on Electronics Manufacturing

Most manufacturers did not feel that the BCE Program had influenced their business. This is because most retailers make their consumer electronics purchase decisions at a national level, and manufacturers tailor their business to this national demand. According to one manufacturer, "Our business runs on getting placement with businesses on a national level. Giving regional $5 to $10 discounts really doesn't help me get products on shelves." Another manufacturer agreed: "Our factories are not saying, 'OK, there are two utilities in California and their programs require ENERGY STAR certification, therefore we have to meet this energy level.'" One manufacturer, however, said the program was "really beneficial" because the associated rebate funding to retailers allowed them to advertise to consumers.

Manufacturers said they would like to receive regular updates on program changes. Four of the five manufacturers interviewed commented on the challenges of keeping informed about changing ENERGY STAR criteria. For example, the ENERGY STAR 5.3 specification went into effect on September 30, 2011. The impacts of this have been significant as both manufacturers and retailers saw the number of their ENERGY STAR-qualified products decline from 25 to 75 percent. However, two manufacturers said they were unsure about how these changing specifications affected the BCE Program because no one associated with the BCE Program had discussed this issue with them. Similarly, retailers and manufacturers would like more information regarding the overall program's lifespan. According to one manufacturer, "Programs can be put in to place, rebates spent, and then it goes away. We have no insight as to when rebates go away unless I reach out."

Some manufacturers want to be incorporated into program planning and marketing efforts. While this program is targeted to consumer electronics retailers, it is also intended to affect manufacturers. Two manufacturers suggested that the current approach is not as collaborative as it could be. One manufacturer stated, "Generally, these types of programs don't really come out to manufacturers and say, 'OK, here's a program and here's how you

[15] See http://www.cee1.org/eval/eval-res.php3

participate in the program.' It's more (like) 'This is what we are offering. What models do you have that qualify?'"

Program Influence on Retailer Stocking and Sales of Electronics

Corporate retail staff reported that the BCE Program helps them influence television manufacturers. All three corporate retailers said the program is effective in influencing manufacturers to increase their products' energy efficiency in order to qualify them (particularly televisions) for program incentives. Two of the retailers also sell computer monitors and felt that the program had had less impact on the manufacturing of these products. One retailer sells desktop computers and felt that the program had not affected the manufacturing of these products. In general, these retailers viewed themselves as the intermediary between the consumer and the manufacturer, and saw themselves as the ultimate decision-maker, since they buy the electronics.

Corporate retail respondents also reported that the BCE Program had affected their decision to stock high-efficiency televisions. Two out of three corporate-level retail respondents stated that the BCE Program had had a significant impact on how their companies purchase consumer electronics. They felt this impact most noticeably when the program began, and more for televisions than for computer monitors or desktop computers. At that time, two of the retailers made a concerted effort to tell manufacturers how important the program was to their assortment. The remaining corporate retailer contact did not comment on stocking practices directly, but did state that the program had greatly influenced the manufacturing and availability of energy-efficient televisions, had had some impact on monitors, and a minimal impact on desktop computers. All three corporate retailers said that the program increased the number of high-efficiency electronics products their stores sell, particularly televisions.

All five manufacturer contacts and the retailer contacts said that retailers determine their consumer electronics product assortments at a national/corporate level. This assortment may or may not change, depending on regional preferences for electronics, socioeconomics, or store size. For example, stores in densely populated or more affluent areas in New York or California tend to stock higher-end electronics. Stores with more square footage may have a broader selection of products. Some store-level retailers said that, although they may submit product assortment requests in response to consumer requests, corporate buyers or merchants ultimately make assortment decisions. This suggests that any influence of the program is likely at a national level than at a regional level.

External Influences on Manufacturing, Stocking, and Sales of Electronics

National efforts, such as the ENERGY STAR program, the Consortium for Energy Efficiency, and the FTC Energy Guide label, also influence the consumer electronics industry. Both manufacturers and retailers said that national efficiency programs impact their product design and assortment due to their broad scale, consumer brand recognition, and in-store

visibility. One corporate contact and one store-level retailer each described the Energy Guide as impactful in terms of focusing consumers on efficiency. Another respondent mentioned that approximately 80 percent of end-consumers recognize the ENERGY STAR logo, even if they are not sure what it means. This recognition is important to both manufacturers and retailers as a metric of consumer perception of product quality and product differentiation. Respondents also mentioned of the Consortium for Energy Efficiency as an influential market actor.

Both manufacturers and retailers reported that technological improvements have been the primary driver advancing efficiency in consumer electronics. For example, desktop computers are made as all-in-one units combining the processor and monitor. One respondent said that these units achieve ENERGY STAR specifications much more frequently than desktop computers with separate CPUs and monitors. Design changes also have increased television and monitor efficiency. One retailer said this change began when flat screen TV and computer panels were introduced in about 2004. Since then, efficiency has improved along with technology as consumers have moved to products with LED backlighting.

Retailer and Manufacturer Suggestions for Improvements

The evaluation team asked retailers and manufacturers to report any program improvements, or what they would most like to change about the program.

One manufacturer and two store-level retailers recommended that SDG&E offer a recycling program for electronics. Although the BCE Program influences the efficiency of newly purchased units, consumers may continue to use their older, less-efficient units. A pick-up program for older electronics such as televisions would help remove them from use and encourage the purchase of newer, more efficient units.

Both retailers and manufacturers would like to see a standardized platform for BCE programs. As stated earlier, retail purchasing decisions are made at the national, corporate level. As such, it can be difficult for larger retailers to adapt their product assortments and marketing campaigns to individual utility programs. Two manufacturers suggested the implementation of national BCE programs. While this would better align with corporate buying strategies and allow for a more comprehensive and integrated roll-out of associated training and marketing campaigns, it is unclear how it would differ much from existing ENERGY STAR programs. Similarly, one retailer wondered why, although the California IOUs operate under the same regulatory guidelines, their BCE programs have different goals and objectives. He felt a shared program would better influence retailers' buying decisions.

Retailers would like the BCE Program to include additional categories of consumer electronics. One retailer said that his company tends to consider consumer electronics not just as individual products, but also as "home solutions." In other words, the retailer is not just selling a product, but viewing consumer needs throughout a home, and determining how best to address them. While retailers sell many electronics that affect plug loads, the BCE Program

addresses only a few "solutions" or electronics. If the program instead allowed for a "home solutions" perspective by adding electronics categories to the program, retailers said they could cross-sell a variety of energy-efficient options to consumers.

4.5.4 Comparison to Best Practices

The evaluation team compared program processes to the best practices outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool.[16] As described below, the evaluation team evaluated the SDG&E BCE Program with respect to best practices in Program Theory and Design, Program Management, and Program Implementation.

Program Theory and Design

The program theory is well-articulated in the Program Implementation Plan (PIP). Despite this, there appears to be a disconnect between corporate-level retail staff's enthusiasm for the program and the lack of program awareness at the store level. Furthermore, while the program seeks to increase the stocking and sales of high-efficiency electronics in the SDG&E service territory, retailer assortment decisions are made at the national level.

Program Management

Project Management

Management responsibilities for the BCE Program are very well-defined. Navitas manages the retailer relationship and oversees efforts by BDS Marketing to conduct field services and Energy Solutions to handle sales data processing and invoicing.

Reporting and Tracking

The program tracks the number of participating retailers, participating retail locations, and locations receiving in-store POP detailing. All of these are Program Performance Metrics (PPMs). The program also tracks sales of qualifying products by specification level. Retailers reported that the system for submitting sales data had become easier process over the course of the program.

Quality Control and Verification

The program maintains a list of model numbers of products that qualify for program incentives under the current efficiency specifications. However, it can be difficult to match

[16] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

ENERGY STAR model numbers to the numbers used by manufacturers and retailers. This evaluation did not specifically address procedures for verifying the accuracy of the sales data for qualifying products.

Program Implementation

Participation Process

Participation in the program is relatively simple, and has become easier for retailers as the data submission process has become more streamlined. Retailers work with a single contact at Navitas regarding several utilities' programs; this helps streamline communications.

Marketing and Outreach

The program uses the well-recognized ENERGY STAR logo. However, store-level sales associates interviewed for this evaluation were largely unaware of the BCE Program or its marketing materials. POP detailing and training were conducted only three times during the 2011 program year. Training was informal. BDS Marketing staff estimated that this training reached about half of sales associates. High turnover rates can impede efforts to train retail staff.

4.5.5 Conclusions and Recommendations

Primary research findings from this process evaluation of the SDG&E BCE Program are outlined below.

Conclusions

While corporate-level retail staff were satisfied with the program, manufacturers and retailers differed on the extent of the program's influence on the manufacturing and stocking of efficient electronics. Furthermore, store-level retail staff generally were unaware of the program. Thus, the effects of the program are unclear. This suggests potential flaws in the program theory; given a sound program theory, one would expect manufacturers, corporate-level retail respondents, and store-level retail respondents to agree on the effects of the program.

Manufacturers and retailers agreed that one of the program's key strengths is that it raises the visibility of energy efficiency throughout the industry. This fosters the continued adoption of high-efficiency electronics and helps key players in the retail chain speak to a common framework. Respondents said they viewed the California BCE Program as "leading the way." Corporate-level retail staff appreciated being part of a movement to increase product energy efficiency through the program.

Retailers familiar with the BCE Program generally were satisfied with their participation in it, although they cited some challenges related to the program. They

also recognized that program implementers must deal with constraints in managing the program within its guidelines, and for the most part, viewed the implementers as partners in promoting high-efficiency goods in the industry.

Although sales of high-efficiency electronics in California have increased, this likely is due to a confluence of factors. Manufacturers and retailers interviewed for this evaluation agreed that the energy efficiency of consumer electronics largely is driven by technological advances. In particular, the power usage of televisions has decreased significantly, driven largely by consumer demand that manufacturers incorporate more functionality into these devices at lower cost. Manufacturing also is heavily influenced by increases in ENERGY STAR specifications. Some manufacturers and retailers indicated that the program had influenced the stocking and sales of energy-efficient electronics, but said that retailers make assortment decisions at the national, not regional, level. Therefore, it may be impossible to isolate and quantify the effects of the program.

Manufacturers and corporate-level retailers differed regarding the influence of the BCE Program on electronics manufacturing. The program is designed to promote the adoption of energy-efficient consumer electronics through incentives to retailers. Given these incentives, retailers are expected to weight their assortment toward energy-efficient products and request more of them from manufacturers. In other words, the incentive should "pull" not only retailers, but also manufacturers, toward more energy-efficient televisions, computer monitors, and desktop monitors. However, manufacturers interviewed for this evaluation generally felt that the BCE Program's regional focus hampered its ability to influence their business. Furthermore, manufacturers felt that rather than coordinating closely with the program to produce more efficient products, the program simply asks them which of their products meet the program's specifications. On the other hand, corporate-level retail staff felt that the program gives them unique information to leverage when negotiating assortment with manufacturers. This was especially true when the program first began. This disagreement regarding the program's possible effects on the market could mean that the program logic is not sound, because there may not be a clear mechanism for the program to influence the manufacturing of energy-efficient electronics.

The effect of the in-store marketing materials and sales associate training is unclear. Store-level retail staff interviewed generally were unaware of the program's in-store marketing materials and were not promoting qualifying products. This implies that the POP materials and retailer training either are applied inconsistently or simply are not effective. Furthermore, recent FTC Energy Guide labels may reduce the impact of BCE Program collateral, as the labels provide consumers straightforward metrics to compare similar products. It also is unclear if consumers are aware of the marketing materials and if they are factoring the messaging of these materials into their purchase decisions, as the program does not track, nor does it necessarily target, consumer awareness or participation.

The program-tracking data appear to be effective in supporting the program objectives. The program tracks sales by participating retailer, type of product, and by specification level.

Retailers reported that the system for submitting sales data has become easier, which has improved retailer satisfaction.

Recommendations

Recommendations stemming from these findings are as follows.

Continue to assess the soundness of the program theory. Although corporate-level retail staff reported that the program had influenced their stocking and sales practices, manufacturers did not report that retailers were demanding more-efficient products. If the program is to influence the manufacturing of electronics products, it may make sense to involve manufacturers more actively to ensure that they are aware of current program specifications. Furthermore, sharing specifications with manufacturers early in the production cycle may help influence the efficiency of products they choose to produce.

Determine the role of POP materials and retailers in the program. If the goal of the program is only to influence stocking of energy-efficient electronics, then sales associates do not have a role in the program. However, if the program wishes to influence the sale of or demand for high-efficiency electronics, then the program must not only influence corporate buyers, but also the store-level sales associates. This means that sales associates need training on the benefits of the program and high-efficiency electronics. Sales associates also need an incentive to promote qualifying products, whether a direct financial incentive, or contests or prizes at the store or associate level. If it is determined that sales associates are an integral part of the program, POP materials will help them identify qualifying products. Monthly in-store POP detailing will ensure the appropriate labeling of qualifying products, and the supply and display of POP materials. The program also may choose to inspect POP detailing.

Table 42 shows detailed recommendations.

Table 42: Summary of Issues and Recommendations for the SDG&E Business and Consumer Electronics Program

Issue	Consequences	Steps Sempra Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
It is unclear if the program theory is accurate.	The program may be having limited influence on the manufacturing of efficient electronics.	None	Continue to assess the soundness of the program theory. Consider involving manufacturers directly in the program.	M	H
Sales associates interviewed were largely unaware of the program.	Sales associates may not be promoting qualifying products to customers. Furthermore, qualifying products may not be labeled, and products that no longer qualify could be incorrectly labeled as qualifying for the program.	BDS Marketing educated sales associates during store visits, but these visits occurred only three times in 2011. Training was informal, and reached about half of all associates. POP detailing also occurred only three times during 2011.	Determine the role of store-level retail staff and POP materials in the program. If the roles are minor, the current level of POP detailing and retailer training may be adequate or even unnecessary. If the roles are substantial, consider increasing the POP detailing, providing formal retailer trainings, and performing in-store inspections to assess the accuracy and effectiveness of these activities.	M	M

4.6 Energy Upgrade California

4.6.1 Background

Program History

To provide the reader with a broad context for understanding the SDG&E Energy Upgrade California (EUC) program, we include a brief history of the EUC brand, its evolution, and its relationship to overarching California Long Term Energy Efficiency Strategic Plan (CEESP) goals.

The EUC brand is an umbrella that includes America Recovery and Reinvestment Act (ARRA) and municipal program streams, and investor-owned utility (IOU) incentive programs. EUC seeks to provide a single point of entry for California homeowners interested in obtaining residential home energy retrofits. The primary goal of the EUC program is to increase residential investment in energy efficiency upgrades to homes, by supporting the development of market infrastructure sufficient to increase the role of home performance contracting in residential upgrades.

While EUC is presented to customers as one comprehensive offering, for internal tracking purposes it is a combination of two PIPs: the Whole House Performance Programs (WHPP) and the statewide Prescriptive Whole House Retrofit Program (PWHRP). The locally administered WHPP was proposed for the 2010-2012 program cycle by each of the four California investor-owned utilities, while the statewide PWHRP was added after direction from the CPUC Energy Division.[17] By including a prescriptive path, the CPUC sought to offer a simple path for homeowners interested in pursuing basic home energy upgrades. As a statewide program, the PWHRP offers a consistent program model that local governments can roll out in their communities; it was designed to be aligned with new and proposed efforts at the state and federal level.[18]

Ultimately, the two programs were combined and offered to California homeowners under the statewide "Energy Upgrade California" brand, which the California Energy Commission (CEC)

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[17] Decision (D.) 09-09-047, ordering paragraph (OP) 21, required the IOUs to include prescriptive whole house offerings in their statewide residential program, consistent with guidance provided in that decision. The IOUs' submitted plans for the PWHRP through an Advice Letter (SCE's Advice 2430-E), which was approved in a disposition letter issued by Energy Division on March 11, 2010.

[18] Source: California Investor Owned Utilities 2010-2012 Energy Efficiency Portfolio Program Implementation Plan Statewide Program Prescriptive Whole House Retrofit Program, Draft January 5, 2010. http://www.cpuc.ca.gov/NR/rdonlyres/D5103159-DED0-4E20-ABDC-A053DFAE07FD/0/CAIOU_PWHRPPIPDraft.pdf

established under legislative direction.[19] Measures included in the prescriptive and local whole house PIPs are offered through a single program with two participation pathways—a "basic" path for installation of PWHRP prescriptive measures, and an "advanced" path for customized comprehensive upgrades. Projects qualifying for basic path incentives earn a flat $1,000 incentive, while advanced path projects earn tiered incentives that reflect modeled and measured energy savings.

EUC provides training to contractors in home performance techniques and sales strategies and requires Building Performance Institute (BPI) certification to support project quality. EUC also seeks to create demand for home performance projects by providing homeowners financial incentives for prescriptive (basic path) or custom (advanced path) energy upgrades.

While SDG&E and the other IOUs present EUC to customers as a single program, the statewide PWHRP and WHPP programs remain administratively separate. Program staff members operate and track program activities as two line items to match the original, approved PIPs.

Program Structure

Prescriptive Whole House Retrofit Program (PWHRP): "Basic Path"

The basic path option offers homeowners a fixed incentive for insulating domestic hot water pipes, installing low-flow shower heads, and attic insulation, and for conducting air and duct sealing and combustion safety testing. Contractors use a blower door test to assess air-sealing levels. The program estimates that these prescriptive measures, in total, reduce a participant's energy use by approximately 10 percent.

A relatively wide range of market actors in the home repair sector is expected to be able to participate in the program at the basic path level, in part because the program does not require contractors to have a general contractor license. Instead, in order to install basic path upgrades, contractors must meet minimum insurance requirements; hold a license as an HVAC, insulation, or general building contractor; and attend the program's three-day Basic Building Performance Workshop.[20]

Whole House Performance Programs (WHPP): "Advanced Path"

The advanced path, based on the WHPP, offers performance-based incentives for homeowners who pursue upgrades beyond the measures required for the basic path. In

[19] AB 758 – Skinner, 2009

[20] Contractors with at least one BPI-certified Building Analyst on their staff can forgo the Basic Building Performance Workshop.

addition, homes that do not qualify for basic path upgrades (e.g., homes without a ducted HVAC system, or those with insulation levels that are too high to qualify them for the basic path) may pursue advanced path projects. According to program staff, the WHPP program offers larger incentives for advanced path upgrades for two reasons: 1) to reward participants who achieve higher savings; and 2) to offset the cost of the additional modeling and testing the advanced path requires. A narrower range of home repair market actors is able to participate at the advanced path level. Contractors providing advanced path upgrades must have a general contractor license and have at least one BPI-certified Building Analyst on staff.

The general contractor license requirement could reduce the attractiveness of the program for HVAC contractors, who often are well-positioned to "up-sell" advanced energy upgrades to the customers as part of other HVAC equipment upgrades or repairs. Program staff are investigating alternative licensing options to address this issue, including the possibility of establishing a special license for HVAC contractors to do home performance work.

Predicted vs. Actual Participation

As Table 43 suggests, planners and program staff originally anticipated that EUC projects primarily would follow the basic path. Program and implementation staff members reported that the program anticipated completing 3,600 projects, 3,000 of which would be classified as basic path.

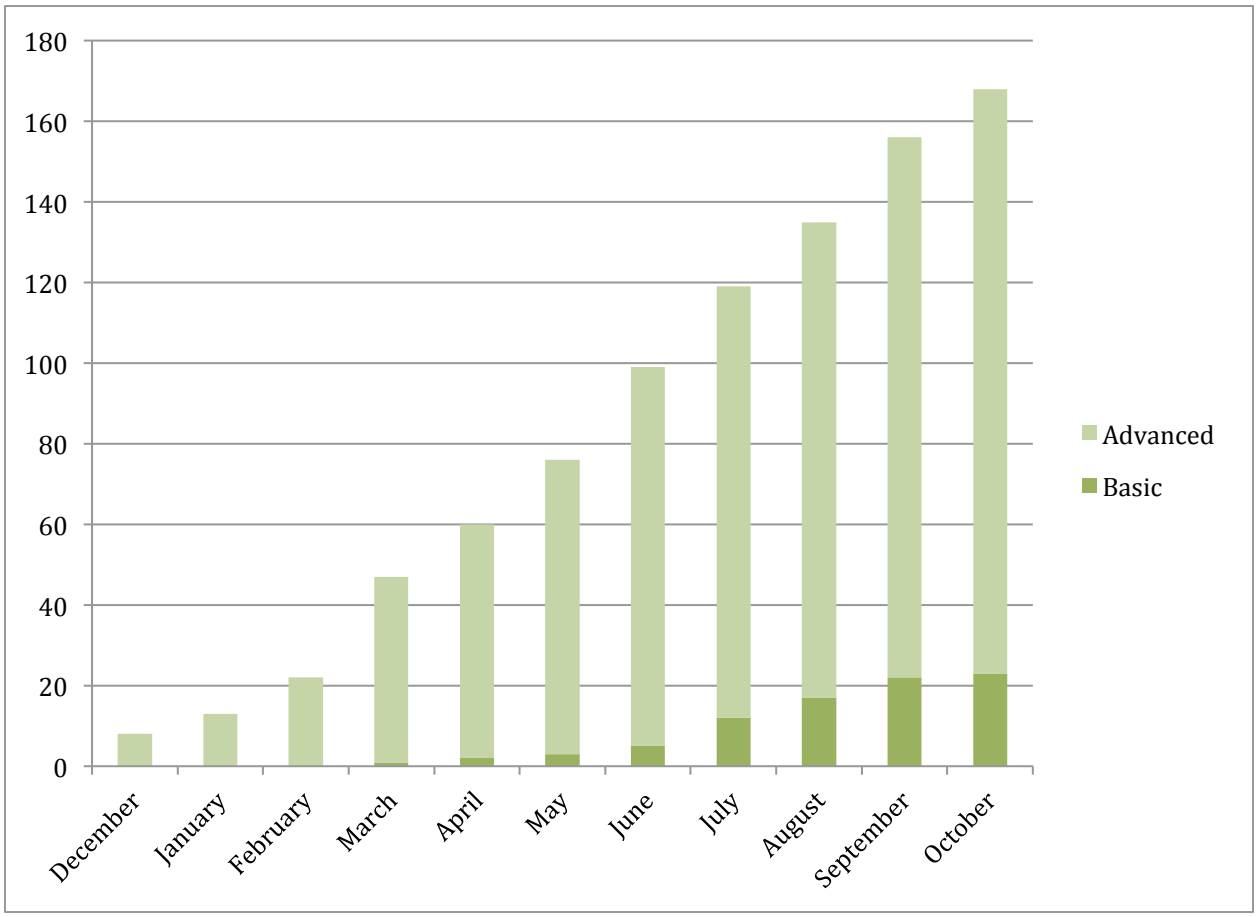
Table 43: EUC Component Program Budgets and Projected Savings for 2010-2012 Program Cycle

	Total Budget	Projected Gross Impacts		
		kWh	kW	Therms
Prescriptive Whole House Retrofit Program (Basic Path)	$13,000,000	1,471,252	2,102	179,912
Whole House Performance Program (Advanced Path)	$2,011,633	640,947	468	72,532

Sources: 2010-2012 Energy Efficiency Programs Comprehensive Home Performance and Statewide Residential Energy Efficiency Program Implementation Plans

In contrast to these expectations, the large majority of the projects submitted in the program's first year of implementation followed the advanced path. Program and implementation staff interviewed for this evaluation said they believed that contractors prefer the advanced path because it is consistent with BPI principles and allows them to offer customers a larger incentive. Contractor interview findings support this assertion. However, program staff noted that the number of basic path jobs had increased following a change in the program's quality assurance and quality control (QA/QC) provider in March 2011, which increased the requirements for advanced path projects. Figure 29 illustrates the cumulative number of pre-project submittals the program received through the first 10 months of implementation.

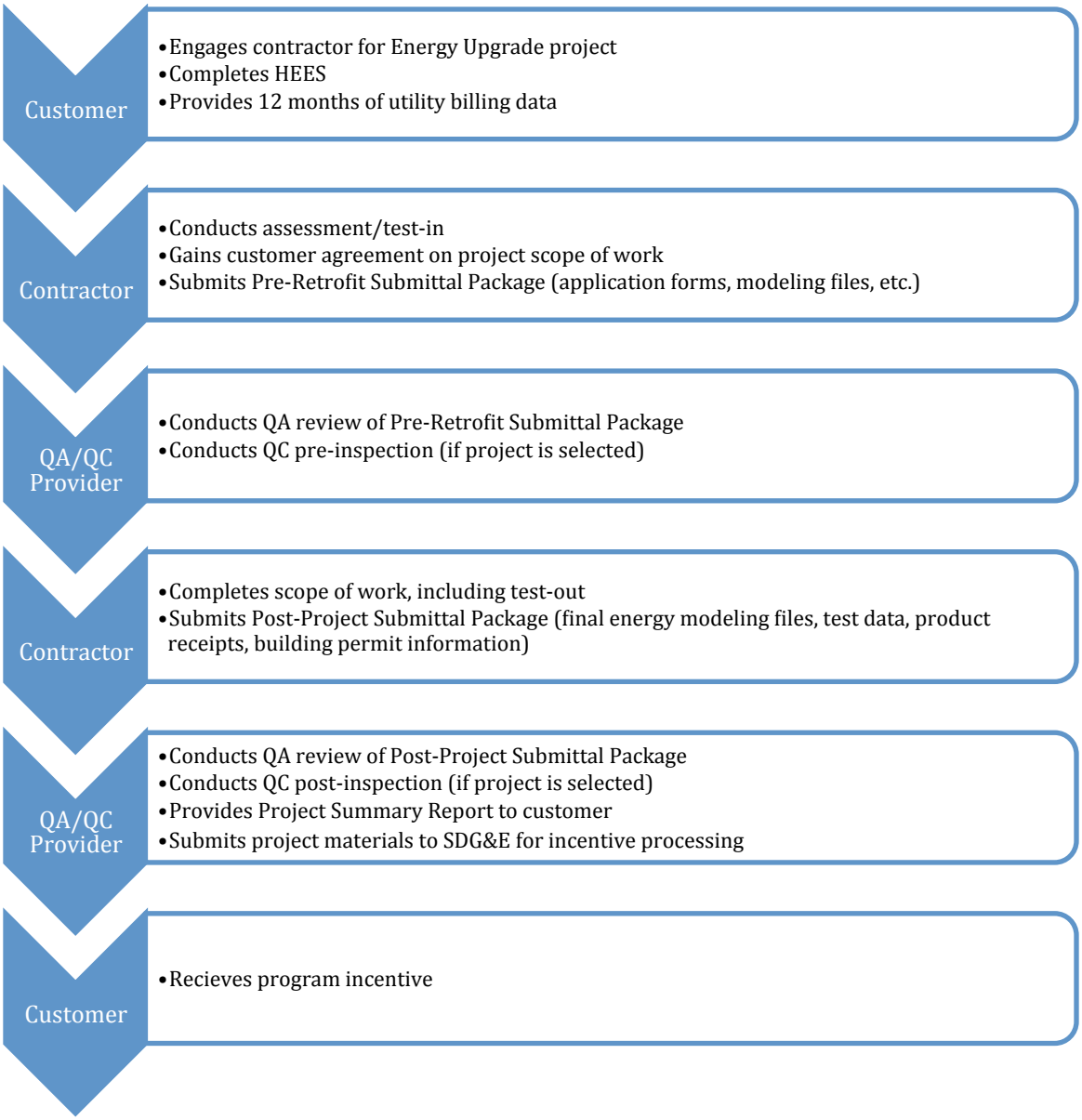
Figure 29: Cumulative Pre-Project Submittals Received – December 2010 to October 2011



Participation Process

The program expects that participating contractors will be the primary delivery agents of the EUC program. Contractors market the program to customers and typically act as the customer's primary point of contact throughout the participation process. Figure 30 presents a simplified summary of the steps that customers and contractors must undertake in order to receive an incentive for both basic path and advanced path EUC projects.

Figure 30: Simplified EUC Participation Process



The program database suggests that this process typically takes approximately four months (an average of 130 days from Test-In to Incentive Processed), although, as will be discussed below, recent efforts to clarify the program's QA/QC process are expected to shorten this timeframe.

Program Activities

SDG&E conducts three essential activities to implement the EUC program: outreach, technical training, and QA/QC.

Outreach

While participating contractors have the primary responsibility for marketing EUC services, SDG&E's EUC Program also conducts outreach activities designed to increase overall awareness of the EUC Program. These efforts include press releases and mass media campaigns, as well as maintaining the EUC website, which provides program information, offers an online application process, and directs participants to program-trained contractors.

In addition to these direct activities, the EUC Program leverages outreach efforts by other utility programs and non-utility initiatives. For example:

- EUC coordinates efforts with the Home Energy Efficiency Surveys (HEES). The program requires that participants fill out the HEES as a way of "starting the conversation" between the homeowner and contractor.
- Some municipalities used funding from the American Recovery and Reinvestment Act (ARRA) to offer incentives for energy upgrade projects, in addition to the incentives available through the IOUs' EUC program. The City of Chula Vista is particularly notable in this regard, offering matching incentives up to the full $4,000 available for advanced path upgrades.
- Other pilot efforts funded through federal Better Buildings Program grants seek to test innovative approaches to encourage upgrades, and ultimately drive participants to EUC through community outreach or additional contractor support.

Interviews with program and implementation staff members suggest that numerous outreach activities provide important support for contractors' marketing efforts. One program staff member stated that "brand awareness around EUC and comprehensive whole house retrofits [is] extremely low." An implementation staff member made a similar comment and noted that greater awareness of the program and its offerings among potential participants would make it easier for contractors to sell energy upgrade services.

The EUC program's customer-facing outreach efforts also support the larger market transformation goals shared by EUC and the California Energy Efficiency Strategic Plan. According to one implementation contractor, building a home performance industry sufficient to serve the EUC program will entail both raising consumer awareness, as well as training contractors to carry out home performance work.

Contractor Recruitment, Training, and Support

SDG&E has contracted with the California Center for Sustainable Energy (CCSE) to recruit contractors for the EUC program and provide training and support services. Through training, CCSE seeks to ensure that EUC contractors are: aware of program procedures, able to accurately estimate energy savings, and able to identify energy-saving opportunities for customers.

Early in the program's implementation, CCSE reached out to contractors in a variety of ways, including: contacting industry organizations; sending e-mail blasts to all contractors with relevant licenses; and drawing on CCSE's own databases, which were developed through their experience implementing other efficiency programs. SDG&E and CCSE program staff expressed satisfaction with the number of contractors recruited through these efforts. A contact at CCSE noted that ongoing recruitment primarily occurs through word-of-mouth contact between contractors. Table 44 provides details on the number of contractors qualified to provide EUC services in SDG&E territory as of November 15, 2011.

Table 44: Qualified Contractors as of November 15, 2011

Participation Path	Number of Contractors
Advanced	35
Basic	21
Total	56

As noted above, contractors who do not already have staff members with BPI certifications must undergo a three-day Basic Building Performance Workshop in order to provide basic path upgrades. The workshop provides an introduction to building science and building performance and explains what the program expects from its contractors. The advanced training prepares contractors to take the tests necessary to become BPI-certified. According to program staff, the majority of contractors attend the Advanced Building Performance Training shortly after completing the basic workshop.

The basic workshop and advanced training provide contractors with a general background in home performance. However, CCSE and program staff recognized a need for additional training and support to assist contractors in integrating home performance into their offerings and successfully carrying out home performance jobs. To provide this support, in July, 2011, CCSE began offering an optional mentoring program to guide contractors through the process of performing assessments, developing work scopes, and collecting and formatting data in a way that meets the program's QA/QC requirements. CCSE also has begun offering a webinar series on business, sales, and marketing, drawing on the experience of contractors and other industry actors. CCSE seeks to ensure that contractors are fully aware of these resources through periodic updates on program changes.

Quality Assurance and Quality Control

As Figure 30 suggests, the EUC Program conducts quality assurance reviews of the applications and energy models contractors submit and quality control inspections of a sample of projects both before and after contractors complete an energy upgrade. Through these quality reviews, the program seeks to ensure that contractors identify appropriate energy savings opportunities, accurately estimate energy savings, and meet EUC installation

standards. For advanced path projects, energy savings estimates verified through the QA/QC process form the basis for the incentives customers receive.

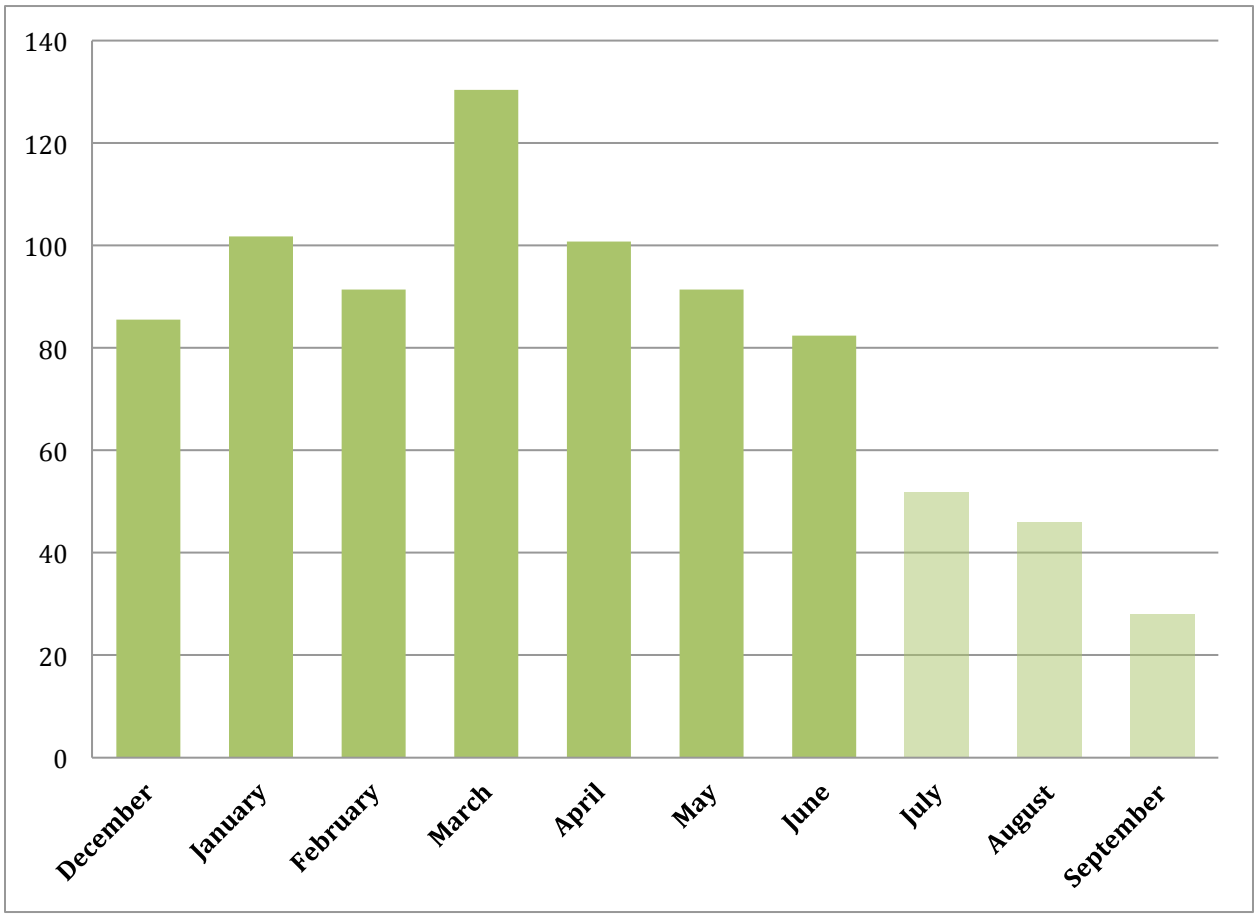
The program conducts a QA review of each project to ensure that the home qualifies for participation. Advanced path applications receive additional review to ensure that modeled energy savings estimates are sound. The program conducts an additional on-site QC review of a sample of projects, which replicates and validates the contractor's tests and measurements and verifies pre-retrofit conditions (in the case of a pre-inspection) or the equipment installed (in the case of a post-retrofit inspection). Post-retrofit inspections also check combustion safety, installation quality, and adherence to project scope and program requirements. Following the QC inspection (or QA review if an inspection does not occur), the program provides contractors with an Inspection Report, which includes QA/QC findings and lists any follow-up action the contractor must take.

CCSE, the organization responsible for contractor recruitment and training, served as an interim QA/QC provider early in the program's implementation. While this arrangement allowed for some synergies between QA/QC and contractor training, the program decided to contract with a third party, Richard Heath and Associates (RHA), in March 2011, in order to eliminate the potential for conflicts of interest in QA/QC findings.

Early in the program's implementation, the QA/QC process resulted in delays for a large number of projects. Program and implementation staff interviews suggest that these delays largely reflected a disconnect between contractors' understanding of the program's expectations for data collection and energy modeling and the QA/QC provider's requirements. According to one implementation staff member, "Nobody knew the rules, so nobody knew how to play by them." Comments by interviewed contractors (below) are consistent with this assessment.

In response to this disconnect in understanding, RHA and program staff developed a QA/QC plan, which seeks to clarify QA/QC procedures and requirements. The plan includes an appeals process for contractors who disagree with QA/QC findings. The plan also explicitly seeks to address the issue of delays resulting from the QA/QC process, and sets a three-day deadline for QA review following project submittal. Staff contacts reported that, since the plan was finalized in July 2011, projects have been better prepared to meet QA/QC requirements. Consistent with this assessment, the program database suggests that the average time between project submittal and rebate processing has decreased (Figure 31).

Figure 31: Average Number of Days Between Contractor Job Submittal and Incentive Processing by Month of Job Submittal, December 9, 2010-October 17, 2011



While Figure 31 shows that the time between job submittal and incentive processing has tended to decrease, it is important to note that, as of October 17, incentives had not been processed for a majority of the jobs in the database submitted in July, August, and September. As a result, average times for these months likely are longer than Figure 31 suggests.

4.6.2 Researchable Issues

The researchable issues this evaluation addresses fall into two broad categories: program delivery and implementation, and customer response. More specific issues addressed are listed below.

Program Delivery/Implementation

- Are contractors presenting the basic path option or only the advanced path? Why?
- How are participants becoming aware of the whole house product?
- What are the characteristics of EUC participants?

- Document the work of other stakeholders (contributions of money, training, credibility, being supplied by Better Buildings Program grantees, training programs, or city/county staff).
- Does training adequately prepare contractors to use Energy Pro? What are contractors seeking/expecting from their training experience with CCSE?
- What are the costs associated with EUC-qualified projects by measure?
- Investigate contractor attitudes toward and experience with sub-contracting in whole house retrofit work.
- What are contractors or participants doing to document baseline conditions or current home features prior to upgrades (levels of insulation, model and type of HVAC equipment, hot water age/model/type)?

Customer Response

- What are participants' expectations for their whole house upgrades? Are the upgrades meeting these expectations? Were participants satisfied with the contractor(s), as well as the work performed?
- Are customers satisfied with the upgrades? Do customers believe they got a good value for their upgrade?
- Why did customers pursue an upgrade?

4.6.3 Data Collection Activities

This evaluation draws on three primary data collection activities:

- Staff Interviews and Document Review: The evaluation team conducted interviews with SDG&E program staff in May 2011 to explore preliminary program processes, and follow-up interviews in September 2011, to discuss changes made during implementation. Additionally, in October 2011, the evaluation team interviewed third party implementation staff to discuss contractor recruitment and training and QA/QC processes. Evaluators also reviewed documents, including program implementation plans, process maps, training materials, and QA/QC plans.
- Contractor Interviews: Program staff provided a list of 56 contractors approved to provide services through the program as of November 15, 2011. In December 2011 and January 2012, the evaluation team completed 13 telephone interviews and one partial interview with participating contractors.
- Participant Survey: Program staff provided a list of 78 program participants who had completed projects as of November 16, 2011 and had indicated a willingness to be contacted about their program experience. The evaluation team completed 30 telephone interviews with program participants in late November and early December 2011.

4.6.4 Research Findings: Contractor Interviews

This section presents the findings from interviews with 14 contractors registered with SDG&E's EUC program.

Contractor Characteristics

The majority of the contractors interviewed represent small companies, with 12 of 14 contacts (86 percent) reporting that their company had 20 employees or fewer (Table 45).

Table 45: Size of Interviewed Contractors' Companies

Number of Employees	Number of Contacts (n=14)
10 or fewer	7
11 to 20	5
50 to 100	1
More than 100	1

Most of the interviewed contractors (86 percent) reported that they had experience with green building or building science before they became involved with EUC, although the level of experience contractors described varied widely. While some contractors elaborated that their green building experience consisted of "insulation knowledge" and "work with green fibers," others reported BPI certification, work in the solar industry, and years of experience with green building.

The interviewed contractors primarily reported learning about EUC through outreach by the California Center for Sustainable Energy (43 percent). Other sources of program awareness included: word of mouth (2 contacts); involvement in program development (2 contacts); mass media, contact with utility staff, and being approached by another firm interested in partnering on EUC work (one contact each). One contact could not recall how his company learned about the program.

Contacts most often reported that they chose to participate in the EUC Program because they anticipated an increased demand for home performance services. Three contacts anticipated that program incentives would drive this increase in demand. According to one of these contractors, "The rebate system helps people understand that they should take a risk to improve their homes and better understand how to save energy." Two contractors noted a general market trend toward green building. According to one of them, "It's the direction the market and retrofit building is going."

Program Activity

The program database indicates that, as of mid-October 2011, 15 contractors had completed a total of 168 jobs through SDG&E's EUC Program. However, one contractor was responsible for more than 70 percent of these jobs, and most of the participating contractors (9 of 15, or 60 percent) had completed only one job through the program. While most of the contractors interviewed (8 of 14, or 57 percent) had completed EUC jobs, the majority of these active contractors had completed relatively few jobs through the program (Table 46). Two contractors reported that, while they had not completed EUC jobs in SDG&E territory, they had completed jobs in Southern California Edison or Los Angeles Department of Water & Power (LADWP) territory.

Table 46: Interviewed Contractors' Level of Program Activity

Program Activity Level	Number of Contacts (n=14)
Active	
Completed 3 jobs or fewer	3
Completed 4-6 jobs	3
Completed 20 jobs	1
Completed 125 jobs	1
Active Total	8
Inactive	
Actively market EUC	3
Do not market EUC	1
Inactive in SDG&E territory, completed jobs elsewhere	2
Inactive Total	6

The largest company in the sample of contractors had conducted the preponderance of EUC jobs in SDG&E territory. In open-ended comments, this contact and two others suggested that the program's administrative requirements and the need to draw on multiple types of building expertise in carrying out projects favor larger companies. According to one of these contacts, "You have to be a very large company. You've got to be a general [contractor] for this to work well for you, and you've got to have multiple specialty licenses and very deep pockets to be able to carry all this money." Another contact, representing the largest company interviewed, acknowledged that, "Especially [for] a smaller contractor, it's got to be overwhelming."

Most contractors who had not completed jobs reported that they nonetheless market the program. Only one said that they had not marketed EUC jobs. However, comments by some inactive contractors and contacts that had done relatively few jobs through the program suggest that these contacts may not have made much of an effort to market EUC projects. According to one contact, "We really didn't have any leads, and we didn't market EUC to customers much." Another contact reported that, while their company initially had received referrals from the utility, recently "those leads just aren't coming in. So going into the next year, it's kind of up to us to market the program."

The interviewed contractors who had completed EUC jobs in SDG&E territory reported that EUC work constituted only a small proportion of their companies' overall business. None of the active contractors reported that EUC work constituted more than 25 percent of their total business, and most (6 of 8) reported that EUC work makes up 10 percent or less of their business. All of the contacts who had completed projects through the program reported that they had expected to conduct a higher volume of EUC work than they had carried out. However, two contacts reported that they anticipate conducting more EUC work over the coming year. A third contractor noted that economic conditions made it difficult for his company to sell EUC jobs.

Approach To EUC Work

Contractor interview findings are consistent with program records indicating that the majority of the EUC jobs completed in SDG&E territory followed the advanced path. All but one of the active contractors interviewed had completed advanced path jobs, including two contractors with basic energy upgrade certification who had worked as sub-contractors on advanced path jobs (Table 47). Of the five interviewed contractors certified to provide advanced energy upgrades that had completed EUC jobs in SDG&E territory, three had completed only advanced path jobs and the others reported that the large majority of the jobs they had completed were advanced path upgrades.

Table 47: Number of Contractors Using Advanced and Basic Paths

Type of Jobs Completed	Number of Contacts (n=8)
Advanced Path Only	3
Basic Path Only	1
Both Advanced Path and Basic Path	4

Explaining the prevalence of advanced path jobs, the interviewed contractors primarily cited the potential for customers to achieve greater savings and receive a larger incentive, in some cases with little additional effort beyond that necessary for basic energy upgrades (Table 48).

Table 48: Suggested Reasons for Prevalence of Advanced Upgrades

Reason Given for Prevalence of Advanced Upgrades	Number of Contacts (n=5)
Potential for greater savings and larger incentives	3
Customers do not meet requirements for basic path	2
Advanced path offers greater flexibility or is easier to market	2

Contractors also reported that a notable portion of their customers did not qualify for basic path upgrades. Contractors cited homes that do not have ducted heating and cooling systems, that have too much existing insulation, or that have irregular roof patterns that make it impossible to insulate evenly across the whole roof. One contractor estimated that two-thirds of the homes in which he had completed advanced path EUC jobs were ineligible for basic path upgrades for one of these reasons.

Contacts were divided in their approach to marketing advanced path and basic path upgrades. While some contractors certified to provide advanced path upgrades reported that they promote basic path upgrades as an alternative for homeowners, others said they promoted only advanced path upgrades (Table 49).

Table 49: Contractors' Approach to Marketing Advanced and Basic Path Upgrades

Marketing Approach	Number of Contacts (n=14)
Market both basic and advanced path jobs	3
Market only advanced path jobs	3
Do not distinguish path in marketing	3
Basic path-certified only	5

Three contractors also reported that they do not distinguish between basic path and advanced path upgrades in their efforts to sell the program to customers. Instead, these contractors promote energy upgrade services generally and direct interested customers to the appropriate path based on the customers' needs. One of these contractors said that this approach facilitates the sales process. Another contractor focused on maximizing the incentives available to the customer.

Sub-Contractors

The majority of the active contractors interviewed (63 percent) reported that they had sub-contracted work to non-EUC contractors on EUC jobs. However, contacts who elaborated on their responses primarily reported using non-EUC sub-contractors infrequently or that these sub-contractors had played only minor roles in the project (e.g., installing doors and extending dryer vents) or had been involved with elements of the project not related to energy (e.g., plumbing).

Four of the seven contacts who had completed advanced path home assessments reported that they had (2 contacts) or would be willing to (2 contacts) sub-contract assessment and modeling tasks to independent raters. Two of these contacts noted that partnering with independent raters might allow them to complete a greater volume of work if necessary. The three contacts who reported being unwilling to sub-contract assessment and modeling tasks expressed a general lack of trust in sub-contractors.

Program Experience

Training and Support

Interview findings suggest that participating contractors largely are new to the home performance industry and value the general information the program provides about home performance. Most of the interviewed contractors (57 percent) reported receiving additional training in order to participate in EUC. Most of these contacts (75 percent) reported undergoing BPI training. Consistent with this finding, among the training and support services the program offers, contractors most often reported taking part in the Basic and Advanced Building Performance Workshops (Table 50).

Table 50: Training and Support Services Used (Multiple Responses Allowed)

Program Services	Number of Contacts (n=14)
Basic Building Performance Workshop	11
Advanced Building Performance Training	10
Combustion safety workshops	10
Co-op marketing	9
Sales and marketing webinars	9
EnergyPro workshops	6
Desktop mentoring	4
Field mentoring	4

In contrast to other interview contacts, the contractor who had completed the preponderance of EUC jobs reported receiving the necessary training outside of the program. This contractor is a franchisee of a national home performance company, which provided all of the necessary training. According to this contact, the customized training his company received helped the company quickly ramp up its ability to conduct EUC jobs.

In describing the parts of the program-provided training they found most valuable, the interviewed contractors primarily (5 of 10 respondents) cited the training's role in increasing their knowledge of home performance and building science. More specifically, these contacts cited conducting assessments, calculating savings estimates, and understanding the house as a system as valuable elements of the training. One contractor said that he found the portion of the advanced path training conducted in the field particularly valuable. In addition to generally building their knowledge of home performance, two contacts noted that the training provided valuable opportunities to network with other contractors and program staff.

Half of the contractors responding (50 percent) reported that, in carrying out EUC upgrades, they had encountered issues not covered in the program training. These contacts primarily cited issues related to the diversity of the homes in which they had worked. For example, one contractor noted that the training had not covered ways to address homes with multiple roof systems and different types of additions. Three additional contacts stated that the training had not adequately prepared them to complete program documentation and pass the QA/QC process.

Consistent with the high proportion of contractors taking advantage of ongoing program support services like co-op marketing and sales and marketing webinars, all but one of the interviewed contractors reported that they had been in contact with the program following their initial training. In addition to the support services listed in Table 50, six contractors reported that they had contacted SDG&E program staff or CCSE staff directly.

Barriers to Selling EUC Jobs

The interviewed contractors primarily cited the cost of carrying out upgrades as a barrier that prevents homeowners from moving forward with EUC projects (Table 51). Three of the ten contractors who cited cost as a barrier elaborated that customers may not have realistic expectations regarding the cost of comprehensive energy upgrade projects. A fourth contact noted that the cost of the assessment deters some customers.

Table 51: Barriers Preventing Customers from Carrying Out EUC Projects

Barrier	Number of Contacts (n=14)
Cost of upgrades	10
Uncertainty related to QA/QC requirements	2
Homes not qualified for program incentives	1
Difficulty marketing a new service offering	1
Have not had leads	2

Two contractors also noted that uncertainty related to the program's QA/QC requirements made it difficult for them to sell EUC jobs. One of these contractors reported that he had not received referrals from customers who had completed EUC projects because of customer dissatisfaction arising from the need to coordinate multiple QA/QC visits. The other contact said that the need to correct multiple QA/QC findings made it difficult for contractors to bid on EUC jobs.

Finally, one contact reported that it had been difficult to capitalize on leads because his company, which primarily does HVAC work, had just begun to offer whole house energy upgrade services and was not fully prepared to explain the program benefits.

Most of the interviewed contractors who had completed advanced path home assessments (4 of 7) estimated that 30 percent or fewer of the homeowners who received an assessment ultimately completed an upgrade project through the program. All of these contractors stated that this represents a lower lead conversion rate than is typical for their other work. In contrast, two contacts reported that at least 75 percent of the homeowners who received home assessments hired them to complete upgrades through the program – a much greater lead conversion rate than they normally achieve. All of these contractors suggested that they typically see lead conversion rates of approximately 50 percent in their non-EUC work.

While they did not explicitly cite a lack of customer awareness as a barrier that prevents them from carrying out additional EUC projects, five contractors suggested that the program could benefit from additional efforts to reach out to homeowners and incentivize participation. These contractors recommended increasing direct, in-person outreach; expanding co-op marketing support; conducting program workshops for homeowners; and subsidizing assessments.

Home Assessments

Contractors reported that the time required to conduct an advanced path home assessment can vary from 90 minutes to six hours, but most contacts suggested that these assessments

typically range from two to four hours. Contacts' estimates of the additional time required to input the information into the EnergyPro software varied from one to six hours, or an average of two and four hours.

The interviewed advanced path contractors typically reported charging between $149 and $500 for a home assessment. Two contacts reported that they bill for home assessments on a sliding scale based on the size and complexity of the home (Table 52). These contractors reported that they might charge as much as $1,000 for assessments of the largest, most complex homes.

Table 52: Price for Advanced Path Home Assessment

Price	Number of Contacts (n=9)
$0-150	4
$151-300	1
$301-500	2
Sliding scale	2

Contractors provided a variety of explanations of the price they charge for a home assessment. Four of the five contractors who reported charging less than $300 for home assessments suggested that their price reflected what they felt the market would support, rather than their cost to provide the assessment. One of these contractors stated that "we lose money at that price," and another reported that his company had lowered the cost of an assessment to $149 from $300 because customers were not interested at the higher price.

One contractor, who had done a large volume of work through the program, echoed these views. According to this contact, "A lot of people don't know enough about this program to where they can really see the value in even paying for an assessment." This contact reported that his company had offered specials reducing the price of an assessment to as low as $49, "Just to try and get our guys in the home, because when we get in the home, we can close these deals once we educate people."

EnergyPro

Contractors offered negative assessments of the EnergyPro software. They had two primary criticisms: the accuracy of the software and the ease of using the software. Regarding the first issue, one contractor cited "inaccuracies in lighting and how you build the model with the ductwork." Another stated, "It's not accurate for HVAC distribution." The third said that, "So many of the measures are not given the proper weight or proper credit for what they really do for a home in the long term." Regarding the second issue, three contractors said that the

software is not easy to use, although one contractor noted that his staff was able to enter job information more efficiently as they became more familiar with the software.

One contractor suggested that the reason for these difficulties may be that the software is designed primarily as an asset rating tool to compare a home against a set reference point rather than to predict change in energy use resulting from upgrades within a single home.

Contractors cited relatively few positive aspects of the EnergyPro software. One noted that the report generation function was beneficial. Another said that the software allowed him to present customers with more precise energy savings estimates than he could generate based on his relatively limited experience providing energy upgrades. This contact also noted that the CPUC's acceptance of the software lends credibility to the savings estimates he presents his customers.

QA/QC Process

Interview findings suggest that, while contractors experienced problems related to uncertainty in the QA/QC processes over the first year of program implementation, recent program efforts had clarified these processes.

All but one of the interviewed contractors who had completed EUC jobs reported that the application or QA/QC process had caused delays in *some of* their projects, and nearly half (3 of 8) reported that *all* of their EUC projects had been delayed. In addition, half of the contacts who had completed EUC jobs in SDG&E territory (50 percent) reported that they had disagreed with a QA/QC finding, and two of these contacts indicated that they had formally appealed the decision through the program. The others reported resolving the dispute through conversations with program staff.

Despite the difficulty contractors described, interview findings suggest that recent program efforts to clarify QA/QC requirements have been effective. A majority of the interviewed contractors (7 of 11) reported that the program's QA/QC requirements are clear, and three of these contacts elaborated that the requirements were unclear in the past but recently had become clearer. Another contact acknowledged that the diversity of the housing stock made it difficult to create requirements that apply to every situation.

Interview findings suggest two factors that have generated uncertainty among contractors regarding QA/QC requirements. First, some contractors reported a lack of understanding of how the program's QA/QC providers determined some of the variables necessary to estimate energy savings and calculate program incentives. For example, one contractor reported that it was not clear to him how QA/QC inspectors determine variables ranging from home size to appliance energy use. Another contractor said that, "[The QA/QC vendor's] understanding of EnergyPro was not the same as a lot of the contractors'. Their understanding of how to do assessments, modeling, testing procedures, and their conceptualization of standards were different, and they weren't meeting in the middle." Second, two contacts stated that frequent

changes in the application and QA/QC process made it difficult for them to track program requirements.

As a result of this uncertainty, some contractors have felt ill-prepared to undergo the QA/QC process. One contractor explained that, "There are blind spots that I can only learn about through continually having them be put on the inspection reports from the QA/QC." Contractors cited this uncertainty and the resulting un-preparedness as a cause of delays related to the QA/QC process.

Contractors most often reported that these delays increased their costs, set their projects back approximately two weeks, negatively affected customers' satisfaction with the contractor and the program, and reduced a project's scope of work. These impacts clearly can frustrate and discourage contractors. According to one, "I guess it makes us less confident in the products we are producing. When we replace a furnace or replace a water heater on a project outside of EUC, we are confident the product is in working order and will be of value to the homeowner."

Uncertainty in the QA/QC process poses additional risks to contractors that guarantee estimated incentive payments to their customers. Three of the interviewed contractors reported that they guarantee customers' incentive payments and, consequently, take a loss when the actual incentive is less than their estimate. According to one of these contractors, who had completed a large number of jobs through the program, "We have eaten a considerable amount of money as a result of that." A fourth contractor reported that his company does not guarantee incentive payments because some contractors that have done so have gone out of business or left the program.

Two contacts who do not guarantee incentive payments reported that they explain to customers that quoted incentive amounts are estimates, and the incentive amount the customer actually receives may be less than the estimate. However, one of these contacts noted that lower-than-predicted incentive amounts had left customers dissatisfied. Another contractor reported that they provide conservative estimates of the incentives customers might receive in order to avoid this situation.

While contacts stated that the program recently had clarified the QA/QC process, three recommended actions the program could take to alleviate project delays. Two contacts suggested allowing the contractor to be present for the QC inspection. According to one, this would allow him to build on the rapport he had developed with the customer, immediately address some of the issues identified, and better understand the QC inspectors' criteria. Similarly, the other contractor stated, "After you've had a customer open up their home to you and let you go in and do all of this work and they are happy, then you don't necessarily want that customer disrupted by third-party verification." The third contractor also sought additional information about QA/QC requirements, and suggested that the program should quickly inform contractors of common problems found in paperwork or inspections.

Impact of Participation

A majority of the interviewed contractors (7 of 13) reported that participation in EUC has positively affected their business, as they shift their focus or provide home performance services as a new offering. Representative comments include:

- "We've basically evolved into a whole home company. It's definitely been a positive thing for our business."
- "For a builder that's been around for 30 years, it just started making us think differently about how to build a house."
- "We took a hard look at how we can survive the future and become the go-to company in the area that knows how to solve these problems. I think that's been incredible for us."

Consistent with these comments, a majority of contractors reported that participation in EUC had caused them to shift staff members' roles, and nearly half reported hiring new staff members (Table 53). Contacts reported shifting staff roles for a variety of reasons, including: assigning staff to market EUC projects and manage the program participation process, and ensuring that BPI-certified individuals are available for EUC work. Most of the contractors who had added staff reported hiring five or fewer new staff members, although two contacts reported adding 10 and 20 staff members respectively.

Table 53: Impact of Participation on Contractors' Business

Change in Business	Number of Contacts (n=13)
Shifted roles of existing staff	8
Hired Nnw staff	6
No change in business	3

While most of the interviewed contractors reported overall positive experiences with the program, four said that the program primarily had had a negative impact on their business. These contractors focused on the program's administrative requirements and the QA/QC process. According to one, "I can't apply the same cost to [an EUC project] because there is so much more paperwork involved." Contacts also stated that their program experience had increased the "levels of frustration" in the company and reduced their confidence in their home performance offerings.

Two contractors reported that they were going out of business or no longer planned to provide home performance services, but individual contacts at both companies said they valued the program's introduction to home performance contracting. A third contractor reported that their company had not been able to retain the staff members they had hired because their firm had not found consistent EUC work.

4.6.5 Research Findings: Participant Surveys

This section presents the results of telephone surveys with 30 EUC program participants.

Awareness and Initial Interaction

As shown in Table 54, over half of contacts (57 percent) reported hearing about the program through their contractor. Other means of learning about the program included through word of mouth (14 percent), through the utility company (11 percent), or through media channels (7 percent). [21]

Table 54: How Participants Learned of Program (n=28)

Means of Awareness	Percent
Home improvement contractor	57%
Word of mouth (co-worker, friend, family member, neighbor)	14%
Utility company (bill insert, letter, e-blast, or website link)	11%
TV, newspaper, or radio	7%
Other	14%

Two contacts also mentioned learning about the program through the California Center for Sustainable Energy (CCSE), and one mentioned a Chula Vista flyer. Of those contacts who learned through a contractor, eight said that they had contacted the contractor to do work on their homes (including six who had contacted a contractor about HVAC service), and three said the contractor contacted them (via a flyer or a Costco representative).

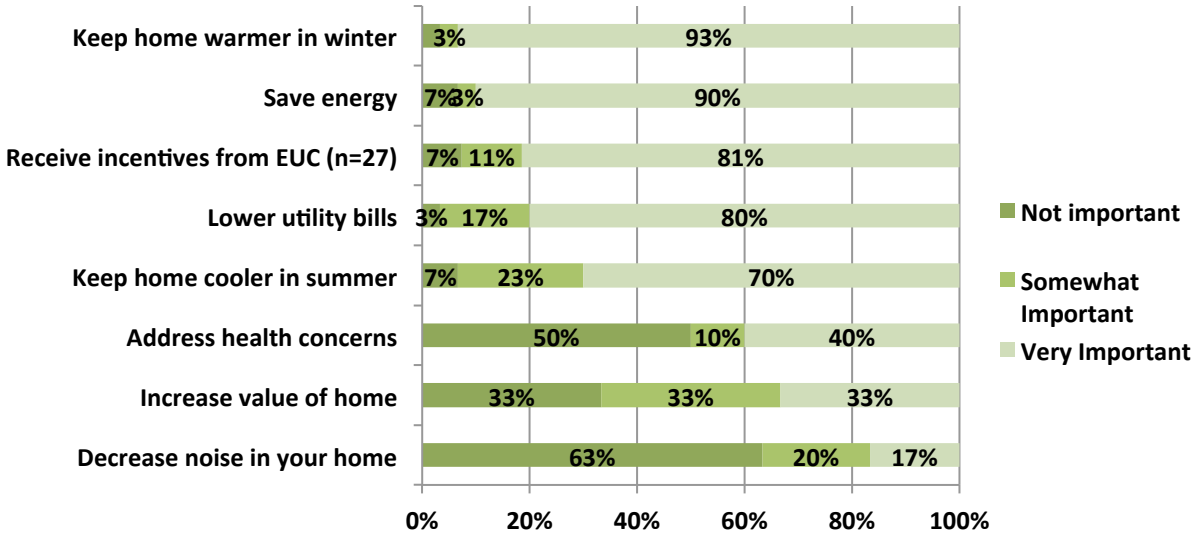
The evaluation team also asked contacts about their experience with the program website. Half of the participants (50 percent) recalled having used the website to find information about the EUC Program. Of the 15 who used the website, three reported difficulties in navigating the website.

[21] One participant interviewed by the evaluation team participated in the program before the website and program paperwork were available, and before all program implementation processes had been refined. For example, this participant reported completing his or her own pre-assessment. The evaluation team has omitted many of this participant's comments and complaints about the program from the counts in this chapter, because that individual's experience was not representative of the program, and because the participant already had communicated their experiences to program staff.

Decision-making about Participation and Project Scope

Participants reported that a variety of factors motivated them to participate in the program (Figure 32). The most frequently mentioned "very important" motivations included keeping their home warmer in the winter (93 percent), saving energy (90 percent), receiving incentives (81 percent), and lowering utility bills (80 percent).

Figure 32: Motivation to Participate in EUC (n=30 unless specified)



Although, overall, a third of contacts (33 percent) said that increasing the value of their home was not an important motivation, three of the four basic path participants (75 percent) said that increasing the value of their home was not an important consideration.

The evaluation team attempted to understand participants' understanding of the two program paths, and why they chose one path over the other. Half of contacts (53 percent, including 3 of the 4 basic path participants) reported being aware that there were two program paths. Just two advanced path participants reported initial interest in the basic package; one of these mistakenly thought they had participated through the basic path.

Two-thirds of participants (67 percent) reported learning what upgrades were needed in their home through their contractor (Table 55). Just less than half of contacts (43 percent, including 3 of 4 basic path participants) reported that the home assessment report also helped them learn which upgrades were needed.

Table 55: How Participants Learned Which Upgrades Were Needed (n=30)

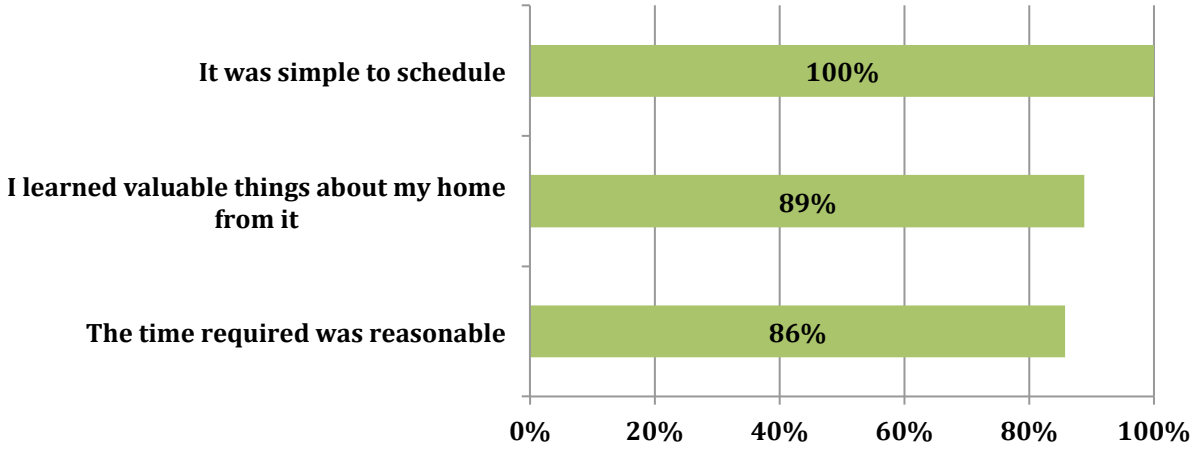
	Percent
Contractor discussed them with me	67%
Information from the home assessment report	43%
I already knew	20%
Other	10%

A third of contacts (33 percent) reported receiving incentives from sources other than SDG&E, including tax credits (4), rebates (4, from Costco and manufacturers), and matching funds from Chula Vista (2).

Home Performance Assessment

All but two participants recalled having received a home performance assessment before starting their projects. Satisfaction with the assessment was high: contacts agreed that it was simple to schedule the assessment, that the time required was reasonable, and that they learned valuable things about their home from the assessment (Figure 33).

Figure 33: Satisfaction with Home Performance Assessment: Percent "Agree" or "Strongly Agree" (n=28)



Twenty-one contacts were able to estimate how much they had paid for the assessment; estimates ranged from free to $300 for both the pre- and post-audit assessments, with an average of $135. To understand the degree to which participants valued the information from the pre-project audit, the evaluation team also asked participants how much they would be willing to pay for a similar audit. About half of responding participants (46 percent of 24 respondents) said that they would pay $100 to $200, and an additional third (29 percent of 24 respondents) said they would pay $200 to $300.

Experience with Contractor

Less than a third of contacts (30 percent) had used their EUC contractor on a prior project. Less than half (40 percent) reported getting a second bid on their project. A majority of contacts (27 of 30, or 90 percent) also reported that their contractor had estimated how much the upgrades would reduce their energy use (Table 56). Of these 27, over half (53 percent) could not recall how the energy reduction estimate was expressed; six (20 percent) said that their contractor estimated a percent reduction in energy use or utility bills, and five (17 percent) said that they received the estimate through other, more general ways (Table 56).

Table 56: Contractor Estimation of Energy Savings (n=30)

	Percent
Contractor estimated savings: don't remember how	53%
Contractor estimated savings: provided percent reduction	20%
Contractor estimated savings: provided another estimate	17%
Contractor did not estimate energy savings	10%

The evaluation team also wanted to understand how contractors conveyed the rebates to participants. Nearly all participants (90 percent) reported that their contractor provided an itemized estimate. Less than a quarter of participants (17 percent) said that the rebates were *not* listed on the bid. Over half (57 percent) of contacts said that the contractors' estimate of the rebates was accurate (Table 57).

Table 57: Accuracy of Contractor's Estimate of Rebate (n=30)

	Percent
Contractor's estimate of rebate was accurate	57%
Contractor overestimated rebate by ~$500	13%
Contractor underestimated by $500-$1000	10%
Contractor provided estimate of rebate amount; don't recall if accurate	3%
Contractor did not provide rebate estimate or don't remember	17%

Approximately two-thirds (63 percent) of contacts recalled receiving their rebate check directly from SDG&E.

About half of contacts (15 of 28, or 54 percent) reported that the cost of their projects matched their expectations. Roughly a third (10 of 28, or 36 percent) reported that the cost

was higher than they had expected, and a few (3 of 28, or 11 percent) reported that the cost was lower than they had expected.

One-third of participants (33 percent) reported not doing all of the upgrades recommended by their contractor, often because of cost.

Participant satisfaction with contractor performance was very high, with over 90 percent of contacts rating a "4" ("agree") or a 5 ("strongly agree") on a five-point scale (Table 58). Only two contacts disagreed with any of the statements below by providing a "1" or "2" on the five-point scale.

Table 58: Agreement with Statements Regarding Contractor Performance (n=30)

Statement	Percent "Agree" or "Strongly Agree"
My contractor knew about how to make my home more energy-efficient	100%
I'm satisfied with the service provided by my contractor	97%
My contractor was friendly and professional	97%
The information I received from my contractor was credible	97%
I was able to contact my contractor when I needed to	97%
My contractor treated my property with care	97%
My contractor arrived on time	93%
I received a fair bid from my contractor	90%

Roughly half of contacts (15 of 29, or 52 percent) recalled filling out forms or other program paperwork. Of these, three of 15 (20 percent) recalled that some of the information was difficult to provide. Only one of the three recalled what was difficult, saying that, "Some [information] required a little digging through utility bills, but it was reasonable; it probably took close to an hour to fill out all of the paperwork with the contractor guiding me through the process." One additional contact participated before the pre-application paperwork was available.

Experience with Inspection

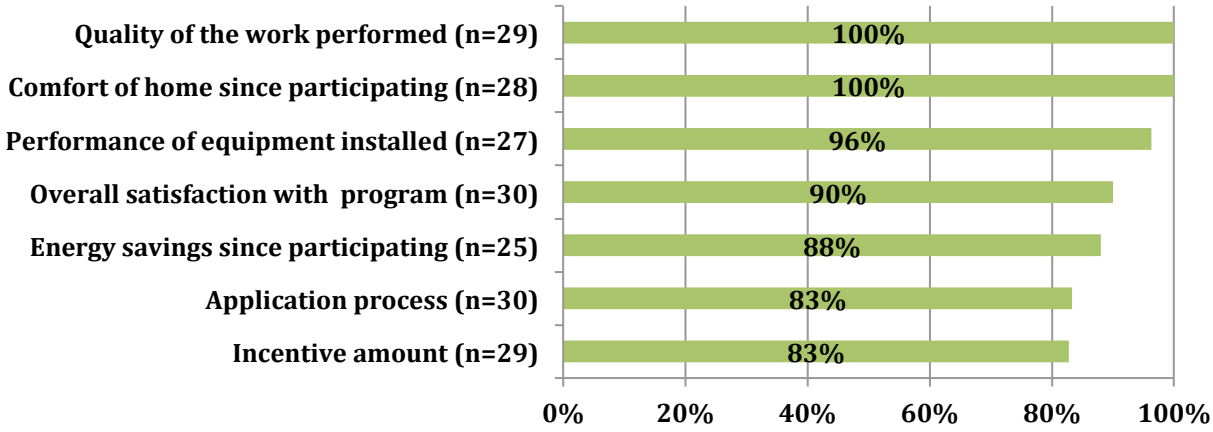
Nearly all participant contacts (28 of 30, or 93 percent) recalled having a post-installation inspection, and 80 percent of them were present for that inspection. Satisfaction with the inspector was high: nearly all contacts agreed that the inspector arrived on time, explained what they were doing, and behaved professionally.

Four contacts (3 percent) reported that the inspection identified issues, including insulation lacking (2 mentions), excessive air sealing (2 mentions), and weather stripping lacking (1 mention). In all cases, the issue was resolved, either immediately or during a return visit.

Program Satisfaction

Overall program satisfaction was high; over 80 percent of respondents reported being "satisfied" (a "4" or "5" on a 5-point scale) with each item[22] (Figure 34). Just five contacts (17 percent) were dissatisfied (indicated by a rating of "1" or "2") with any element of the program.

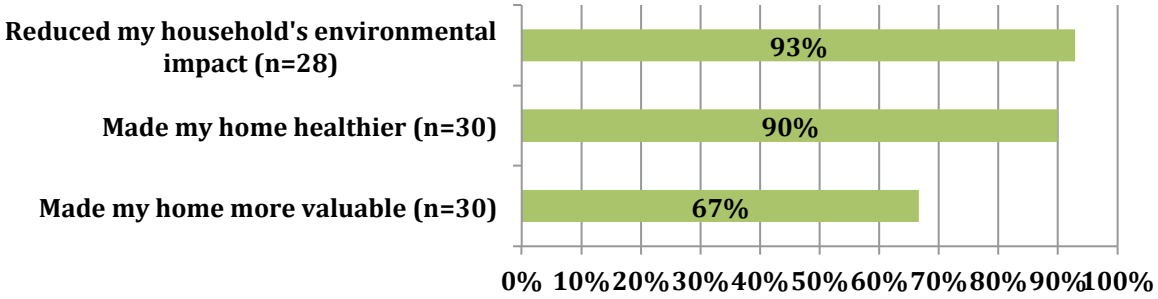
Figure 34: Percent "Somewhat" or "Very" Satisfied with Program Elements



Participants also rated the benefits of the program's upgrades to their home (Figure 35). Nearly all participants agreed (indicated by a "4" or "5" on a 5-point scale) that the EUC energy upgrades reduced their homes' environmental impact and made their homes healthier in which to live.

[22] Percents exclude "don't know" or "too soon to tell" responses. Five contacts said it was "too soon to tell" whether they were satisfied with the energy savings since participating.

Figure 35: Ratings of Benefits of Participation: Percent "Agree" or "Strongly Agree"



One-third of participants (10 contacts, none of them a basic path participant) described elements of the program that did not work well for them. These program elements included: energy savings that were less than expected (3 mentions), issues with contractors (3 mentions), and other issues (4 mentions).

Two-thirds of participants (20 of 30, or 67 percent) also provided suggestions for improving the program. The most common topics were: issues with contractors (5 mentions), increasing or changing the incentive structure (4 mentions), and the amount of time the pre- or post-project audits took (4 mentions).

Participant Characteristics

Respondents provided information about themselves and their homes. Table 59 shows these participant characteristics.

Table 59: Demographic Characteristics of Interviewed Participants

	Mean	Minimum	Maximum
Number of residents (n=29)	2.8	1.0	6.0
Age of home (n=27)	45	17	84
Size of home, in square feet (n=28)	1,693	875	3,700
Respondent age (n=28)	58	30	80

All but two respondents reported living in the property that was upgraded through the program. One of these two individuals said the property was a rental, and the other said that he upgraded two properties through the program and intended to sell them.

4.6.6 Comparison to Best Practices

Best practices for whole house programs are emerging as these programs become more common, although they remain somewhat limited. The best practices provided below are based on the evaluation team's review of evaluation and other literature.[23]

While contractors have the primary responsibility for delivering home performance programs to homeowners, program marketing and outreach should support contractor efforts to sell home performance services. Programs can provide this support by offering co-op marketing incentives to contractors and through marketing and outreach efforts that target homeowners directly. These efforts may include earned media and mass media advertising, websites, bill inserts and direct mail, and outreach through community groups and events.

EUC promotes the availability of incentives as a way to encourage whole house upgrades and provides contractor training to support the sale of home performance projects. Additionally, the program is able to leverage the resources provided by ARRA and the Better Buildings Program to reach specific communities, although this federal support likely will end over the next two years.

Home performance services deliver notable non-energy benefits, which may play a larger role in convincing some homeowners to undertake retrofits than the potential energy savings. Programs should promote non-energy benefits like increased comfort and safety as part of their outreach efforts. Programs also may promote benefits to the community *as well as* the individual, for example environmental benefits and reduced strain on the electric grid.

The extent to which EUC is directly marketing non-energy benefits is unclear. Participating contractors reported matching their marketing efforts to the specific needs of their customers. There may be opportunities to identify and further leverage non-energy benefits by including these aspects in home performance sales training.

Programs can benefit by recognizing that some contractors are more likely to succeed in offering home performance services than others. The most successful contractors are typically those at the "cutting edge" of the building industry and are focused on identifying and taking advantage of emerging trends, and contractors that historically have promoted efficient products and services as being in their customers' best interests. Programs may benefit from targeting recruitment efforts toward these contractors, and by offering additional support to

[23] Specifically, the evaluation team relied on three primary sources for emerging best practices for home performance: a white paper produced by the Home Performance Resource Center in 2010, "Best Practices for Energy Retrofit Program Design"; a brief summary comparing key aspects of the 2006 California home performance evaluation results with those of NYSERDA; and a paper included in the 2008 ACEEE Summer Study authored by Von Schrader et. al. titled "Best Practices and Lessons Learned from EPA/DOE's Home Performance with ENERGY STAR Program."

contractors that find the transition to home performance contracting more difficult. Programs can provide this support through:

- Mentoring efforts that can help contractors apply their training in real-world situations and integrate home performance into their business model
- Program-supported education and training efforts that can help build a workforce qualified to provide home performance services.

Through EUC, SDG&E has invested substantial effort in supporting contractors, by both encouraging new home performance entrants and in supporting the contractors who have registered with the program. EUC supports specific education, training, and certification opportunities likely to support the development of a qualified home performance industry.

Programs should balance the need for verification and quality control requirements with the need to maintain processes that are not overly onerous for contractors. Quality control is an important element of home performance programs. It serves both to ensure that savings are realized and customers are satisfied, and to distinguish home performance services as a high-quality product in the marketplace, helping to build the home performance industry. However, programs also should seek to ensure that quality control requirements are clear and that the costs and administrative burden they create do not unnecessarily interfere with contractors' ability to sell and carry out home performance jobs.

Balancing the verification requirements and expectations for certainty in project savings estimates with the need to keep participation processes as simple as possible for participating contractors likely will continue to be an issue for EUC Program. Recent efforts to clarify the QA/QC process and better document the overall expectations of everyone involved in the program seem to indicate that these efforts will be more balanced in future program years.

4.6.7 Conclusions and Recommendations

As a component of the statewide whole house program designed to include both prescriptive and comprehensive whole house projects, SDG&E's EUC Program is but one piece of a somewhat complicated, ambitious California effort. The program launch was delayed as the many organizations involved worked through program requirements and restrictions and developed a statewide web portal under the EUC banner. As of fall 2011, nearly a year after the program was made available to California homeowners, there were signs that the recruitment, training, and QA/QC requirements had become routine.

Conclusions

- **Contractors play a critical role in marketing and providing information about the program, as well as in recommending specific upgrades to participants.** Participating contractors described seeking new business opportunities and an expanded suite of services for their customers, although not all registered contractors

had embraced marketing the EUC program. None of the active contractors reported that EUC work constituted more than 25 percent of their total business. Contractors voiced concerns about the delays and uncertainty caused by QA/QC verification and inspection, but noted that these requirements had become clearer since the process was clarified in summer 2011. Complaints about the EnergyPro modeling software also were common.

- **Participants were quite satisfied with their EUC-sponsored projects;** 100 percent agreed that it was simple to schedule an assessment, that their contractor knew how to make their home more energy-efficient, and that they were satisfied with the work performed and the comfort of their home after the upgrades were completed. Participants also gave high ratings to the performance of the equipment, and nearly every measure of contractor performance. Ninety percent of participants reported that they were "somewhat" or "very" satisfied with the program overall.
- **The high levels of participant satisfaction could indicate that contractors and program representatives had protected EUC participants from their own frustrations with the program or that the incentives participants received from the program were sufficient for them to overlook any issues they had with inspections or uncertainty.**

Recommendations

- **Continue to explore ways to reduce any uncertainty in the estimation of incentives.** This uncertainty makes it difficult for contractors to estimate incentives confidently, and limits their ability to provide an accurate estimate of homeowners' out-of-pocket costs in bid documents.
- **Monitor the QA/QC process to ensure that the cycle time required to get projects approved continues to decline.**
- **Use program-tracking data and ongoing communication with contractors to identify signs of further improvement in QA/QC processes.** Participating contractors should experience fewer issues as they become more familiar with the program and they internalize the program's quality requirements.
- **Incentives that can exceed $4,000 for residents in certain areas of SDG&E territory likely are sufficient to get the attention of homeowners interested in home energy upgrades.** As the ARRA funds are discontinued or if the EUC incentive levels are ratcheted down, SDG&E and the other EUC sponsors may need to commit to additional marketing and outreach to sustain or increase overall project volume.

Table 60: Summary of Issues and Recommendations

Issue	Consequences	Steps Sempra Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
There is tension between the level of QA/QC desired and the delays and uncertainty created	Projects take substantial time to move through the process; can affect contractor receivables and willingness to stay in the program	Ongoing efforts to simplify and clarify QC requirements	Monitor program data for signs that cycle time is improving	M	H
Incentives are based on performance relative to modeled savings and create risk/uncertainty for contractors estimating incentives	Contractors could mitigate risk by increasing bid estimates; they could also lose money and decide to leave the program	Unknown	Work with contractors and to identify strategies for reducing uncertainty in incentive estimatation	H- Rules established at statewide level	
ARRA-funded marketing and incentive sweeteners will drop off as funds are depleted	Program marketing and attractiveness could drop	Ongoing marketing efforts are underway	SDG&E may need to ramp up marketing efforts or identify new marketing strategies if project volume drops off next year	M	M

4.7 Comprehensive Manufactured and Mobile Home Program

This section presents the results of process evaluation activities conducted for the Comprehensive Manufactured and Mobile Home Program (Manufactured and Mobile Home Program) provided by Synergy Companies (Synergy) in the San Diego Gas & Electric (SDG&E) service territory. This section includes an assessment of the program's success to date and provides recommendations for improvement.

4.7.1 Background

The Manufactured and Mobile Home Program is designed to provide energy efficiency measures to owners and renters of manufactured and mobile homes. According to the PIP, the program has operated continuously throughout California for over five years.

According to Synergy contacts, many of the customers in this market segment are senior citizens on fixed incomes and often are physically unable to install the measures themselves. According to the PIP, this segment is unlikely to take advantage of energy efficiency programs because of barriers associated with cost, split incentives, park management directives, income, and language. The Manufactured and Mobile Home Program seeks to overcome or reduce these barriers through direct marketing and direct installation of selected energy efficiency measures.

4.7.2 Research Overview

Evaluation research tasks sought to assess the Manufactured and Mobile Home Program's effectiveness and identify possible recommendations for improvement.

As a first step in the evaluation, the process evaluation team reviewed program documentation (e.g., PIPs, logic models, previous Manufactured and Mobile Home Program evaluation). From this review, the team developed a list of eight researchable issues, from which the team developed hypotheses and research questions for Synergy program staff and program participants.

4.7.3 Research Objectives

In May 2011, the evaluation team met with representatives from SDG&E and Synergy to discuss the program and identify potential areas for evaluation research. The researchable issues identified included:

- Opportunities to improve program marketing and outreach
- Opportunities for the program to reach more mobile home residents or more parks
- Opportunities to leverage local government partnerships
- Additional measures that could be included or opportunities to get even more comprehensive savings from these residences

- How does Synergy manage the overlap with California Alternate Rates for Energy (CARE) and the Manufactured and Mobile Home Program? Are there opportunities to improve the process around referrals to other programs?
- What are participant expectations for their upgrades? Are the upgrades meeting these expectations?
- Are participants satisfied with Synergy staff, as well as the work performed?
- Are customers satisfied with the upgrades? Do customers believe they got a good value for their upgrade?
- Why did customers agree to participate? Did they have any concerns? How did Synergy persuade them to participate?

4.7.4 Data Collection Activities

This evaluation consisted of the following activities:

- Review of program documentation
- In-person interview with SDG&E Program Manager at evaluation kick off meeting
- In-depth telephone interviews with seven Synergy program staff
- Telephone survey with a sample of program participants
- Ride-along, on-site visits with Synergy technicians in Southern California.

Table 61 displays data collection activities completed by the evaluation team.

Table 61: Mobile Home Data Collection Samples

Sampling Target	Sample
SDG&E Program Manager	1
Synergy staff	7
Synergy technicians	4
Manufactured and Mobile Home Program participants	100

Interviews

The evaluation team conducted an in-depth, in-person interview with the SDG&E Program Manager of the Manufactured and Mobile Home Program and telephone interviews with seven Synergy staff in September and October 2011. The team also spent one day interviewing Synergy technicians on the job.

In addition, between October 24 and November 5, 2011, the team completed surveys with 100 SDG&E customers who had participated in the program between January 2010 and June 2011.

4.7.5 Research Findings: Program Staff

This section discusses implementation of the program and the experiences of program staff and technicians with program marketing, program management, and customer response.

Program Marketing

The evaluation team explored the program marketing activities regarding the general marketing strategy, role of technicians and the utility, and approach to saturation.

During the 2006-2008 program cycle, Synergy used the California Department of Housing and Community Development website to locate all manufactured and mobile home parks and residences within Southern California. Synergy tracked interactions with the parks in an *Excel* database. For the 2010-2012 program cycle, Synergy transitioned to a comprehensive tracking database – the Synergy Technical System database (STS) – which compiles information about and the history of the marketing activities and completed projects at each site. Synergy contacts said this enhancement enabled marketers to cover the targeted parks within each geographical area more efficiently.

The STS compiles data that inform Synergy's marketing efforts. These efforts include: outbound telephone outreach and (when authorized) door-to door canvassing, distribution of flyers and mailers, and open-house presentations.

In addition to the Manufactured and Mobile Home Program, Synergy also implements SDG&E's Energy Savings Assistance Program (ESAP) and California Alternate Rates for Energy (CARE) programs, which target a similar market segment. Synergy contacts explained that these three programs can be presented to income-qualifying customers simultaneously. Presentations can include information about enrollment in the Manufactured and Mobile Home Program.

Synergy contacts reported that, although door-to-door marketing was the most effective approach to enrolling customers in the program, the majority of mobile home parks in Southern California traditionally have not allowed door-to-door canvassing. Because of this, in prior program years, Synergy's marketing strategy focused on introducing the program to park managers and offering to explain the opportunity to park residents during neighborhood meetings. This strategy changed for the 2010-2012 program cycle. Because Synergy has implemented the Manufactured and Mobile Home Program statewide for over five years, program contacts said that mobile home property owners, managers, and park managers are very aware of the program. Furthermore, contacts reported that the program has established a well-developed and respected reputation throughout Southern California. For these reasons, the current marketing activities rely less on neighborhood meetings to introduce the program,

and instead emphasize increasing saturation within participating parks through customized, targeted outreach to specific mobile home park managers, mobile home parks where participation has been low, and individuals.[24]

Once residents sign up, program technicians do some or all of the following: perform duct test and seal and AC diagnostic and tune-up activities; and install faucet aerators, low-flow showerheads or shower starts, compact fluorescent lamps (CFLs), and interior and exterior fluorescent fixtures.

In addition, program technicians install some or all of the following measures in mobile home park common areas: area occupancy sensors, interior and exterior fluorescent fixtures, T-8 or T-5 lamps, electronic fixtures, vending machine controllers, and LED exit signs.

Role of Technicians in Marketing

According to Synergy contacts, communication within mobile home parks is well-developed, and the potential for customer referrals is very high. Because so many residents hear about the program through word-of-mouth, the program strives to preserve Synergy's reputation by ensuring that technicians are doing good work and that residents are satisfied.

In addition, Synergy encourages technicians to market the program as they work in the parks. Technicians have a checklist containing all of the steps necessary to complete a service appointment. The list includes obtaining customer referrals, which is one of the tools to increase saturation. Technicians are reminded to obtain referrals at their monthly meetings and receive a $5 bonus per customer sign-up.

In 2010-2012, Synergy added logos, a toll-free number, and calls to action on its fleet of vehicles to support program marketing and credibility. One Synergy technician said that mobile home park residents had noticed the signage on Synergy trucks and learned that other residents of the park were receiving free services and measures. According to this technician, "That is when the residents approach technicians to ask about the program."

Utility Support for Marketing

Synergy staff noted that the utilities play very important roles in program marketing efforts. Overall, Synergy and utility contacts reported maintaining a good working relationship.

Program staff reported that the authorization to use utility logos on an introductory letter had helped reduce customer skepticism about the program, but these contacts said they would

[24] Synergy contacts clarified that neighborhood meetings continue to play an important role when interfacing with parks where program awareness is low.

like to be able to use utility logos on a wider range of Synergy marketing materials, including ID badges or shirt patches. Program contacts also said they seek to cross-market multiple utility programs at each mobile home park. Synergy currently cross-markets SDG&E's ESAP and CARE programs to income-qualifying residents when promoting the Manufactured and Mobile Home Program in each neighborhood. Synergy contacts said the utilities could achieve additional benefits by enlisting the organization to implement other programs (particularly outreach, education and smart meter efforts).

Local Government Partnerships

Synergy began partnering with local governments' energy saving and carbon reduction initiatives in SoCal Gas territory during 2011. According to program contacts, these partnerships have helped increase the visibility and legitimacy of the Manufactured and Mobile Home Program and assisted the municipalities in meeting their carbon reduction goals. SoCal Gas utility account representatives assigned to municipalities helped forge these partnerships with local governments, acting as liaisons to city officials engaged in carbon reduction initiatives and representing the mobile home programs to decision-makers. One Synergy contact noted that the SoCal Gas utility account representatives "opened doors we are not able to open on our own." Although contacts said they had not yet initiated similar partnerships in SDG&E territory, they planned to do so, and assumed their efforts would be productive.

Program Management

The evaluation team reviewed several components of program management: technician training, quality control, and data tracking and reporting.

Technician Training

Synergy program staff said they were able to recruit and retain qualified technicians. All of the four Synergy technicians interviewed for this study reported receiving sufficient training to install program measures correctly. Training protocols included all aspects of duct testing and sealing and installation of energy-efficient measures. Technicians also reported receiving training in customer service and marketing that included information about the importance of looking and acting professionally and building customers' trust in the program and its representatives.

At monthly technician meetings, Synergy staff give technicians updated information about installation techniques, data-tracking protocols, and customer service approaches. A representative from the evaluation team attended one technician meeting and observed that program staff reminded technicians that they are the "face" of the organization and encouraged them to pay close attention to their personal appearance and the level of customer service they provide.

Quality Control

Synergy's five Quality Production Managers physically inspect at least five percent of all completed jobs. In addition, Synergy contracts with a third-party firm to call 20 percent of participating customers after the work is complete to assess their satisfaction with the installed measures and the installation process. Synergy provides customers self-addressed customer satisfaction cards and refrigerator magnets displaying Synergy's toll-free number. The Operations Manager and Production Specialist analyze the data and use the findings from the inspections to improve training procedures and measure installation processes.

Technicians receive copies of the project inspection reports so they can review feedback about their performance. If a technician's numbers are inaccurate, Synergy staff recommend how best to complete the work, or take disciplinary action. Synergy offers productivity bonuses to qualifying technicians at the end of each month. If technicians receive any quality assurance failures, they are ineligible for the bonus.

Data Tracking and Reporting

Technicians record customer and project information electronically while at the customers' homes and upload information from duct testing and sealing and air conditioning tune-ups directly from handheld data loggers. These loggers eliminate potential errors and data manipulation. These data are processed and analyzed to verify the quality of the measure implementation.

The most important development in tracking and reporting for Synergy in this program cycle is the Synergy Technical System database (STS) system. The STS uses information from electronic forms completed by technicians to automatically populate files required for utility reports, invoices, and status reports. This system has reduced the number of errors associated with handwritten forms, and is used to create statistical samples for on-site inspection and verification. STS also has increased the speed with which this information can be matched to utility Customer Information Systems because STS enables Synergy to upload program-tracking data directly into the utility database, where it is automatically verified.

Because of these enhancements, tracking errors tend to be limited to instances when account information is recorded incorrectly. Allowing Synergy to access utility customer databases through their STS could eliminate these errors by allowing technicians to confirm account numbers before they install the measures, but concerns about customers' privacy and confidentiality limit this access to customer account information. Synergy contacts noted that their organization continues to discuss this issue with partner utilities to find and implement an acceptable solution.

4.7.6 Research Findings: Customer Experience

This section presents the results of telephone surveys with 100 Manufactured and Mobile Home Program participants in SDG&E territory. The survey sought to understand how

customers heard about the program, their reasons for participating in it, their satisfaction with various program elements, and whether they promoted the program to others.

Program Outreach

Eighty-eight participant contacts were able to recall how they heard about the program. Most of them (38 percent) said this first contact occurred when a program representative came to their door. As noted in Table 62, another 20 percent cited direct mail advertising and outreach through mobile home park managers.

Table 62: Source of Program Awareness (n=88, Multiple Responses Allowed)

Source of Awareness	Percent
Program representative came to door	38%
Through advertising or the mail	20%
Through park office or management	19%
Through a neighbor	14%
Notified via phone	13%
Other	9%

When prompted, about one-third of these contacts (35 percent) reported that they initially were concerned about the program's legitimacy. The evaluation team asked all participant contacts what convinced them that the program was legitimate. Table 63 displays their responses. Participants most frequently said that the appearance of the utility's name on implementation staffs' IDs or paperwork (27 percent), knowing others who had participated (17 percent), and/or interactions with program representatives (16 percent) addressed their concerns. Although over one-half of contacts (61 percent) reported having internet access, only 10 percent of those (6 of 62) reported accessing the internet to obtain program information.

Table 63: Factors that Convinced Participants of Program Legitimacy (n=100, Multiple Responses Allowed)

Convincing Factor	Percent
Utility name on ID or paperwork	27%
Knew others who had participated	17%
Interaction with representative	16%
Park management	15%
No cost	7%

Convincing Factor	Percent
Contact called to verify	6%
Prior knowledge of program, including advertising	5%
No reason/not a concern	4%
Don't know	4%
Other	9%

4.7.7 Reasons for Participation

Contacts rated the influence of seven potential benefits to their households and three program features on their decisions to participate in the program (Table 64). Well over three-fourths of contacts rated "saving energy" and "lowering utility bills" as "very important" factors in their decisions. Similarly, over three-fourths of contacts rated each of the three program features (participation was free, the program was sponsored by SDG&E, participation appeared simple) as being "very important" factors in their decisions.

Table 64: Reasons for Program Participation

	Rating		
Benefit	**Very Important**	**Somewhat Important**	**Not at all important**
Benefit to Household			
Saving energy (n=99)	88%	9%	3%
Lowering your utility bills (n=99)	83%	14%	3%
Keeping your home cooler in the summer (n=97)	67%	13%	20%
Keeping your home warmer in the winter (n=96)	67%	18%	16%
Addressing health concerns (n=98)	47%	29%	24%
Increasing the value of your home (n=92)	39%	23%	38%
Decreasing noise in your home (n=95)	28%	26%	45%
Benefit of Program Feature			
Participation was free. (n=100)	88%	9%	3%
The program was sponsored by SDG&E. (n=99)	85%	13%	2%
Participation appeared simple. (n=100)	83%	14%	3%

4.7.8 Program Experience

All but nine contacts reported being present during measure installation. Each of them reported allowing the installer to complete all of the recommended improvements to their home. About 90 percent of contacts "strongly agreed" that the time required to complete the work was reasonable, scheduling was simple, and that installers effectively informed them about the work to be conducted (Table 65).

Table 65: Installation Process Experience

	Rating				
Element	**Agree Strongly**	**Agree Some what**	**Neither Agree nor Disagree**	**Disagree Somewh at**	**Disagree Strongly**
The time required for the work was reasonable. (n=101)	90%	10%	0%	0%	0%
It was simple to schedule the installation. (n=99)	90%	9%	1%	0%	0%
My installer told me what items would be installed and what work would be conducted. (n=100)	89%	9%	0%	1%	1%
I learned valuable things about my home from the installer. (n=96)	46%	32%	9%	10%	2%

Ten contacts said that unexpected issues occurred during the installation process. Seven of the ten reported finding loose or leaky ducts when Synergy technicians completed an air-conditioning duct test and seal, and that technicians subsequently repaired the faulty ductwork. Two of the ten said their installer did not complete the work as proposed; one of them said the installer could not successfully install the porch light and the other said the duct sealing created a blockage that caused furnace problems. One of the ten reported being generally dissatisfied with the installed measures.

4.7.9 Satisfaction

Program participants rated their degree of satisfaction with six program elements (Table 66). Overall, participants provided very high ratings; 92 percent of contacts reporting being "extremely" or "very" satisfied with each of the program elements. Less than ten percent of contacts reported being "not very" or "not at all" satisfied with the program elements.

Table 66: Program Satisfaction (n=101, unless otherwise noted)

Element	**Rating**

	Extremely or Very Satisfied	Somewhat Satisfied	Not Very or Not at All Satisfied	Don't Know / Refused
Interactions with program representatives	94%	4%	0%	2%
Overall services provided by this program	92%	5%	2%	1%
Quality of the work performed in your home	90%	8%	3%	0%
Time between signing up for the program and when the installer came out	90%	8%	0%	2%
Overall comfort of your home since participating in the program	87%	11%	0%	2%
Performance of the energy-efficient lighting installed in your home (n=97)	84%	12%	4%	0%
Performance of your ductwork after it was checked by the program (n=69)	81%	6%	1%	12%
Performance of the air conditioning or heating equipment since it was tuned up through the program (n=25)	56%	12%	8%	24%

Additionally, nearly one-half of contacts who reported receiving air conditioning and/or heating tune-ups (38 of 86, or 45 percent) reported noticing lower utility bills after the tune-up was completed. Twenty-three percent said they had not noticed lower utility bills, and 33 percent were not sure if their bills were lower.

When prompted, 11 contacts provided feedback about elements of the program that did not work well. Nine of them reported dissatisfaction with the performance of low-flow showerheads, aerators, and/or lighting measures. One of the 11 reported complications with the air conditioner tune-up, and one reported difficulty scheduling an appointment with Synergy.

Contacts also provided feedback about what they considered the best aspects of the program (Table 67). Contacts most frequently reported valuing the measures they received (55 percent), the ability to participate in the program for free (24 percent), and the financial and energy savings (23 percent).

Table 67: Best Aspects of Program (n=93, Multiple Responses Allowed)

Program Aspect	Percent
Desirable measures and services/Useful program	55%
Free program	24%
Saves money/energy	23%
Quality technicians/Good customer service	18%
Increased safety	6%
Increased comfort	3%
Offered through utility	2%

Nearly all contacts (93 percent) indicated that they would be "very" or "somewhat" likely to use SDG&E efficiency programs in the future, if the opportunity arose. In addition, contacts offered feedback about SDG&E's efficiency services in general. When prompted, nine of 101 contacts (9 percent) reported having contacted SDG&E about energy efficiency services and/or ways to reduce their bills, and said the information provided by SDG&E was helpful. Six of the nine agreed it was easy to find the appropriate SDG&E contact.

Table 68: Agreement with Statements about Contacting SDG&E about Efficiency (n=9)

Statement	Strongly or Somewhat Agree	Neutral	Strongly or Somewhat Disagree
It was easy to find the right person to speak with.	6	1	2
The information provided by SDG&E helped me understand what else I could do in my home.	9	0	0

4.7.10 Outreach

Just under half of participant respondents (46 percent) reported having recommended the program to someone else. Table 69 displays the program aspects these respondents reported sharing with others.

Table 69: Program Aspects Respondents Reported Sharing with Others (n=68, Multiple Responses Allowed)

Program Aspect	Percent
Desirable measures and services/Useful program	57%
Free program	19%
Quality technicians/Good customer service	10%
Saves money on utility bills	9%
Other	4%

About one-quarter (28 percent) of contacts who reported speaking with their installer said the installer had asked for a referral. Of those who recalled being asked for a referral, about one-quarter (7 of 27, or 26 percent) said they provided the installer with contact information.

Twelve of the 17 respondents who recalled being asked for a referral but did not provide one explained they either did not know any likely prospects or that everyone in their neighborhood already was aware of the program; the remaining five said they were either not comfortable providing contact information to program representatives, or that they preferred to refer individuals to the program themselves. Only three contacts reported that they knew of others who had considered participating in the program, but had decided not to.

4.7.11 Demographics

Three-fifths of contacts (60 percent) were female. The average size of contacts' homes was 1,198 square feet, and the average age of their homes was 29 years (Table 70).

Table 70: Respondent Home and Household Characteristics

	Min	Max	Mean
Household members (n=101)	1.0	6.0	2.3
Home size (n=68)	300	2500	1,198
Home age (n=81)	3.0	63	29

Over one-half of contacts (56 percent) reported living in households with adults who were 70 years or older (Table 71).

Table 71: Household Member Characteristics (n=101)

	Percent
Children under five	13%
Children between 5 and 18	16%
Adults 70 or over	56%

Almost half of these contacts (46 percent) reported that they had not received a high school diploma (Table 72).

Table 72: Education (n=100)

Education Level	Percent
No high school diploma	46%
High school graduate or GED	36%
Some college	7%
Associate's degree	6%
Bachelor's degree	5%

Table 73 displays respondents' reported racial identities. In addition to racial identity, just over one-quarter of contacts (26 percent) identified their ethnicity as "Hispanic" or "Latino."

Table 73: Racial Identity (n=96, Multiple Responses Allowed)

Ethnicity	Percent
White	94%
Black or African American	1%
American Indian or Alaska Native	6%
Asian	3%

Over three-fourths of contacts (82 percent) reported annual household incomes lower than $40,000 (Table 74).

Table 74: Income (n=91)

Income	Percent
Less than $20,000	41%
$20,000 to $40,000	41%
$40,000 to $60,000	9%
$60,000 or more	10%

Comparison to Best Practices

The Comprehensive Manufactured and Mobile Home program is consistent with many programmatic best practices and was included in the residential weatherization chapter during the National Best Practices Study in 2004.

- The program has a clear target market and the implementer possesses substantial expertise in the targeted market.
- The program delivers a suite of measures at eligible homes with relatively low hassle for homeowners.
- The program employs multiple marketing strategies, and has evolved in sophistication and approach as the limitations of prior strategies became evident.

Of particular note is the ability of the implementer to leverage neighborhood contact by delivering multiple programs in targeted neighborhoods through one delivery approach. Synergy has also developed an effective tracking system that informs outreach activities, tracks participants and reduces invoicing errors through automation. The high portion of survey respondents with relatively low incomes indicates that Synergy likely is guiding many of these residents through the income qualification process before delivering services.

4.7.12 Conclusions and Recommendations

Conclusions

- **Synergy has developed an effective marketing strategy,** which addresses the major hurdles affecting the target market, including barriers related to cost-effectiveness, split incentives, park management directives, income, and language.
- **Adding visual information, such as Synergy's logo and toll-free number, to its fleet of vehicles improved awareness and credibility of the program.**
- **Customer survey responses confirmed Synergy staff's opinions of the value of prominently displayed utility logos in establishing credibility and reducing customer skepticism.**

Synergy also systematically provided training and oversight to installation technicians.

Program participants generally were satisfied with their experience and the performance of the measures installed. The relatively lower satisfaction rating given to the performance of air conditioning equipment post tune-up could indicate an opportunity to manage expectations**.**

- **Synergy demonstrated the benefits of cross-marketing and delivering the Energy Savings Assistance Program (ESAP), California Alternate Rates for Energy (CARE), and Manufactured and Mobile Home programs to the same neighborhood.**
- **In SDG&E territory, Synergy demonstrated the benefits of working with utility account representatives to forge partnerships with local governments' energy-saving and carbon-reduction initiatives.**

Recommendations

This evaluation finds only a few opportunities for improvement.

- **SDG&E should continue to work with contractors to identify additional ways utility logos could be used to support their outreach efforts.** There is a medium level of value for addressing this with a low level of difficulty.
- **Synergy should look for opportunities to further leverage the program's presence and increase awareness of it.** Yard signs, window clings, or other "leave-behinds" could spur word-of-mouth awareness. There is a medium level of value for addressing this with a medium level of difficulty.
- **SDG&E should consider other ways to leverage Synergy's presence in mobile home neighborhoods.**
- **Additionally, SDG&E should consider if there are ways to replicate this success in other types of programs and/or with other contractors by identifying how Synergy integrates the income qualification process into their delivery of the Mobile Home Program.**
- **SDG&E should consider using its utility account representatives to help forge local government partnerships in the SDG&E service territory, similar to those in the SoCal Gas territory.**

4.8 Home Energy Efficiency Survey

4.8.1 Background

The Home Energy Efficiency Survey (HEES) Program comprises a survey instrument that SDG&E makes available to residential customers. The goal of the program is to prompt customer implementation of more energy efficiency measures and behaviors by helping participants understand how their household energy use varies throughout the year and how it compares to characteristically similar households.

HEES provides SDG&E customers the opportunity to take an online survey that generates an analysis of their home energy usage.[25] The home energy assessment tool uses a series of questions to determine the opportunities for energy savings in the participant's home and offers measure and behavioral recommendations based on customer input. The survey report provides information on additional SDG&E rebate and program opportunities and web links for further information.

The HEES instrument used in 2011 is being replaced in the 2012 calendar year. As a result, the evaluation team focused on evaluating the effectiveness of each recommendation in "funneling" HEES participants into other energy efficiency programs offered by SDG&E. The evaluation team did not evaluate the content of the survey instrument.

4.8.2 Data Collection Activities

The evaluation team conducted in-depth interviews with the SDG&E Program Manager and the prior Program Manager. The interviews were based on a series of open-ended questions. Discussion topics included:

- How the program actually works;
- The program's key challenges;
- Who is and is not participating;
- Planned program changes; and
- Coordination with other SDG&E programs.

The evaluation team also analyzed the database of HEES participants and the program tracking database (CRM) to compare the volume of survey respondents who subsequently participated in a resource program.

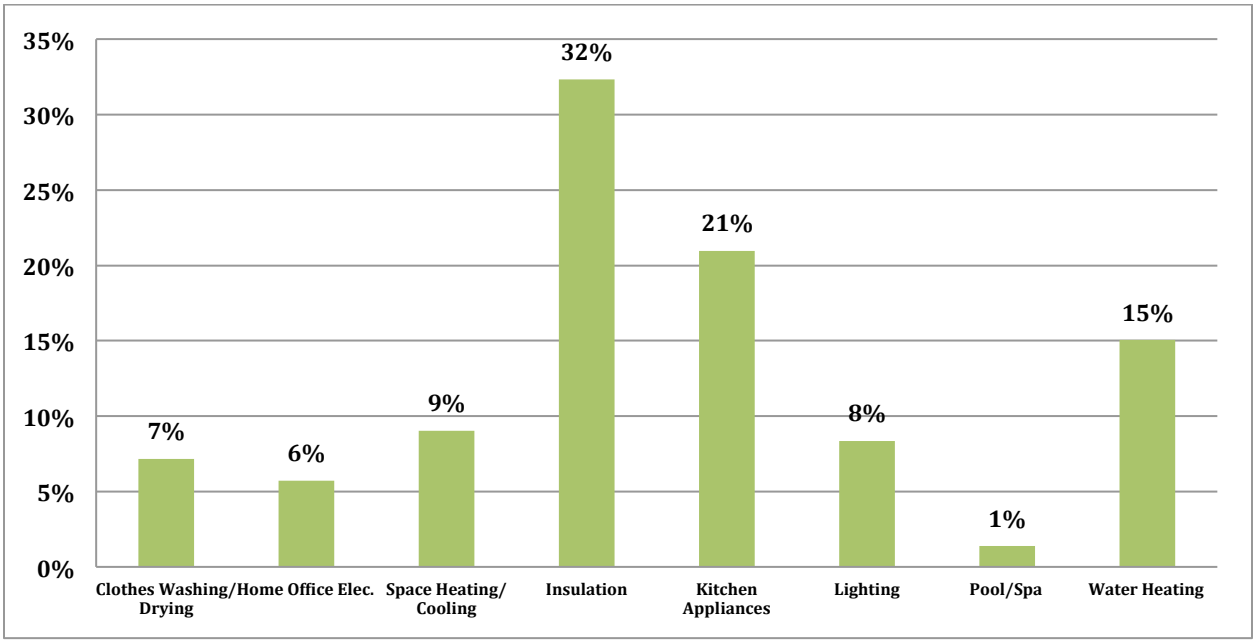
4.8.3 Research Findings

HEES generates recommendations or "tips" to each respondent based on their answers to the survey questions. Each respondent could receive up to 34 unique recommendations on completion of the survey. The sample included a total of 22,813 recommendations. Figure 36 shows the distribution of all 22,813 recommendations in the sample. The leading recommendations were: insulation, kitchen appliances, and water heating energy efficiency improvements. The remaining categories represented from 6 percent to 9 percent of the recommendations, exception for pool/spa, which accounted for just 1 percent of the total recommendations. It is important to note that, while each recommendation was given at most

[25] The great majority of HEES participants take the survey online. Less than two percent use the paper form of the survey.

only once per survey, many respondents received more than one recommendation per category.

Figure 36: HEES Recommendations in Sample by Category (n=22,813)



The evaluation team investigated if HEES motivated participants to implement the recommended energy savings actions/measures. To perform this analysis, the evaluation team collected and matched survey participant data with customer recommendations and measure program-tracking data. There were 8,865 individual SDG&E customers in the HEES database. Of that population, 7,477 individual customers received recommendations. The evaluation team compared the list of customers in the recommendation database to the overall program tracking database. The program tracking database of resource programs included 110,246 records representing individual residential customers.[26] The evaluation team then matched the HEES dataset to the program tracking database to identify the portion of HEES participants who subsequently participated in other energy efficiency programs offered by SDG&E. That revealed that 2,266 individual customers overlapped between the two datasets (Table 75). The analysis shows that 25 percent of the individual customers who took the survey and 30 percent of the customers who received recommendations participated in some energy efficiency program at SDG&E. The analysis also shows that two percent of the individual customers in the program tracking database also participated in HEES.

[26] The tracking database consisted of 172,599 records. The evaluation team adjusted the database so that individual households had a single entry.

Table 75: HEES and Program-Tracking Data Overlap

Dataset	Number of Individual Households	Overlap	Overlap (%)
HEES survey	8,865	2,266	26%
HEES survey + recommendations	7,477		30%
Program tracking	110,246		2%

The evaluation team identified the individual energy efficiency programs in which the HEES takers participated. Table 76 shows the number of individual customers who took the HEES and participated in a program. The evaluation team then focused on those customers who participated in a program after taking the HEES. This smaller figure is one measure of how well the HEES directed its participants to other energy efficiency programs.

This analysis revealed that 2,266 individual customers participated in seven different programs, for a total program-participation count of 3,228. About two-thirds of this total participated in the program after taking the HEES.

Table 76: SDG&E Program Participation Summary

SDG&E Program ID	SDG&E Program Title	Participated and Took HEES	Participated After Taking HEES	
			Count	% of Participants
3113	Residential Basic Lighting	72	32	44%
3114	Advanced Consumer Lighting	353	199	56%
3116	Local Whole House Performance	25	3	12%
3121	Home Efficiency Rebates	2,344	1,617	69%
3171	Res HVAC Tune-up/Quality Installation	160	103	64%
3172	Comprehensive Mobile Home (SW)	6	3	50%
3175	Appliance Recycling	268	120	45%
Total		3,228	2,077	64%

The evaluation team identified the recommendations that could lead a respondent to a resource program sponsored by SDG&E. Table 77, Table 78, Table 79 , and Table 80 show the

list of these recommendations and the number of individual customers who participated in each SDG&E program.

One recommendation for HEES takers involved lighting measures. A total of 5,509 respondents received this recommendation. Of those HEES takers, 152 appeared in the program tracking database for the Basic and Advanced Lighting programs. These participants are the individuals who attended a "turn-in" event sponsored by SDG&E, at which customers brought in their old, inefficient bulbs and fixtures and received an efficient product in exchange. The total number of efficient bulbs sold through the lighting programs is much greater than the number of bulbs distributed through the turn-in events. Point-of-sale purchases account for 96.5 percent of all bulbs distributed through both lighting programs. Because the great majority of efficient bulbs are sold through point-of-sale retailers (and the SDG&E customer is not tracked), there is no way to determine the actual number of HEES takers who subsequently participated in the lighting programs through a point-of-sale purchase.

The majority of the HEES participants who also participated in a resource program participated in the Home Energy Efficiency Rebates (HEER) Program. Table 77 shows the measures for which the HEES participants received rebates after taking the HEES. The table also shows the portion of all HEER rebates that had an overlap with HEES participants. For most of the HEER measures, the HEES participants accounted for less than two percent of the total rebates distributed.[27] HEES participants accounted for five percent of the total number of distributed water saving kits and six percent of the rebates distributed for efficient pool pumps.

Table 77: HEER Program Participation Summary

Measure	Number Installed after Completing HEES	% of all HEER Rebates
A/C - room unit - ENERGY STAR	1	0%
A/C - whole-house fan	13	4%
Attic insulation	36	2%
High-efficiency electric water heater (EF=0.93)	1	2%
as 92% AFUE	33	1%
Motor - pool pump (two-speed)	1	1%

[27] These figures represent only the non-Point of Sale rebates. The evaluators did not have the ability to track any purchases made by HEES participants with a point-of-sale rebate.

Measure	Number Installed after Completing HEES	% of all HEER Rebates
Motor - pool pump (variable speed - contractor/installer)	58	5%
Motor - pool pump (variable speed - pool owner)	75	6%
Pool contractor incentive (SPIF - 2007)	1	1%
Refrigerator - ENERGY STAR (Retail)	69	1%
Wall insulation (R-0 to R-13)	9	2%
Water heating - clothes washer (MEF= 2.0/ WF=6.0)	16	1%
Water heating - clothes washer (SDCWA)	16	0%
Water heating - dishwasher (ENERGY STAR)	65	1%
Water heating - high energy factor unit (gas storage EF>=.62)	6	0%
Water heating - high energy factor unit (gas storage EF>=0.67)	1	5%
Water-saving kit	1,216	5%
Total	1,617	2%

The evaluation team also analyzed how effective HEES recommendations are at directing survey participants to the relevant measures. The analysis identified six HEES recommendations that could lead the survey taker to participate in the HEER program. There were 6,773 HEES takers who received at least one of the recommendations that included text regarding measure incentives available through the program. Table 78 shows the number of times each recommendation was given to the HEES takers and the number of times a related measure subsequently was installed.

The recommendation that led the largest portion of HEES participants to action was the installation of low-flow showerheads; 13 percent of the customers who received the recommendation received the measure through the HEER Program. SDG&E customers also were able submit an online request to receive a free water saving kit. The remainder of the recommendations led just two percent or fewer of the survey takers to pursue the relevant measure through the HEER Program.

The results from the HEER Program indicate that a large portion (21 percent) of HEES takers who received a recommendation did not participate in the HEER Program. However, an analysis of measures that should explicitly direct HEES participants to the HEER Program revealed that that portion drops to just two percent. This suggests that the HEES may not be directing individual customers to the most relevant programs. The customers themselves may be identifying the HEER measures that are most effective.

Table 78: HEER Program Recommendations and Participation

Recommendation	Participated in Program after Receiving Recommendation: Received Tip	Count	%
Replace your existing air conditioning system with a new high-efficiency system.	1,026	2	0%
Replace your old window or wall air conditioner(s) with an ENERGY STAR-qualified room air conditioner.	56	0	0%
Replace your older refrigerator or freezer.	62	1	2%
If your older gas heating system needs repair, consider investing in a new, energy-efficient system.	1,484	14	1%
Install energy-efficient low-flow showerheads.	4,273	541	13%
Install additional insulation.	4,599	36	1%

The HEES included two very similar recommendations regarding HVAC efficiency improvements. A total of 2,191 HEES takers received at least one of these tips, and 25 of those customers participated in the Residential HVAC Tune-up/Quality Install Program (Table 79). There were 4,077 individual participants in that program, so the HEES survey directed less than one percent of total participants to the program.

Table 79: HVAC Program Recommendation and Participation

Recommendation	Received Tip	Participated in Program after Receiving Recommendation: Count	%
Insulate and make sure your heating and cooling ducts are properly sealed.	2,191	25	1%

A single recommendation for HEES takers directed them to the Appliance Recycling Program. As shown in Table 80, 2,827 HEES takers received the recommendation, and 54 customers (2 percent) subsequently recycled a refrigerator or freezer. There were 21,670 individual participants in that program, so the HEES survey directed less than one percent of total participants to the program.

Table 80: Appliance Recycling Program Recommendation and Participation

Recommendation	Received Tip	Participated in Program After Receiving Recommendation	
		Count	%
If you have a second refrigerator, make sure it is a necessity	2,827	54	2%

All 25 Whole House Performance Program participants had both installed at least one eligible measure and completed a HEES. Of these 25, three (12 percent) completed a HEES before participating in the program. This finding shows that Whole House Performance Program participants are being directed to the HEES Program instead of the other way around. It is important to note that the Whole House Performance program requires participants to complete a HEES.

Table 81 shows the Program Performance Metrics (PPM) associated with the HEES Program. The only PPM for this program is the percentage of HEES participants who enroll in other program offerings supported by SDG&E.

Table 81: PPM Summary and Status

PPM	Tracked?	Status relative to Goal	Comment
Percentage of HEES participants that enroll in (a) whole house and (b) other resource programs	Not actively tracked	(a) 100% of whole house participants also participated in HEES. (b) 26% of HEES takers and 30% of HEES takers who received recommendations also participated in other resource programs.	Program staff indicated that the new survey tool is supposed to feed into the CRM tracking database.

The evaluation team determined that 30 percent of HEES participants enrolled in at least one other SDG&E resource program (or two percent of the overall tracked population). Within this 30 percent, most program participation occurred after a customer completed the HEES (64 percent). This finding suggests that the HEES Program succeeded in encouraging participants to participate in energy efficiency programs in which they otherwise may not have participated. However, the overall resource program participation rate is low.

4.8.4 Comparison to Best Practices

The evaluation team evaluated the SDG&E HEES Program with respect to best practices in program theory and design, program management, and program implementation, as outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool for audit programs.[28]

Program Theory and Design

It is important to articulate a program theory that clearly states the program's target. The PPMs do not clearly state a goal, but simply ask for participation reports. The HEES should identify specific goals regarding the portion of HEES takers who subsequently participate in SDG&E resource programs, and determine the percentage of those takers that demonstrates a the program's success.

Program Management

Project Management

Electronic project management has proved very effective in other programs. The HEES data are electronic, but the Program Manager is unable to access the information easily. The system automatically generates only one report, which shows the numbers of customers who: 1) started the survey, 2) completed the survey, and 3) did not complete it. The Program Manager also was unable to easily access reports from the data and customer response data. This limits the Program Manager's ability to track customers' further participation and satisfaction.

Reporting and Tracking

The audit recommendations, including energy-saving potential, should be part of the program tracking database. The HEES recommendations were not tied to the program tracking database. Although the program keeps good records on HEES participation, it does not systematically track which measures participants implemented after taking the survey.

Effective programs use databases that fully integrate audit participation and results with other energy efficiency program information systems. The version of HEES reviewed in this evaluation did not integrate the survey with the program tracking database. As a result, program staff had limited access to HEES data and the HEES survey results did not automatically link to the program tracking database.

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[28] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

Program tracking systems should support the requirements of evaluators as well as program staff. The current HEES system limits the ability of program staff and evaluators to access participant data.

Quality Control and Verification

As other programs have shown, it is very helpful to conduct follow-up analysis and interviews with participants to estimate the number of measures installed and actions taken. The current HEES system limits program staff's ability to regularly audit HEES takers' participation in resource programs. Program staff indicated that the new version of HEES will connect directly to the program tracking database.

Program Implementation

Participation Process

The HEES provides a range of recommendations for participants to pursue.

The current HEES provides guidance to help customers find information about rebated measures, but it does not lead HEES takers directly to the program website.

Marketing and Outreach

The most effective residential energy efficiency programs feature links to residential audits prominently on their web sites. Program staff indicated that HEES is difficult to find on the SDG&E website. The evaluation team agrees. The HEES is listed on the page titled "rebates and incentives for your home," although HEES is neither a rebate nor an incentive.

Programs are more effective when their marketing materials and audit instruments are available in several languages. The online HEES survey is available only in English, although the paper version is available in many languages.

4.8.5 Conclusions and Recommendations

Conclusions

Program theory expects that HEES will encourage participants to implement more energy-efficient behaviors and install energy-efficient equipment and participate in other energy efficiency programs. The goal of this evaluation was to determine if the HEES Program were effectively motivating these actions. The following are some of the key findings of this program evaluation.

- **The participant survey results indicate that the HEES Program prompts participants to implement energy-efficient behaviors.** Thirty percent of HEES participants who received recommendations participated in a resource program.
- **Only a very small portion of HEES participants follow specific recommendations they receive.** The recommendation to which the most participants responded was to obtain the free water saving kit provided by SDG&E and then install the products it contains. HEES participants followed about only two percent of the recommendations connected to a measure in a resource program.
- **The current data system does not allow the Program Manager to track HEES participants' follow-up participation in resource programs, or to follow up with survey takers to encourage further participation.**

Recommendations

Potential program changes that should be considered include the following.

- **Develop a PPM that identifies a specific goal.** The current PPM asks only for the percentage of HEES participants who enroll in other resource programs.
- **Develop systems that allow the Program Manager to easily access reports about HEES takers and their subsequent participation in resource programs**, so the Program Manager can assess the rate of HEES participants implementing other energy efficiency measures and determine the efficacy of a specific recommendation. There is a medium level of value for addressing this with a medium level of difficulty.
- **Develop systems that allow the Program Manager to follow up with HEES takers.** The new HEES tool is supposed to connect with the program tracking database. The data should support efforts to implement follow-up activities to verify which of the recommended HEES measures each customer actually has implemented.
- **Clearly identify the HEES on the utility website (particularly on the residential page) as a tool to help customers identify energy savings.** There is a medium level of value for addressing this with a low level of difficulty.
- **Directly link HEES results and recommendations to relevant SDG&E energy efficiency programs.** This could increase the rate at which HEES Program participants implement HEES equipment upgrade recommendations.

4.9 K-12 Energy Efficiency Education Program (E3)

This section provides a brief process evaluation of the Energy Efficiency Education Program (E3). Throughout the rest of this section, the program will be referred to by its common name, which is also its curriculum name, Energy and You. The purpose of this evaluation is to assess the program's effectiveness and identify recommendations for improvement.

4.9.1 Background

Energy and You is a third-party energy efficiency educational program for K-12 students delivered by the San Diego County Office of Education (SDOE). The program provides lessons, materials, and professional development opportunities free of charge to teachers within the SDG&E service area. The program is in the development stage. It focuses on curriculum development and training a critical mass of teachers.

As of November 2011, Energy and You reached 30 school districts in San Diego County and provided training to over 500 teachers, thereby potentially introducing over 20,000 students to Energy and You. One district, National City, adopted the curriculum district-wide. A consultant was working with SDCOE to analyze pre and post data collected to assess student learning outcomes.

Major changes during this program cycle included a complete revision of the curriculum developed during the 2006-2008 program cycle, including a name change to Energy and You. SDCOE worked with a curriculum consultant on the second generation of the curriculum. At the time of the evaluation team's interviews with program staff, the primary, upper elementary, and middle school units were complete, and the new high school unit was in production. By the end of the evaluation research, all four units were produced, and the high school unit had become available. SDCOE reports indicated that it planned no other program changes.

The key research issues were:

- What are the teacher experiences with the curriculum: accessibility, usability, relevance, supporting equipment?
- Do teachers intend to deliver the curriculum again? How many times have they delivered it? To how many students?
- What are teachers' recommendations to improve the curriculum?

This brief process evaluation of the Energy and You program focused on teacher experiences with the upper elementary (grades 3-5) and middle school (grades 6-8) lessons and materials.

4.9.2 Data Collection Activities

The data collection activities included reviews of program documentation and secondary data provided by SDCOE, in-person and telephone interviews with program staff, and telephone interviews with participating teachers and other school staff as follows:

- In-person interview with the SDG&E Program Manager and SDCOE Program Manager
- In-depth telephone interview and follow-up call with the SDCOE Program Manager
- In-person interview with the program curriculum consultant
- In-depth telephone interviews with five teachers and short telephone interviews with two After School program staff.

SDCOE staff provided the evaluation team with a list of 584 teacher records for program years 2010 and 2011 (referred to as the "participant list"). This list included teachers who had taken the training in person or online and a few teachers who had requested materials but had not attended any training. SDCOE compiles the list on an ongoing basis from attendance sheets generated when teachers register online for either on-site or online training. Attendance is confirmed by sign-in sheets at the on-site trainings and an email that is generated when a teacher completes the training online. After removing duplicates, incomplete records, and resolving district and school name anomalies, the list had 560 unique teacher records. The evaluation team used this cleaned list to determine program participation.

Teachers at schools on SDCOE's participant list were invited by phone and email to participate in a telephone survey and offered an honorarium for their school after one or more teachers completed the survey. In order to obtain five completed interviews, the evaluation team called or emailed 109 teachers at 51 elementary and middle schools in 19 districts. (No high school teachers had yet received the curriculum. Since the evaluation research plan was constrained to a small number of interviews, the evaluation team did not contact lower elementary school teachers.) Of the 109 attempts, 32 records (30 percent) had list errors, such as wrong numbers, unknown teachers, or teachers who had left the school.

Table 82 shows the final disposition of the teacher interview contacts.

Table 82: Teacher Interviews Final Disposition

Disposition	Count
Teachers, complete interview	5
Staff, partial interview	2
Contacted, no response	70
List errors	32
Total attempts	109

SDCOE staff also provided the evaluation team with online surveys completed by teachers after they had taught the course, but which SDCOE had not yet analyzed. The evaluation team analyzed these responses, compiling descriptive statistics and coding the open-ended responses for themes. The survey results enhance the interview findings presented in this report.

4.9.3 Research Findings: Program Staff

The program seeks to change behavior of students who receive Energy and You instruction so that they exhibit conservation and efficiency practices at home and school. The program strategy has participating local teachers influencing other local teachers to become engaged

and implement the curriculum in their classrooms. The program engages teachers through professional development, measures knowledge outcomes as a result of curriculum implementation, and conducts limited surveys of teachers, students, and families regarding behavioral changes associated with program activities. Program materials and activities are available free of charge to teachers and students within the SDG&E service area.

The program is still in the development stage according to SDCOE staff. During this program cycle, the program focused on:

- **Curriculum development:** Three second-round units and one new unit were developed, assessed, and deployed in general accordance with educational best practices (see Best Comparison to Best Practices, below).
- **Learning and Behavioral Outcomes:** Assessment instruments were developed for three units: upper elementary, middle, and high school. There is no assessment instrument for the primary unit. An educational consultant will help SDCOE analyze pre and post data to determine student learning outcomes, as well as analyze data from postcard surveys from parents about home activities.
- **Professional development and dissemination of materials:** Training was delivered on-site at individual schools, online, or at summer professional development workshops (e.g., STEMposium).
- **Marketing and recruitment:** Teachers were recruited through schools, the website, and word of mouth.

SDCOE staff reported being well-supported by SDG&E. They were pleased with the quality of the final curriculum. According to SDCOE staff, the National Science Teachers Association would like to publish and disseminate Energy and You materials, but this cannot happen until the intellectual property rights have been established.

SDCOE staff said that the logic model provides a good description of the program approach, in which teachers teach the teachers, the teachers teach the students, and the students teach the parents. SDCOE staff explained that the program theory is based on green initiative behavior change research, which suggests that people need a compelling reason to change. In this case, new information, peer norms, or peer competition gets children to change, and children get parents to change behavior.

SDCOE staff reported being on track to meeting all their goals except the number of teachers trained online (Table 83). They were not sure why more teachers were not taking advantage of the online training, but offered three possible reasons: 1) teachers (particularly older ones) are not yet comfortable with online training; 2) teachers are used to "buddy thinking," and like to have a face-to-face partner; and 3) principals prefer on-site training because they know who attends and what is happening. So far, SDCOE staff have found it difficult to get high school teachers to attend the in-person trainings and concluded that the online training may be the best option for them. The high school materials had been developed and were available, but had been used very little in classrooms.

Table 83: Program Targets

K-12 Energy Efficiency Education	Program Target Each Year (2010-2012)	Reported by Program 2010- 2011
# of on-site trainings	10	32
# of on-line trainings	250	10
# of teachers trained at on-site professional development	600	574
# of teachers trained at online professional development	1500	10
# K-12 students reached	25,400	20,623
# schools trained	737	119
# kits distributed	2,100	584

Program Participation

Reported program participation numbers describe the number of teachers who participate in the trainings. The vast majority of teachers took the in-person training. According to program records, only 10 of 584 teachers trained during 2010-2011 took the training online. Teachers report the number of students they teach and the grade level when they request materials. The program does not collect information regarding when teachers teach the course, how often they teach it, or the number of students taught.

Teachers are asked to complete an online survey after teaching the curriculum. SDCOE staff reported that the response rate had been low, and did not improve when the program offered a $50 incentive. These completed surveys are the only indicator that the lessons have been taught. SDCOE knows if a teacher repeats the curriculum only if SDOE receives a request for additional materials. There is no formal process for requesting these materials.

SDCOE staff provided the evaluation team with information on 2010-2011 participation. Energy and You reached 30 school districts in San Diego County and provided training to over 500 teachers, potentially introducing over 20,000 students to Energy and You (Table 84). Table 85 shows the distribution of teachers and their students by grade level. One district, National City, adopted the curriculum district-wide.

Table 84: 2010-2011 Program Reach as of November 2011

Year	Districts	Schools
2010	18	71

Year	Districts	Schools
2011	23	55
Total Unique Districts	30	110

Table 85: Distribution of Teachers and Students by Grade Level as of November 2011

	# of Teachers		# of Students	
Grade Level	**2010**	**2011**	**2010**	**2011**
Lower Primary (K-2)	80	164	2,145	3,554
Upper Primary (3-5)	75	116	2,360	3,057
Middle School (6-8)	45	33	3,422	1,765
High School (9-12)	6	25	610	2,185
Multiple*	4	231	564	577
Other/Unknown	6	7	216	168
Total	216	368	9,317	11,306

* Seven of these teachers taught lower and upper primary school, and 16 taught middle and upper primary school. The program database also notes that 17 of these teachers (5 in 2010 and 12 in 2011) did not attend the training, but received the program materials.

Implementation in the Classroom

The program does not have current processes for monitoring teachers' use of the Energy and You units or collecting feedback from teachers on an ongoing basis. SDCOE staff noted that they have tried various techniques to keep in touch with teachers, for example, sending emails about revisions to the materials or sending flyers about the program to principals to distribute in their schools. SDCOE staff receive feedback informally from teachers when teachers request more materials or staff encounters teachers at other SDCOE events. SDCOE staff reported that they did not have sufficient budget to hold the focus groups described in the Program Implementation Plan.

SDCOE staff recognize that the largest constraint on how teachers implement the curriculum is lack of time and competing class-time requirements for specific content and activities. They noted that teachers are required to do a lot to prepare students for statewide assessments and have additional requirements for English learners and students with special needs. They are not aware of any legal or content restrictions on how teachers use Energy and You, except for limitations on how school funds are spent. However, the latter do not apply because Energy and You units are free. SDCOE staff further noted that individual schools might have specific policies or requirements for the use of curriculum.

The fact that National City implemented the curriculum district-wide was a felicitous event, largely due to the fact that the superintendent advocated for adoption of the program. While SDCOE would like to encourage additional districts to adopt the curriculum, this is largely outside of program control. Instead, staff described relying on indirect dissemination, what they call a "snow ball" approach, whereby teachers adopt the curriculum because other teachers recommend it. In National City, the program trained a cadre of lead trainers in advance of the district-wide training. These lead trainers were available to help other teachers in their schools.

SDCOE also has targeted After School programs for training. According to SDCOE staff, these programs like to offer students something academic; science content is especially appealing to After School programs. When districts request science training for these staff members, SDCOE offers them Energy and You training. After School program staff also may attend other professional development events that include Energy and You training.

Behavioral Outcomes: The program collects limited information on behavioral change associated with the curriculum. The survey that teachers complete after teaching the curriculum asks a single question about what types of energy-saving behaviors students and families are likely to engage in as a result of Energy and You (see Section 4.9.5). Parents are asked to complete a postcard that inquires about specific actions taken at home. SDCOE plans to have an educational consultant help program staff analyze the postcard data.

Program Website: The public website is a vehicle for outreach and marketing and provides resources and activities related to energy efficiency and conservation. The teacher portal, which is password-protected, is the site teachers access for online training, materials, and online support. The portal also is used at on-site trainings to introduce teachers to the curriculum. Teachers register for on-site training through a link to the SDCOE events management system. The website provides limited program tracking features; for example, it sends an email message to SDCOE staff when a teacher completes the online training.

Outreach and Marketing: SDCOE uses a variety of channels for outreach and marketing, including the website, collateral materials, and media kits. The most recent quarterly report provided to the evaluation team (Third Quarter 2011) listed the following marketing activities:

- Maintenance of the E3 website (www.k12e3.org), which is expected to provide a place for parents, students, and teachers to learn more about the program and energy conservation
- Website updates, including professional development dates for the 2011/2012 school year
- E3 key chains, tote bags, lab coats, magnets, and pencils distributed to participating administrators and teachers

- Design and development of E3 Energy and You media kits that include: a marketing folder, program description, brochure, professional development flyer, participant quotes, and staff bios
- Distribution of a promotional video for Energy and You

4.9.4 Research Findings: Teacher Interviews

The teachers and staff interviewed were very positive about their participation in the Energy and You activities. They found the training to be useful and of an appropriate length. They reported that the content and materials are age-appropriate, engaging, complete, (mostly) easy to use, and in conformance with California standards. Everyone agreed that the kits are extremely useful. The major findings from the teacher interviews are described below.

Awareness and Interest: Teachers and staff learned about Energy and You in a variety of ways, including a summer professional development week (STEMPosium) (3 mentions), through their schools (2), a flyer from SDCOE for After School programs (1), and selection for train-the-trainer by their district (1).

Only two teachers were required to teach the curriculum, either by their school or district.

Teachers expressed different reasons for being interested in Energy and You, including having an interest in science or the environment, applicability to real life (e.g., take-home activities and green issues), and relevance to student careers.

Training: All seven teachers made many positive comments about the training, mostly relating to content and materials. The training effectively covered how to use the materials. "It was not just an inventory of what was in the box," one teacher noted. Four people particularly appreciated the hands-on activities.

Several commented that the kits were a big plus (a "lifesaver," as one respondent put it) because having the materials made it more likely they would teach the curriculum; otherwise the lessons are less engaging or the teachers would have had to buy the materials themselves. As one teacher noted, "The materials are wonderful. In the state of the state right now having to have hands-on consumables is very difficult."

Two people (one teacher, one staff) wanted more time to practice activities and learn about the website and online support. In contrast, one thought a longer session would have been too much. Another teacher trained as a trainer for a National City school said it would be impractical to try to train all teachers, so the cadre model was a good solution.

Teachers did not report any follow-up from SDCOE after the training. One mentioned that such follow-up is important so teachers can repeat the curriculum. Other teachers mentioned not knowing how to get materials, although they knew how to contact SDCOE).

Website: Teachers reported using the website very little after the training. Two teachers mentioned going to the website to find visuals or demonstrations to show their students. Another teacher commented that she would have liked more time at the training session to cover the online support. Another reported that she got frustrated when she could not find something, and she never went back. However, one teacher who is responsible for teacher professional development at his school, said he refers teachers to the website for online training.

Implementation in the Classroom: Teachers are implementing Energy and You in a variety of ways, depending on time constraints, restrictions on incorporating outside curriculum, and whether Energy and You is required or not.

Teachers reported using the full Energy and You curriculum, as well as using lessons and materials in labs, summer camp, and as supplemental activities in the regular curriculum.

- Several teachers mentioned that they could use the lessons and materials only to supplement the regular curriculum. Another commented that underperforming schools have limited time for electives.
- One third-grade teacher taught the entire curriculum and reported it required an hour a day for two weeks (8 sessions).
- Teachers were not sure how other teachers at their schools implemented the curriculum, or if they had even taught any of the lessons.

At one school, the entire curriculum was taught for each grade level during summer camp. At another, all teachers who took the Energy and You training were required to teach the entire curriculum in the period before Christmas break. National City implemented the entire curriculum district-wide.

Curriculum: Teachers agreed that the curriculum is age-appropriate, engaging, complete, mostly easy to use, and conforms to California standards. Teachers described several examples of student engagement, particularly in the hands-on activities. Teachers liked the activities because students have to pull so many pieces together; they have to think scientifically, by forming and testing hypotheses, making observations, and recording data. One teacher commented: "[The 8th graders loved] the day we were outside. I don't know if they liked it just because we were outside. Any time they do anything outside, in their mind there is a possibility it can blow up." The majority of teachers said that they had not heard any student complaints about the curriculum. Two teachers who work with English language learners reported that the amount of new vocabulary that students had to learn made the materials hard to read and intimidated some students.

All five teachers agreed that the curriculum meets California's content standards. Two said that it conforms to standards for methods, and specifically mentioned the "five E's"[29] or inquiry-based pedagogies. Most were not sure about assessment standards. One teacher suggested that a rubric would help assess varying degrees of comprehension.

Issues Raised: Several teachers provided feedback about the hands-on activities. Some teachers expressed concerns about the materials, for example, the mercury in the thermometers, and wires that were so fragile they broke during use. One teacher asked for more information on how to do the outdoor activities. Another commented that the hands-on activities were hard to do in practice, because of limited time and rambunctious students. One teacher said that her students did not have the equipment at home to do the home survey or energy audit, nor did they have access to the appropriate equipment at school.

Teachers also commented about specific lessons or activities. One sample comment is: "How to use the solar panels to experiment with them wasn't clear, or maybe I wasn't clear."

Teachers raised more substantive issues with the curriculum related to their students' language skills. For instance, some teachers said they used lower grade-level materials (e.g., 5th-grade materials for their 8th-grade students) to help their non-native English-speaking students understand the content. In addition, one bilingual teacher valued the Spanish-language materials, but had to develop graphics to illustrate concepts that were difficult for students to understand through text alone. "The students don't know the English words and don't know what they are describing or what things look like," she said.

Behavioral Outcomes: Teachers did not know what long-term effects the curriculum might have on students' behavior. "We had conversations while doing Energy and You activities, but then we moved on to other things," one teacher noted. Asked about outcomes, one teacher said, "Maybe [there was] just an increased awareness." One teacher reported that her students would ask if the heater really needed to be on, or why the door to the air-conditioned computer lab was open. She added: "They say that they do it [energy-saving behavior(s)] at home. I haven't seen anything first-hand here in the classroom."

Teachers said parents gave them little feedback that could help gauge any changes in students' at-home behavior that could be linked to Energy and You. Three teachers had not heard anything from parents about Energy and You. The National City teacher interviewed had sent surveys home with the students and had received comments from parents. "Every survey I got back from a parent who was previously unaware [of the need to save energy], said we need to switch [and do so]," the teacher said. "It's good to see that others who are already aware were

[29] The five "E's" are: engage, explore, explain, elaborate, and evaluate. The instructional model is described briefly on the teacher portal, the password protected section of the K12 program website.

trying to save energy." Another teacher heard from a parent that their child had won a trip to SeaWorld because the student had returned the parent response card, and SDCOE had entered the card into a drawing to encourage response.

Future Use: Only the National City teacher had taught Energy and You more than once. Others were uncertain about how they would use the lessons and materials in the future. One said it would depend on if the curriculum were required, and another said it would depend on if the curriculum would be taught at a summer camp. One teacher, who has the freedom to use the materials as he wishes, said he had not yet fully implemented the curriculum but intended to do so. Two teachers said that they would need additional sets of the materials but were not sure how to get them.

All five said they would recommend Energy and You to other teachers. One interviewee, who is a faculty developer, already has recommended the online training to colleagues at his school and those he works with through grant partnerships.

The two After School program staff had taken the training, but had not yet implemented it. They said they either did not have a person to teach the Energy and You curriculum or the curriculum did not fit into their time or format constraints.

4.9.5 Research Findings: SDCOE Teacher Surveys

To augment the in-depth interviews, the evaluation team analyzed the online survey results provided by SDCOE for the 2010-2011 program years. These surveys were completed by 28 teachers who had taught the curriculum. (Eighteen were from National City District; three teachers were among the five who were interviewed.) These 28 teachers included 22 K-5 teachers, five middle school teachers, and one special needs teacher. The survey included closed-ended questions about why they taught the curriculum, how it worked, and what behavior changes they expected to see in the students. The survey also included open-ended questions about the program's strengths and weaknesses, and asked teachers to relate anecdotes from parents.

In general, the survey responses are consistent with the interview information. For example, respondents reported a variety of reasons for teaching the curriculum, including: "It supports California standards." (17), "It provides great resources." (12), "I'm interested in energy efficiency" (12), "It's an interesting way to teach science." (11), "It's required by the school district>" (11), and "Students are interested in energy efficiency." (7).

Their responses regarding what worked well and what needed improvements included comments about specific lessons and materials that they liked, and problems they had encountered. For example, the hands-on activities and experiments worked well. Teacher respondents most frequently (nine of 28, or 32 percent) mentioned that the thermometers and temperature experiments most captured student interest, as did learning about energy efficiency (five of 28, or 18 percent). Teachers also identified weaknesses in the program,

including: “too much material,” “too little material,” “lack of a glossary,” “lack of advance organizers,” “not enough time,” and “some lessons were too hard.”

Teachers reported positive receiving feedback from parents. For example, that they enjoyed working on the audits with their children and appreciated having information about how to save energy at home. Teachers said that some parents said they had observed some at-home behavior changes in their students. For instance, parents said that their child might remind them to turn out a light or their child reported serving as a home energy monitor. Teachers also said that the program faced challenges specifically related to poor communities. For instance, it can be difficult to get parents involved in the at-home activities, and some households cannot afford the more expensive energy-efficient lights.

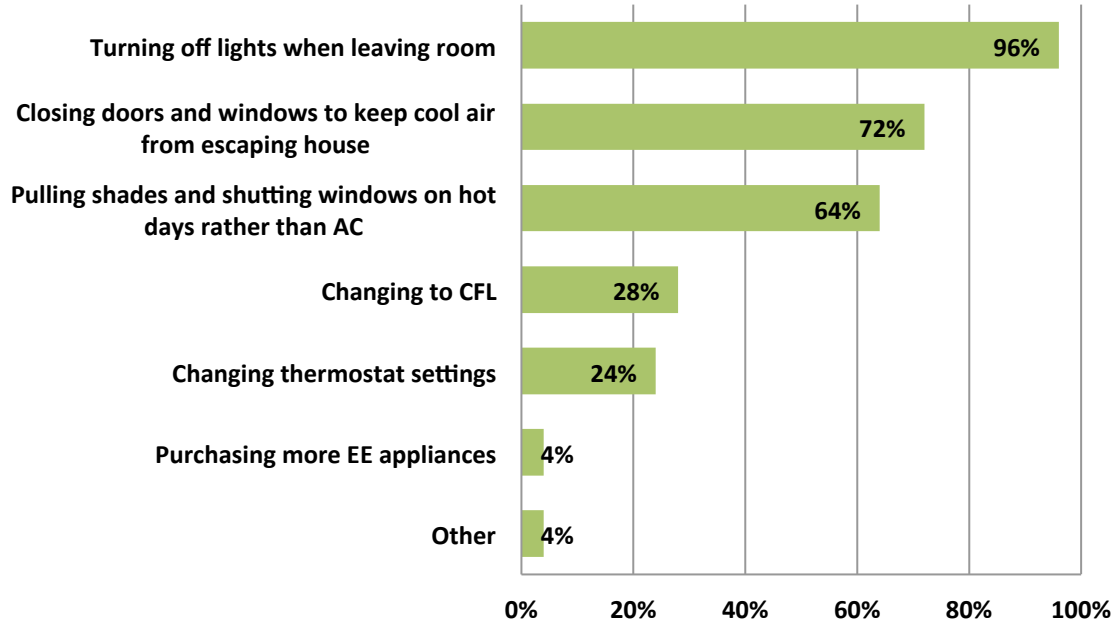
Table 86 and Figure 37 summarize teachers’ responses to questions regarding their students’ energy efficiency knowledge and awareness and behaviors that they expected to see change.

Table 86: Energy Efficiency Knowledge and Awareness

Survey Question	Responses in Top Two Boxes*
How much did the Energy and You curriculum cause students to want to make changes in energy use? (n=24)	67%
How much did curriculum increase student awareness?	76%
Was the curriculum a good way to explain how to save energy at home?	73%

*Responses of “4” and “5” on a five-point scale, where “1” means “not at all” and “5” means “very much.”

Figure 37: Which types of behaviors are students and their families likely to adopt because of program?



4.9.6 Comparison to Best Practices

The evaluation team identified two areas in which SDCOE excelled in following best practices: curriculum development and educational website content. This review is based on two broad-based sources: 1) a chapter for the 2008 National Energy Efficiency Best Practices Study, and 2) a paper published in the proceedings of the 2009 International Energy Program Evaluation Conference (IEPEC) that synthesized criteria from a number of studies of effective website design.[30] Members of the evaluation team authored both of these sources. The former outlines best practices for nonresidential education and training programs that provide relevant insights on best practices for the Energy and You curriculum. The later provides a framework for assessing best practices in energy-efficiency education program websites.

Curriculum Development: SDCOE worked with an educational consultant to create a second generation of the curriculum units after field testing the first generation during the 2006-2008 program cycle. Energy and You currently is available in units for four different grade

[30] Itron, Inc. and Research Into Action 2008. Volume 02 – Nonresidential Education and Training Best Practices Report. National Energy Efficiency Best Practices Study. Prepared for Pacific Gas & Electric Company. Available online at: http://www.eebestpractices.com/pdf/Nonres_Educ_Train_BP_Report.pdf.

spans: primary (K-2); upper elementary (3-5); middle school (6-8); and high school. Elementary materials are available in Spanish. Each unit includes:

- Five standards-assigned lessons and teacher support materials
- Professional development for teachers
- All curriculum and supplies
- Interactive DVDs and classroom posters
- Activities to take home for the family

The lessons are structured to look at the science that supports conservation and efficiency. The format is consistent: five lessons in elementary and middle schools using the "5E" instructional model developed by the Biological Sciences Curriculum Study (BSCS) to guide the curriculum. Subject matter and teaching experts reviewed these units. The curriculum was revised in response to a critique that the previous materials focused too much on science and not enough on energy efficiency and conservation. The change of the name of the program to Energy and You emphasized the "you attitude" – the relevance of the curriculum to teachers, students, and families. The revised units have been distributed at all trainings since 2010. Assessment instruments for three units have been developed and will be distributed to teachers.

The educational consultant is helping SDCOE staff determine what students are learning. They will analyze the pre and post data on student learning outcomes, as well as the self-reported changes in behavior associated with the take-home activities, as reported by parents on the return post cards.

Website Development: Program documentation indicates that SDC[31]OE staff took action on recommendations from a prior evaluation to enhance the website with teacher portals and web links for students, teachers, and families. The evaluation team found that the current website largely conforms with best practices related to the content of educational program websites. However, while the website meets best practices as a recruitment and training tool, it does not provide content that would encourage teachers to use it as a resource on an ongoing basis.

[31] McRae, Marjorie, Joe Van Clock, and Toni Lee Hanson. 2009. "Information at a Click: Assessing Efficiency Educational Websites." *International Energy Program Evaluation Conference*. Available online at: http://www.iepec.org/2009PapersTOC/papers/100.pdf#page=1.

4.9.7 Conclusions and Recommendations

Conclusions

The program was still in the development stage during the program cycle that was studied during this evaluation. Program staff have produced a high-quality curriculum, yet preliminary information suggests that it is not widely implemented by teachers who take Energy and You training. The program needs to focus on how teachers use Energy and You units and activities in their classrooms.

The evaluation team identified three elements that are critical to program implementation: dissemination of the curriculum, online training, and data collection and tracking. The following conclusions summarize our findings related to these program elements.

The program theory and logic generally are sound, yet weakest with respect to how the program disseminates throughout SDG&E's service territory. The "snow ball" approach to dissemination does not appear to be sufficient. Teachers do not seem to be talking with each other about Energy and You or referring other teachers to the program in great numbers.

Few teachers had taken advantage of online training. Online training is intended to be the primary vehicle for delivering training to a large number of teachers, particularly high school teachers. Program staff are not sure why more teachers are not taking the training online.

The program has not yet developed mature data collection and tracking processes and collects limited program data, especially concerning the number of students taught. Quality assurance for the Energy and You program has focused on expert review of the curriculum. The program collects limited feedback data from teachers and parents.

Recommendations

We recommend that program staff take the following actions in order to extend program reach and ensure quality control.

Continue to pursue strategies that have been shown to generate program participation, such as: educating superintendents, principals, and other decision-makers about Energy and You; piggybacking on other professional development events, as was done with STEMposium; and extending the train-the-trainer strategy used in National City to other districts.

Develop new strategies to increase communication with teachers and other stakeholders, provide additional training and teacher support after training, encourage teachers to teach the lessons multiple times, and facilitate requests for additional materials. A teacher advisory committee could help identify specific constraints regarding teacher participation, as well as effective deployment strategies. Consider researching barriers to online training.

Develop processes to collect and analyze program data on an ongoing basis, particularly on the number of students taught and feedback about the program. The amount of errors in the program's participant list provided to the evaluation team indicates the need to improve the tracking in order to follow up with teachers.

Consider hiring a dedicated, possibly part-time, marketing person. Other third party implementation firms have found that developing in-house marketing capacity has greatly enhanced dissemination and adoption of energy efficiency curricula.

Table 87 summarizes issues identified through this evaluation and recommendations to improve the program.

Table 87. Summary of Issues and Recommendations

Issue	Consequences	Steps Sempra Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
Program relies on an indirect "snow ball" dissemination strategy.	Teacher participation is limited; the curriculum is not widely implemented.		Develop a multipronged dissemination strategy; consider hiring a marketing professional; consider creating a teacher advisory committee.	M/H	M/H
Few teachers are taking online training.	Limited program uptake through this option		Better understand and take steps to reduce barriers to online training.	M	M
Data collection and tracking processes are not mature.	Program staff do not know how curriculum is being implemented and how many students are exposed to the program		Develop processes to collect data on number of students taught; collect and analyze ongoing feedback from teachers.	M	H

4.10 HVAC Tune-Up Program ("AC Time")

The SDG&E HVAC Tune-Up Program, which concluded at the end of September 2011, targeted residential customers with HVAC systems. The objective of the program, which customers called "AC Time," was to improve the performance of HVAC systems for participating customers through the use of advanced diagnostic techniques, replacement of inefficient air conditioners with new high-efficiency units, adherence to quality installation procedures for HVAC technicians, and high-quality service training designed to provide HVAC contractors with the skills to deliver energy-efficient products and services to residential customers. The program was implemented by KEMA Services, Inc. (KEMA).

The program offered tune-up services to customers at no cost. These services included: refrigerant charge adjustment (RCA), coupled with condenser coil cleaning and duct testing and sealing (DTS). The program also offered incentives to customers for new installations, which ranged from $35 to $195 per ton of capacity for early retirement, and $12.50 to $171.50 per ton for replacement of burned-out equipment or equipment installed in new construction, depending on SEER and climate zone.

Marketing for the program consisted primarily of door hangers placed on residential customers' homes, and press releases. Customers enrolled in the program either online or by calling a toll-free number maintained by KEMA.

KEMA was responsible for recruiting and training contractors, as well as oversight and inspections of contractors' work. KEMA also processed all payment requests. Three verification service providers (VSPs) subcontracted to KEMA to provide diagnostic equipment used by the participating HVAC contractors to conduct advanced quality maintenance on residential customer HVAC equipment. The VSPs were Enalysis, Field Diagnostics Services, Inc. (FDSI), and Verified, Inc.

4.10.1 Background

The HVAC Tune-Up Program began in 2006 and concluded at the end of September 2011, when the program exhausted its funding. Between 2006 and 2008, the program targeted both residential and commercial customers. Beginning in 2009, the program targeted only residential customers.

The major operational change that occurred during the 2006-2008 program cycle had to do with the role of verification service providers (VSPs). Initially, the VSPs were responsible for recruiting contractors, training them, and handling HVAC contractor payments. During the summer of 2010, KEMA assumed these responsibilities, and VSPs became responsible only for providing direct support to contractors in the use of the diagnostic equipment: providing the diagnostic equipment, training contractors to use the equipment, and receiving and processing the test data.

The HVAC Tune-Up Program did not return to market in 2012. The ENERGY STAR Quality Installation/Quality Maintenance Program, which began in October 2011, replaced the HVAC Tune-Up Program. (See section 4.11 below.)

4.10.2 Key Research Questions

In addition to the overarching research issues that span all programs, the following key research questions specific to the 2010-2012 process evaluation of the SDG&E HVAC Tune-Up Program were identified during initial interviews with program staff:

- How is quality tune-up work ensured/verified?
- Are HVAC contractors changing their practices for tune-up and installation as a result of education received through the program?
- How has the change in roles for VSPs affected program implementation?
- Is the program-tracking data effective in supporting the program objectives?

4.10.3 Data Collection Activities

Data collection tasks for the evaluation of the HVAC Tune-Up Program included in-depth interviews with program staff at SDG&E and KEMA in order to document program delivery and gauge program successes and challenges.

The evaluation team also conducted in-depth interviews with 10 participating HVAC contractors. The goal of these interviews was to determine the impact the HVAC Tune-Up Program on contractors' business and quality maintenance practices. Additionally, the interviews helped the evaluation team gather input from the contractors on aspects of the HVAC Tune-Up Program that were successful and those that could be improved through a similar program in the future.

The evaluation team also conducted in-depth interviews with 11 non-participating HVAC contractors who had been targeted to participate in the program but had not participated in it. The primary goal of these interviews was to determine why they had not participated and to determine how best to market utility energy efficiency programs to this set of market actors.

4.10.4 Research Findings

This section describes detailed results from the process evaluation of the HVAC Tune-Up Program and includes a review of quantitative program targets, followed by findings gleaned from interviews with staff, participating contractor, and non-participating contractors.

Review of Quantitative Program Targets

The HVAC Tune-Up Program did not have Program Performance Metrics (PPM), but the program did have quantitative targets for the number of services and installations conducted, as stated in the Program Implementation Plan (PIP). The three-year goals were: 11,104 tune-

up services, 180 quality installations, and 10 contractor training sessions. As of June 2011, 9,566 tune-up services had been performed and 206 new installations had been completed. While the evaluation team did not collect information on the total number of trainings conducted, the scope of work for KEMA shows that their target was to hold at least one workshop and at least 15 field trainings per quarter.

Staff Interview Results

The following issues were identified through the in-depth interviews with SDG&E and KEMA staff.

The most challenging issue for the HVAC Tune-Up Program was funding. Program funds were depleted by the end of September 2011. It is important to note that the reason that funding was depleted is because the marketing campaign was extremely successful. This campaign occurred in fall 2010 and consisted of press releases and door hangers placed on the front door of roughly 50,000 customers' homes. Approximately 5,200 customers enrolled in the program within a two-month period. The campaign was so effective that some customers had to wait until spring 2011 to have the services performed.

Another program challenge was the recruitment of high-quality HVAC contractors interested in providing long-term services instead of just "chasing" program incentives. Previously, the VSPs recruited contractors and processed payments. According to program staff, the VSPs were paid on a per-test basis, which emphasized quantity over quality. KEMA staff said that this issue improved when KEMA took over responsibility for recruiting and screening HVAC contractors, and reduced the VSPs' responsibilities to providing the diagnostic equipment and transmitting field data to KEMA. According to the Program Manager, the contractors KEMA recruited did better quality work than those recruited by the VSPs.

The Program Manager also said that specific temperature and humidity ranges are needed to conduct testing within the specifications of Title 24. Furthermore, RCA testing cannot be conducted on days with "Santa Ana winds." This was a challenge because it made program implementation weather-dependent at times.

Participating Contractor Interview Results

The evaluation team completed interviews with ten contractors who had actively participated in the program. The original goal was to complete 15 interviews with participating contractors; however, SDG&E provided only 23[32] contacts to the evaluation team. Despite the introduction of a $75 gift card incentive mid-way through the data collection effort, only ten

[32] The original list contained information for 25 contacts, but two of these self-identified as non-participants when they were called to schedule interviews.

interviews could be completed. This represents a completion rate of 43 percent. Interviews were conducted in late October 2011 through early January 2012, and lasted from 30 to 45 minutes.

The purpose of the participating HVAC contractor interviews was to understand the impact the HVAC Tune-Up Program had had on the contractor's business and quality maintenance practices. Additionally, the interviews helped the evaluation team gather input from the contractors on the aspects of the HVAC Tune-Up Program that were successful and those that could be improved in the future.

Impact of the Program on Contractors' Business and Quality Maintenance Practices

Seven of the ten respondents explained that the training delivered by KEMA had changed their installation or maintenance practices or at least improved their technical proficiency. Three respondents said that they had not changed their tune-up and installation practices as a result of participating in the program. However, one of these contractors said that his firm already engaged in all of the practices taught in the trainings and another said that his firm already was trying to be "cutting-edge" before they attended the training. All of the contractors felt that the training was valuable and helped improve their installation and maintenance practices.

Impact of Changes in Role of VSPs

All of the contractors said that they used one of the VSPs' equipment packages to verify the tune-up and installation work performed as part of the program. Six of the contractors used the Enalysis system, two used the FDSI (Field Diagnostics Services, Inc.) system, and one used the Verified system. Four of the contractors also mentioned that KEMA inspected and verified a small percentage of the completed projects.

Eight of the 10 contractors were satisfied with the service provided by the VSPs. The two other contractors said they had received poor customer service and support from the VSPs.

None of the contractors felt that their experience with the program changed significantly when the VSPs' role changed. One of the contractors said they appreciated getting paid by KEMA directly. One considered the change a "good thing." The other contractors generally were unaware that a change had occurred and none seemed to notice a significant difference.

Marketing the Program

None of the contractors interviewed had engaged in major marketing efforts for the HVAC Tune-Up Program. Two respondents stated that KEMA explicitly prohibited them from marketing the program.

Participating contractors said that SDG&E could have provided more assistance in promoting the program to customers. One contractor noted that the marketing restrictions regarding the use of the SDG&E logo on non-approved materials made it difficult to market the program to customers because program materials made no specific reference to his company. Two contractors said they did not receive any program promotional material from SDG&E. Two other contractors wanted some form of direct mailing to customers or program information on the SDG&E website. One contractor mentioned that he would have liked to encourage certain customers to upgrade their very inefficient HVAC equipment when he performed program-related tasks on-site, but understood that the program did not permit him to do so.

One contractor wanted to present the HVAC Tune-Up Program to his existing customers, but did not do so because there was no guarantee that KEMA would assign them to him after they enrolled in the program. Another contractor also wanted to be able to market the program to his existing customers but said that KEMA did not allow that.

Program Satisfaction

Satisfaction with the program among participating contractors was mixed. Contractors were asked to rate their overall satisfaction with the program using the following five-point scale: "very satisfied," "somewhat satisfied," "neither satisfied nor dissatisfied," "somewhat dissatisfied," or "very dissatisfied." Five of the ten respondents said they were "somewhat satisfied" with the HVAC Tune-Up Program. One contractor said he was "very satisfied," one said he was "somewhat satisfied", and two contractors said they were "somewhat dissatisfied." Reasons for dissatisfaction included verification equipment malfunctions, being assigned to a low-income area (because the respondent felt that these customers would be less likely to purchase additional services), and difficulties in getting reimbursed by the program.

Participating contractors said the program generally had had a positive impact on their business. Six of the ten contractors interviewed said that the program positively affected their business. Two contractors said they were able to hire or retain employees because the program additional projects. Three other contractors said that, although the program was not a big source of profits for them, it helped them reach new customers and expand their business. One contractor said that the program helped his company keep busy during the slow times of the year.

On the other hand, the remaining four participating contractors interviewed said that the program either had not affected their business or had negatively affected it. Two respondents stated that they lost money on the program. The first said this was because customers opted to receive only the free tune-ups and did not purchase any other services. Two contractors said that they had to buy new equipment in order to participate in the program, but used it only minimally before the program was cancelled. One contractor said that the program had had no significant impact on their business.

Participating contractors generally were not very satisfied with KEMA's performance. Three contractors were "extremely" dissatisfied with KEMA and cited the following primary reasons for this opinion: poor communication and delayed program payments. Two of these contractors said that it had taken between 60 and 120 days to get paid by KEMA for work completed as part of the program. One contractor was upset that his company had had to use KEMA's customer list instead of being able to recruit their own customers. One contractor thought that KEMA had done a good job in working to prevent sub-par contractors (i.e., those taking advantage of the program or doing poor quality work) from participating in the program. However, this respondent added that KEMA had not yet paid them, and, in general, felt that KEMA had made it hard for contractors to participate in their programs, especially because they ended the program early. Only two of the contractors said that KEMA had been good to work with.

Non-participating Contractor Interview Results

The evaluation team conducted 11 in-depth interviews with non-participating contractors. The original goal was to complete 15 interviews with non-participating contractors. However, SDG&E provided only 23[33] contacts to the evaluation team. Despite the introduction of a $50 gift card incentive mid-way through the data collection effort, only 11 interviews could be completed. This represents a completion rate of 48 percent. Interviews were conducted in November and December of 2011, and lasted between 10 and 20 minutes.

The purpose of the non-participating contractor interviews was to determine the level of awareness of SDG&E's HVAC Tune-Up Program among HVAC contractors who had been targeted to participate in the program, and also to determine why they had not participated. An additional goal was to gather input from the contractors regarding the marketing of utility energy efficiency programs.

Eight out of the 11 non-participating contractors interviewed were aware of the program. Six of the contractors said their companies did not participate in the program because it would not have been financially beneficial for them. Of these six contractors, three cited initial cost barriers such as the high cost of the verification equipment. Five said they would not be able to make any money through the program for the following reasons: too many requirements, too few leads, and having to pay for additional VSP training. One non-participating contractor said they had tried to participate in the program, but KEMA had not contacted them to do the work.

[33] Initially, 21 contacts were provided by SDG&E, but an additional two contacts originally contained in the participating contractor list identified themselves as non-participants when called for interviews.

Four of the contractors said it is important to market energy efficiency programs to customers. Three said that bill inserts or advertising in other media would help increase awareness of such programs. One contractor stressed that customers are more likely to participate in programs they believe are affiliated with SDG&E than in programs that are not, and that customers need to know SDG&E's role in the program before a contractor tries to promote the program to them.

4.10.5 Comparison to Best Practices

Program processes were compared to best practices as outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool.[34] As described below, the evaluation team evaluated the SDG&E HVAC Tune-Up Program with respect to best practices in Program Theory and Design, Program Management, and Program Implementation.

Program Theory and Design

The program logic is well-articulated in the Program Implementation Plan (PIP), and the program was effective in overcoming customer cost barriers, as well as increasing the quality of maintenance services performed by HVAC contractors participating in the program. The program specifically involved HVAC contractors by providing training to perform quality maintenance services.

However, the market transformation efforts were less successful, since the program did not necessarily generate repeat business for contractors and it is unknown if customers who received the free service will seek out quality maintenance in the future.

Program Management

Project Management

Management responsibilities for the program were very well defined. KEMA managed all aspects of the program, including contractor recruitment, training, inspections, customer enrollment, and processing payments to contractors. The verification service providers (VSP) ultimately had a relatively minor role: providing the diagnostic equipment, training contractors to use the equipment, and receiving and processing the test data.

While the program provided incentives to customers, it did not provide incentives to contractors; contractors received payment only for the cost of services performed. Providing

[34] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

incentives to both customers and contractors is an identified best practice for residential HVAC programs.

Reporting and Tracking

The program-tracking data appear to support the objectives of the program. Data were tracked by service type, as well as by SEER level and climate zone for new installations.

Quality Control and Verification

KEMA conducted inspections to ensure that work reported by program contractors actually had been done. SDG&E also randomly inspected completed projects and tested participating technicians. VSPs sent diagnostic test data to KEMA, which processed the data and securely uploaded it to SDG&E. SDG&E reviewed the diagnostic data to ensure that the work actually had occurred.

Program Implementation

Participation Process

Participation in the program was relatively straightforward. Customers enrolled online or via a toll-free telephone number. Customers had a single point of contact for enrolling: KEMA. KEMA then assigned the service and installation appointments to participating contractors. The program provided training for quality maintenance procedures but did not provide training for proper installation practices. The program also did not provide incentives to contractors; it only reimbursed them for the cost of performing the free tune-ups plus any incentive amounts that were passed on to the customer for new installations. Best practices for residential HVAC programs call for providing incentives to contractors.

Marketing and Outreach

The program was promoted through two primary methods during the fall of 2010. This included press releases that resulted in newspaper articles, as well as door hangers at 50,000 targeted homes. As a result of these marketing activities, 5,200 customers enrolled in the program in just two months.

The program neither used nor allowed contractors to market the program. Best practices suggest that contractors should help market the program, but given the overwhelming customer response to the newspaper articles and door hangers, contractor marketing efforts were not needed.

4.10.6 Conclusions and Recommendations

Conclusions

Primary research findings stemming from this process evaluation of the SDG&E HVAC Tune-Up Program are outlined below.

Overall, the program successfully improved HVAC contractors' installation and maintenance practices. However, not all contractors were satisfied with their participation in the program.

Participating contractors felt the HVAC training sessions were valuable and most stated that they had changed their installation or maintenance practices as a result of the information presented in the sessions. This is one of the program's important successes. However, it is unknown how many of these contractors will continue to perform quality installation and maintenance practices independent of the program.

Program staff said that shifting responsibility for contractor recruitment and screening to KEMA improved oversight of program-supported tune-ups. The reduction of the VSPs' responsibilities had no notable negative effects on program implementation.

Verification of the quality of the tune-ups appeared to be satisfactory. KEMA inspected projects to ensure that work reported by program contractors had occurred. SDG&E also randomly inspected work that had been completed through the program and tested participating technicians. In addition, SDG&E reviewed the diagnostic data to ensure that the stated work actually had been done.

The program-tracking data appear to be sufficiently detailed to support the objectives of the program. Data were tracked by service type, as well as by SEER level and climate zone for new installations.

Contractor satisfaction with the program was mixed. Some respondents said their business had improved as a result of the program, while others expressed dissatisfaction with the high cost of the diagnostic equipment or the perception that they had not made any money by participating in the program. Some contractors were dissatisfied with KEMA due to poor communications or delayed reimbursements.

Some contractors working with the program said they were prohibited from marketing the program. Participant and non-participant contractors alike indicated that their own marketing activities could increase their business, and that being allowed to include the SDG&E logo on their marketing materials could increase the legitimacy of their work and facilitate customer recruitment.

Recommendations

The following recommendations stemming from these findings are provided primarily to assist with the development of new HVAC programs, such as ENERGY STAR Quality Installation/Quality Maintenance.

Expand marketing responsibilities for contractors. If contractors are used to market the program, consider including the SDG&E logo on any marketing materials that will be provided to contractors to use in promoting the program with their customers.

Examine and address barriers to contractor participation. A substantial percentage of contractors felt that the program had no positive impact on their business, and a number of non-participant contractors chose not to participate in the program because they did not believe it would be profitable. One way to address this issue is to provide contractor incentives, which is an identified best practice for residential HVAC programs.

Monitor the relationship between implementers (such as KEMA) and contractors. Most contractors interviewed were dissatisfied with the performance of KEMA. Contractor reimbursements should occur promptly, to prevent contractors from dropping out of the program.

Table 88 shows detailed recommendations.

Table 88: Summary of Issues and Recommendations for the SDG&E HVAC Tune-Up Program

Issue	Consequences	Steps SDG&E Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
Contractors were unable to market the program.	Contractors were frustrated and there may have been missed opportunities to recruit customers.	The HVAC Tune-Up Program has ended, but SDG&E is planning to use contractors to market the new ENERGY STAR Quality Installation/Quality Maintenance Program to customers.	Expand marketing responsibilities for contractors. Include the SDG&E logo on marketing materials that will be used by contractors.	L	L
Some contractors felt that the program did not positively affect their business.	Contractors may be likely to drop out of the program or decline to participate in future programs.	None	Further examine and address barriers to contractor participation. Consider including a contractor incentive.	M	M
Some contractors were dissatisfied with the performance of the implementer.	Contractors may be likely to drop out of the program or decline to participate in future programs due to negative experiences.	None	Monitor the relationship between implementers and contractors.	L/M	M

4.11 ENERGY STAR Quality Installation/Quality Maintenance Program ("AC Quality Care")

The statewide ENERGY STAR Quality Installation/Quality Maintenance (QI/QM) Program provides financial incentives to residential customers for the quality installation of central air conditioning and air-source heat pump systems, or for advanced diagnostic tune-ups performed on these systems. Installations must be in accordance with EPA HVAC Quality Installation Guidelines; installation requirements are illustrated in detail in the ANSI/ACCA 5 QI-2007: HVAC Quality Installation Specification. The quality maintenance advanced diagnostic tune-ups are based on the standards in ANSI/ACCA 4.

The SDG&E ENERGY STAR QI/QM Program is implemented by KEMA Services, Inc. (KEMA). KEMA develops marketing materials, recruits contractors, provides contractor training and conducts quality control/quality assurance. Program marketing has included direct mail, advertising on the SDG&E and KEMA websites, and advertising at home shows. To recruit contractors to participate in the program, KEMA emailed all C-20 contractors[35] working in the state of California. KEMA conducts a three-day classroom training, followed by a written exam and field training on two HVAC units.

Quality maintenance first requires a full baseline inspection of all HVAC components, instead of just a duct test and seal (DTS) without considering the other system components, such as the sizing of ductwork. The inspection is a 40- to 60-point check depending on the system and includes a basic customer interview, both to engage the customer and determine any problem areas in the house. The customer receives a report of the results of the inspection, and then can have repairs performed or a new unit installed, as needed. SDG&E provides a $50 incentive to customers for the baseline assessment, which covers half the cost of the assessment.

The ENERGY STAR QI/QM Program also provides incentives to customers to cover a portion of the cost of the quality maintenance services. These incentives are: $250 for airflow correction, $50 for a refrigerant system service, $150 for a blower motor retrofit, $75 for a condenser motor retrofit, and $50 for a one-year ACCA 4 QM service agreement.

In addition, SDG&E offers incentives ranging from $750 to $1,250 (depending on SEER and EER levels) to customers for quality installation of new HVAC systems. Quality installations are more comprehensive than the industry standard, which is why the program offers higher incentives than those for a standard simple retrofit.

[35] A C-20 classification refers to a California State Licensing Board (CSLB)-certified contractor, who conducts Warm-Air Heating, Ventilating and Air-Conditioning work, per California Code of Regulations Title 16, Division 8, Article 3.

4.11.1 Background

The ENERGY STAR QI/QM Program replaces the HVAC Tune-Up, or "AC Time" Program, and offers more advanced maintenance and installation procedures. The ENERGY STAR QI/QM had a "soft launch" on October 1, 2011 with a series of informational forums for contractors. These forums were intended to provide potential contractors information on the program, gather feedback from contractors, and ultimately recruit contractors to participate in the program. The required start date was mandated by the CPUC.

Additionally, KEMA held classroom training sessions at no cost for contractors who expressed interest in participating in the program. Two classroom training sessions were held for QM and one classroom training session was held for QI. Sixty-one contractors completed the QM classroom training; six completed the QI classroom training. Only two contractors completed field testing and were certified to participate in the program, both for QM.

One customer participated in 2011. However, this customer was used for an in-field training session, so the work was done for free. It is unknown if this customer will count toward participation goals.

Upcoming Program Changes

Unlike its predecessor, the HVAC Tune-Up Program, the ENERGY STAR QI/QM Program does not use Verification Service Providers (VSPs). Instead, KEMA plans to provide software to contractors so they can perform the diagnostic tests. At the time of this evaluation, KEMA had only a paper version of this information, and was developing software that will allow contractors to use a smart phone or laptop to conduct the diagnostic tests and track all data, including any adjustments made to the system.

KEMA was trying to determine the best method by which to reach customers to participate in the program. KEMA would like to develop sales training and provide marketing materials to contractors so they can promote the program to their customers. A marketing plan was under development.

Program staff is considering bundling the QI portion of the program with the Energy Upgrade California "Whole House" Program (see section 4.6, above). This could be a way to offer customers a larger incentive because the bundled projects would increase savings. For example, if a customer installs insulation as well as an HVAC system, the combined savings will be greater than the savings associated with any one measure. A greater incentive could motivate additional customers to participate.

Key Research Questions

Key research questions specific to the 2010-2012 process evaluation of the SDG&E ENERGY STAR Quality Install/Quality Maintenance Program were identified during initial interviews with program staff. These key research questions include:

- Are customers receptive to participation in the new program?
- Are contractors receptive to participation in the new program?
- How will data for the new program be tracked and verified?

4.11.2 Data Collection Activities

Data collection tasks for the evaluation of the ENERGY STAR QI/QM Program were very limited, as the program had not begun when evaluation activities were planned. Thus, the data collection activities the evaluation team conducted for this evaluation were limited.

First, the evaluation team conducted in-depth interviews with program staff at SDG&E and KEMA in order to document program progress and gauge program successes and challenges. The following staff-persons were interviewed:

- SDG&E – Program Manager
- KEMA – Senior Client Support Coordinator

The evaluation team also used information from in-depth interviews with 21 HVAC contractors that were conducted as part of the evaluation of the HVAC Tune-Up or "AC Time" Program. Ten of these contractors had participated in the SDG&E HVAC Tune-Up Program. The remaining 11 HVAC contractors had been targeted to participate in AC Time but had not participated in the program. The interviews were used as an opportunity to capture contractors' interest in and willingness to participate in the new ENERGY STAR QI/QM Program.

4.11.3 Research Findings

This section describes detailed results of the process evaluation of the SDG&E ENERGY STAR QI/QM Program and includes a review of Program Performance Metrics (PPMs). This review is followed by findings gleaned from interviews with program staff and HVAC contractors.

Review of Program Performance Metrics (PPMs)

Table 89 shows the status of the PPMs for the SDG&E ENERGY STAR QI/QM Program. This program has two PPMs: the percentage of HVAC contracting companies that are participating in the program as a share of targeted market, and the average percentage of participating "certified" HVAC technicians within each contracting company that participates in the program. Because program implementation had just begun at the time of this evaluation, the program had made little progress toward achieving its PPMs. The second PPM is reported only at the end of the program cycle.

Table 89: PPM Summary and Status

PPM [a]	Tracked?	Status Relative to Goal	Comment
Percentage of HVAC contracting companies that are participating in the statewide residential QI program as a share of targeted market.	Yes.	Two contracting companies were certified to participate in QM. None was certified for QI.	This PPM is to be reported annually.
Average percentage of participating "certified" HVAC technicians within each contracting company that participates in the residential QI program.	Unknown.	An average of three technicians per company were certified on QM. None has been certified for QI.	This PPM is to be reported at the end of the program cycle.

[a] PPMs were referenced from the Program Implementation Plan for the ENERGY STAR Quality Installation Program, which was combined with the Quality Maintenance Program. Updated PPMs for the combined program were not available for review.

Staff Interview Results

The interviews with program staff revealed a few key challenges SDG&E is facing with the rollout of the new program.

It will be challenging to motivate customers to participate in the program. In the prior HVAC Tune-Up Program, SDG&E began by charging customers a $75 fee for the tune-up services, and no customers enrolled. It is unclear if customers will be willing to pay the up-front cost for the baseline assessment that is required for the ENERGY STAR QI/QM Program. Other challenges include the weak economy and the fact that many SDG&E customers use their air conditioning only two to three weeks per year.

Another challenge for the program is the level of contractor participation. Although 67 contractors completed the classroom training, as of January 10, 2011, KEMA had certified only two contractors with a total of six technicians to provide QM, and only one contractor with two technicians to provide QI. It is possible that this low level of participation is due to the fact that the program launched in fall. It may be that contractors did not complete the training because they needed to work on heating equipment during this time.

According to program staff, contractors who completed the classroom training commented that the training is too long. KEMA has offered the training in two formats: three full days of training, and seven evenings of training. Attendees were not enthusiastic about the amount of training involved in either case, and expressed a desire for more in-field training instead.

SDG&E prohibits co-branding with third parties, so KEMA has provided all program marketing and none of the marketing materials indicate that the program is sponsored by SDG&E. This

could be a significant challenge, since customers recognize and usually trust their utility, but will likely not recognize KEMA.

HVAC Contractor Interview Results

As part of the evaluation of the retired SDG&E HVAC Tune-Up Program (see section 4.10 above), the evaluation team completed interviews with ten contractors who had actively participated in the HVAC Tune-Up Program and interviews with 11 contractors who had been targeted to participate in the program but had not participated. The evaluation team used the opportunity to gauge contractors' interest in the ENERGY STAR QI/QM Program that replaced the HVAC Tune-UP Program, and to gather their input about which components of the new program they believed would be successful and which should be modified. Results were somewhat different for contractors who had and had not participated in the HVAC Tune-Up Program. Their responses are presented separately below; responses from contractors who had not participated in the HVAC Tune-Up Program are presented first.

Feedback from Non-participating HVAC Tune-Up Contractors

Most (8 of 11) contractors who had not participated in the now-retired HVAC Tune-Up Program were aware of the ENERGY STAR QI/QM Program. Each of these contractors mentioned attending an informational meeting or contractor forum about the new program. Although nearly all of these contractors were aware of the ENERGY STAR QI/QM Program, none of them expressed a strong desire to participate in it. Two contractors said they might participate, and five said they were not planning to participate.

The length and timing of the training sessions was a primary reason these contractors did not plan to participate in the program. Three of these contractors were unhappy that the training would be held during regular business hours; they would prefer trainings at night or on weekends during off-peak seasons.

Two contractors said they did not plan to participate in the ENERGY STAR QI/QM Program because they felt it had not been fully developed and program staff could not provide specific program details or answer contractors' questions during the program information sessions. For these reasons, the contractors believed that training would be a waste of time. One of these contractors expressed doubts about KEMA's ability to administer the program effectively.

Three of the contractors did not see the value of the ENERGY STAR QI/QM Program to homeowners. They said that consumers will not be willing to spend the money to upgrade to their HVAC system, and that the program does not provide enough of a rebate to encourage consumers to implement any recommendations made through the program. The primary recommendation from these respondents was to simplify the program and increase the amount of the consumer rebates.

HVAC Tune-Up Participating Contractors' Concerns about the ENERGY STAR QI/QM Program

All ten contractor respondents who had participated in the prior HVAC Tune-Up Program were aware of the new ENERGY STAR QI/QM Program. Four of them said they planned to participate in the new program, while five did not, and one was unsure. All respondents expressed some concerns about the new program.

Four respondents said that customers would not be willing to spend the money necessary to participate in the program. These respondents also predicted that the new program will be excessively time-consuming for customers. Two contractors said that customers typically do not call them unless something is broken, so it will be difficult to get them to be proactive in order to participate in the program. These contractors also were concerned that, no matter how they tried to sell customers on the program, customers would perceive their efforts as "up-selling." These respondents said it would be challenging to effectively demonstrate to the customer what they would gain by participating in the program.

Contractors said that a lack of program details is one reason why they do not plan to participate in the new program. Furthermore, two contractors felt that some of the rebates do not make sense. One contractor said that replacement of a fan motor with a more efficient motor will yield minimal efficiency gains, especially when compared to the replacement of an old furnace.

HVAC Tune-Up Participating Contractors' Suggestions for the New ENERGY STAR QI/QM Program

Contractors who had participated in the HVAC Tune-UP Program offered one primary suggestion to improve the new program: clarify the details of the program for contractors and customers.

One contractor said that ACCA 4 standards are excessive for residential applications. This contractor felt that it would be difficult to show customers that the difference between the higher-quality service and standard service is worth the higher cost; the rebates will not cover all of the incremental cost.

Three of the contractors suggested that SDG&E sponsor a large marketing effort to raise consumers' awareness of the program and advertise the benefits of participating in it.

Contractors said they want a program that is based on a proven protocol, has contractor buy-in, and is easy to understand. Contractors want a program that can be sold effectively and is profitable for them.

4.11.4 Comparison to Best Practices

The evaluation team compared the planned program processes to best practices outlined in the Energy Efficiency Best Practices Self-Benchmarking Tool.[36] As described below, the evaluation team evaluated the SDG&E ENERGY STAR Quality Installation/Quality Maintenance Program with respect to best practices in Program Theory and Design, Program Management, and Program Implementation.

Program Theory and Design

The program theory is well articulated in the Program Implementation Plan (PIP), but the effectiveness of the program theory and design is unknown.

Program Management

Project Management

Best practices for project management recommend spreading implementation dollars among multiple implementers (including contractors); however, the ENERGY STAR QI/QM Program provides only downstream incentives.

Reporting and Tracking

This is a new program, so no data were available at the time of this evaluation. The program-tracking data will include information about customers, contractors, and associated program savings. The Program Manager was confident that the data will be accurate and will effectively support the program objectives.

Quality Control and Verification

Inspection and verification procedures have been developed. Ten percent of installations and maintenance services will be randomly selected for inspection. The Program Manager also will randomly review the program-tracking data to ensure accuracy.

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[36] Best Practices Benchmarking for Energy Efficiency Programs, Self-Benchmarking Tool. See http://www.eebestpractices.com/

Program Implementation

Participation Process

The program is providing very thorough training regarding quality installation and maintenance procedures for technicians, which is a best practice recommended for residential HVAC programs.

The program provides incentives only to the end-user, however. Contractor incentives are recommended as well per best practices.

Marketing and Outreach

The program is developing a marketing plan and hopes to have contractors assist in marketing the program. The program uses the ENERGY STAR logo to instill consumer confidence, but does not use the SDG&E logo. This may be an issue, since customers may be wary of participating in a program offered by an unknown firm.

4.11.5 Conclusions and Recommendations

Conclusions

Primary research findings stemming from this process evaluation of the SDG&E ENERGY STAR QI/QM Program are outlined below.

The ENERGY STAR QI/QM Program appears to have launched before program details were well understood. As a result, contractors attending informational sessions felt that the program is somewhat disorganized. This is not necessarily SDG&E's fault, as the CPUC mandated the program's start date. The interview conducted with the Program Manager suggested that the program details are now better defined.

Contractor certification was proceeding slowly. Only two contractor firms and six technicians had been certified to perform QM services for the program. No QI technicians had been certified at the time of this evaluation.

Contractor attendance at the training sessions was fairly good. While 61 contractors had completed classroom training, only two had completed the field training and certification.

Some contractors were unclear about the program value proposition to homeowners and therefore, were concerned that customers will not be willing to spend the extra money to have QI/QM work performed. If contractors are to market the program to their customers, it is crucial that they understand the value of the program for customers; they cannot promote a program for which they do not see a benefit.

Recommendations

Recommendations stemming from these findings are described below.

Avoid recruiting contractors if program details are unknown or in flux. Due to the CPUC-mandated start date, premature informational sessions caused some contractors to become frustrated and unwilling to participate.

Consider providing an incentive to participating contractors. An incentive may motivate them to complete their certification to participate in the program. Such an incentive is considered a best practice for residential HVAC programs.

Conduct market research to determine how best to market the value of the program to customers. Program staff and contractors expressed some concern that customers may not be willing to pay a higher price for QI/QM services. Determining which messages will best promote QI/QM services, and the incentive levels that are required to influence participation will help determine if the program design is achievable or if SDG&E should change marketing or incentives.

Table 90 shows detailed recommendations.

Table 90: Summary of Issues and Recommendations for the SDG&E ENERGY STAR QI/QM Program

Issue	Consequences	Steps Sempra Is Taking to Address Issue (if any)	Additional Steps We Recommend	Difficulty in Addressing (H/M/L)	Value in Addressing (H/M/L)
The program appears to have launched before program details were well-understood.	Some contractors are frustrated and may be unwilling to participate.	Details appear to have been clarified.	Avoid recruiting contractors when program details are unknown or in flux.	L	H
Contractor certification has been slow.	The program will not have enough certified contractors to implement the program successfully.	KEMA is continuing to offer training classes.	Consider providing an incentive to contractors to motivate them to participate in the program.	M	M
Program staff and contractors expressed some concern that customers may not be willing to pay a higher price for QI/QM services.	The program may have difficulty recruiting customers.	None	Conduct market research to determine how best to market the value of the program to customers.	H/M	H