



Comparison of California Investor-Owned-Utility (IOU) Direct Load Control (DLC) Programs

Comparison of PG&E's SmartAC Program, SCE's Summer Discount Program, and SDG&E's Summer Saver Program



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1. Executive Summary

This section summarizes the more detailed findings found elsewhere in this report.

1.1 Introduction

This report was commissioned by San Diego Gas and Electric (SDG&E) under the guidance of the California Demand Response Measurement and Evaluation Committee (DRMEC). The purpose of this report was to provide a comparison of program characteristics of the California Investor-Owned Utility (IOU) Direct Load Control (DLC) programs. The comparison was based mostly on already-published information from process evaluations of these programs. These programs include Pacific Gas and Electric's (PG&E's) SmartAC program, Southern California Edison's (SCE's) Summer Discount program, and SDG&E's Summer Saver program. The research scope determined the information sources to include:

- *Process Evaluation of 2007 PG&E Smart AC Program*, Study ID PGE0262.01, prepared by KEMA Inc., March 31, 2008;
- *Participant Satisfaction Findings for the 2008 PG&E Smart AC Program*, prepared by KEMA Inc., February 13, 2009;
- *Process Evaluation of SDG&E Summer Saver Program*, prepared by KEMA Inc., March 19, 2009;
- *The SCE Air Conditioner Cycling Summer Discount Program Evaluation Study*, prepared by Quantum Consulting Inc., P2038-190, January 2006;
- Review of a transcript from a 2008 interview with the SCE Summer Discount program manager that was conducted by KEMA for the SDG&E Summer Saver process evaluation listed above; and
- A telephone interview with the PG&E SmartAC Program Manager to collect information on program improvements made since the issuance of process evaluation reports listed above. This interview was completed in October 2009.

1.2 Key Findings

1.2.1 Program Characteristics

- **Program age, size, growth and customer mix**
 - *Program age:* The SCE Summer Discount program has been in continuous operation for over twenty years, while the PG&E SmartAC and SDG&E Summer Saver programs have been in existence 3-5 years.
 - *Program size and growth rates:* As of September 2009, the SCE Summer Discount program had 354,098 participants, the PG&E SmartAC program had 142,504, and the SDG&E Summer Saver program had 41,834. Over the last three years, the PG&E SmartAC Program has had the most rapid rate of growth. However, in August 2009 PG&E filed an application with the California Public Utilities Commission (CPUC) to slow its expansion and focus its marketing efforts on customers in the hottest areas of its service territory to support cost effectiveness.
 - *Single-family vs. multifamily:* The vast majority of the residential customers that participate in these types of DLC programs are single-family customers due to the utility targeting strategies that focus on owner-occupied housing.
 - *Commercial participants:* Of the three programs, the SDG&E program has the highest enrolled percentage of commercial customers (18% compared to less than 3% for the other IOUs). The detailed section of this report discusses some possible explanations for this.
 - *Demographic, AC usage comparisons:* A comparison of participant demographic data of the three programs shows that enrolled customers in the different service territories were fairly similar in terms of the distribution of ages, genders, and educational levels. However, nearly three quarters of the PG&E and SDG&E participants said that they rarely or never use their air conditioning while this was the case with less than a third of the SCE participants. The report examines possible reasons for this diversity in AC utilization.
- **Control devices, cycling options, event triggers, and number of control events**
 - *Control devices:* The SCE and SDG&E programs only offer the customer an air conditioner control switch while the PG&E program offers customers a choice

between a control switch and a programmable communicating thermostat (PCT, also known as a “smart thermostat.”).

- *Cycling options:* The SCE and SDG&E programs offer much more complicated menus of event options than PG&E’s program does (PG&E only has one cycling option). These include multiple cycling levels, 5-day vs. 7-day options, and options as to how often per year the participant is willing to be cycled. The process evaluation of the SDG&E Summer Saver program found that a larger menu of cycling options can present challenges for marketing and customer education efforts.
 - *Criteria for control events:* All the programs have control event “triggers” based on system emergencies declared by the California Independent System Operator (ISO). The programs can also call events for local emergencies, to test the devices, and for other discretionary reasons.
 - *# of Control events:* During the 2007-2009 period the SDG&E program had 11 control events, the SCE program had 10 control events, and the PG&E program had two control events including one test event. 2009 was the most active year during this time period with 11 control events across the three programs.
- **Program incentives**
 - *Payment methods:* PG&E sends the customer a one-time sign-on “thank you” payment for each device installed when they join the program as well as a free “smart” thermostat for those that choose that option. SCE provides customers an electric monthly bill credit during each program operating month of the summer season that the customer is still in the program. SDG&E provides customers a single billing credit after the program season is over. For all three programs the participants receive incentives for participating in the program regardless of whether control events are called. While the PG&E program pays participants only once, the SCE and SDG&E programs provide incentives to participants during each year they participate in the program.
 - *Payment levels:* PG&E currently pays its customers \$25 and is considering experimenting with a \$50 value for residential and a \$100 value for nonresidential customers. SCE’s incentive is based on the size of the customer’s air conditioning equipment and the cycling level the customer opts for. SCE also pays double bill credits to participants who opt for the enhanced (more frequent) cycling plan.

SDG&E also bases the incentive levels on equipment size and cycling level and pays an extra \$10 for participants who are willing to be cycled on the weekends.

- *Pros, cons:* The detailed section of the report discusses the apparent advantages and disadvantages of these different incentive mechanisms in terms of timeliness, transparency as to the amount of the incentive, and tangibility (e.g., check in the mail vs. bill credit).

- **The Structure of program implementation**

- *PG&E, SDG&E:* The PG&E and SDG&E programs rely more on contractors than the SCE program does. SDG&E's Summer Saver program has primarily outsourced all its key program functions to a single contractor. PG&E's program had used a similar outsourcing model as SDG&E in when it began its program in 2007, but moved its marketing and customer acquisition function in-house only a few months after beginning the program.
- *SCE:* SCE has most of its key program functions in-house. While PG&E and SDG&E have outsourced their program call center functions to contractors, SCE has instead created a dedicated program call center out of its general call center. SCE has calls from customers with high bill complaints routed to this dedicated call center where the Customer Service Representative are trained to try to recruit the customers into the DLC program.
- *Program management:* While all three IOUs outsource key program functions (such as DLC device installation) to contractors, they retain responsibility for overall program management. They constantly monitor the status of enrollments and installations, meet with contractors frequently and are quick to provide feedback if they believe that aspects of their programs are either working well or not being implemented in an efficient or effective manner.

1.2.2 Findings Concerning Program Marketing and Information

- **Marketing methods**

- *Direct mail:* All three of the California IOU DLC programs have relied on direct mail as their primary method for recruiting new participants and informing them about how the program works. The program managers and staff noted that direct mail has a number of advantages over other marketing channels such as radio, television, and

newspapers. Yet the report also discusses additional marketing methods they are using.

- **Measuring the effectiveness of program marketing and education**

- *Program awareness among those targeted by marketing:* Of the published process evaluation reports that were used as sources for this DLC comparison report, the evaluation of the SDG&E Summer Saver program was the only one that included in its evaluation scope a survey of non-participants -- customers who had received program marketing information but had not joined the program. This report found that even when asked aided questions, only a little more than half the residential non-participants and a little more than a third of the commercial non-participants claimed awareness of the Summer Saver program.
- *The payoffs of greater program awareness:* The SDG&E survey gave non-participants who said they were unaware of the Summer Saver program a short description of the program and then asked them if they were interested in receiving information about the program. Over two thirds of the residential non-participants and 82 percent of the commercial non-participants expressed interest. While it's not clear what percentage of these interested respondents would have actually joined the program, the high level of interest indicates that improving marketing effectiveness and increasing program awareness should have a payoff.
- *Sources of first program awareness:* Since all three programs rely on direct mail as their primary marketing channel, not surprisingly utility bill inserts and utility direct mail were the most-cited first sources of program information. However, there was evidence that word-of-mouth grows in importance as a DLC program matures.
- *Recall of program marketing messages:*
 - "Saving energy" was recalled as a marketing message by a large percentage of PG&E and SDG&E respondents even though neither utility promoted energy savings in their marketing materials. The detailed section of this report provides some explanations for this.
 - SDG&E non-participants recalled marketing messages much less accurately than program participants.

- The SDG&E process evaluation found that residential participants recalled very different program marketing messages based on their household income, even though all received the same marketing materials. This lent credence to the marketing best practice for customizing marketing messages to customer subgroups.
- *Whether respondents knew how the program worked:* The SCE and SDG&E programs have complex program designs – with multiple cycling or event-frequency options per customer type. The process evaluations found that these utilities inherently have a tougher challenge in educating customers on how the programs work, compared to a simpler program design. The evaluations found that both these programs needed to improve their educational efforts since many participants (and in the case of SDG&E non-participants and dropouts) were not clear on key program details.
- *Satisfaction with the program information:* 80-86% of the participants from the three programs were satisfied with the program information they received. The percentage of participants seeking additional information ranged from six percent for the SDG&E participants to 27 percent for the SCE participants. When participants were asked how satisfied they were with the responses they received to their phone or email inquiries, PG&E and SCE respondents reported high levels of satisfaction and the SDG&E respondents did not. The detailed section of the report discusses some possible explanations for this.
- **Marketing best practices:** The report discusses over a dozen recommendations for marketing best practices that were derived from a best practices study that was part of the process evaluation of the SDG&E Summer Saver program.

1.2.3 Findings Concerning Participant Comfort

- **Noticing the control events:** The percentage of program participants noticing the control events was 34 percent for PG&E (2008 non-EM&V participants), 36 percent for SCE (2005 participants), and 43 percent for SDG&E (2008 participants).
- **Comfort levels during control events:** Seventy-two percent of the SCE participants (2005 participants) who noticed the control event reported being uncomfortable compared to 40 percent of the PG&E participants (2008 non-EMV participants) and 47 percent of SDG&E participants (2008 participants). The detailed section of this report discusses some possible explanations for this.

- **Comfort level vs. cycling level:** Contrary to what might have been expected, the SCE and SDG&E evaluations found that the lower the cycling level, the higher the level of discomfort. One possible explanation for this is that participants may be selecting themselves into the program cycling options based on their natural level of heat tolerance. A possible alternative theory – that participants on the more intense cycling options may simply not be home as often, was not supported by the data.
- **Other indicators of discomfort:** The report discusses the results from other possible indicators of discomfort such as whether the participant's experience of the control event was better or worse than they had expected, their likelihood of opting out of opting of future control events, whether they were considering leaving the program due to recent control events, how many control events they could tolerate before they leave the program, and their willingness to switch to more intense cycling options.

1.2.4 Findings Concerning Program Satisfaction

- **Satisfaction with enrollment, installations:** Satisfaction with enrollment processes was in the 84-99% range across the three programs. Satisfaction with scheduling and installation processes was in the 86-97% range across the programs.
- **Satisfaction with incentives:** While 93 percent of PG&E participants were satisfied with their incentives, only 46-69% (depending on cycling level) of SCE participants were satisfied with their incentives and only 67 percent of the SDG&E participants were satisfied with their incentives. The main body of the report discusses a number of possible explanations for these differences.
- **Overall program satisfaction:** Overall program satisfaction levels were high (91-95% depending on program year) for PG&E and SCE (86%) program participants, but lower for the SDG&E participants (74%). Reasons given for SDG&E participant dissatisfaction included SDG&E activating their Summer Saver devices too often and the bill credits being too small. Yet there were many other reasons. The percentage of participants saying they would recommend the DLC programs to others was fairly close to those who said they were satisfied with the overall program.
- **Using dropout surveys to improve satisfaction assessment:** Of the published process evaluation reports that were used as sources for this DLC comparison report, the evaluation of the SDG&E Summer Saver program was the only one that included in its evaluation scope a survey of dropout customers. The surveying of dropout customers is listed in this report as one of the marketing best practices. There is a risk of overestimating program

satisfaction by only surveying program participants. This is due to self-selection effects, where the really dissatisfied participants have already left the program and those that remain are at least satisfied enough to have remained. The dropout survey found that that the main reasons the SDG&E dropouts left the program were related to discomfort during the control events.

2. Detailed Findings

2.1 Introduction and Methodology

This report was commissioned by San Diego Gas and Electric (SDG&E) under the guidance of the California Demand Response Measurement and Evaluation Committee (DRMEC). The purpose of this report was to provide a comparison of program characteristics of the California Investor-Owned Utility (IOU) Direct Load Control (DLC) programs. The comparison was based mostly on already-published information from process evaluations of these programs. These programs include Pacific Gas and Electric's (PG&E's) SmartAC program, Southern California Edison's (SCE's) Summer Discount program, and SDG&E's Summer Saver program. The research scope determined the information sources to include:

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- *Participant Satisfaction Findings for the 2008 PG&E Smart AC Program*, prepared by KEMA Inc., February 13, 2009;
- *Process Evaluation of SDG&E Summer Saver Program*, prepared by KEMA Inc., March 19, 2009;
- *The SCE Air Conditioner Cycling Summer Discount Program Evaluation Study*, prepared by Quantum Consulting Inc., P2038-190, January 2006;
- Review of a transcript from 2008 interview with the SCE Summer Discount program manager that was conducted by KEMA for the SDG&E Summer Saver process evaluation listed above; and
- A telephone interview with the PG&E SmartAC Program Manager to collect information on program improvements made since the issuance of process evaluation reports listed above. This interview was completed in October 2009.

This report has three primary sections:

1. *Program characteristics*: This section compares program design characteristics of the three California IOU DLC programs such as program age, size, and customer mix; control devices, cycling options and control events; program incentive; and the structure of program implementation.

2. *Findings Concerning Program Marketing and Information:* This section summarizes findings from the process evaluations concerning marketing methods, measuring the effectiveness of program marketing and education, and marketing best practices.
3. *Findings Concerning Participant Comfort and Program Satisfaction:* This section summarizes findings from the process evaluations concerning participant recall of control events, comfort during events, and satisfaction with various program processes as well as with the program as a whole.

2.2 Program Characteristics

This section compares the key characteristics of the three California IOU DLC programs that we profile in this report. These key characteristics include:

- Program age, size, and customer mix;
- Control devices, cycling options and control events;
- Program incentives; and
- The structure of program implementation.

2.2.1 Program Age, Size, and Customer Mix

Understanding the age, size, and participant mix of these three California Investor-Owned Utility (IOU) DLC programs is important for understanding other aspects of these programs. Startup DLC programs have different needs and challenges than established ones. In terms of participant recruitment, start-up programs often have aggressive growth targets to establish a participant base. Table 2-1 shows that SCE's Summer Discount Program is an established program having been around for over twenty years. PG&E's SmartAC and SDG&E Summer Saver programs are relative newcomers having started in the last 3-5 years.

**Table 2-1
Age, Size, and Customer Mix of the
California IOU DLC Programs**

Program Characteristic	PG&E SmartAC	SCE Summer Discount	SDG&E Summer Saver
Date of Program initiation	2007	1985	2005
# of Program Participants (as of Sept. 2009)	142,504	354,098	41,834
Customer mix	Almost exclusively residential, < 1% commercial	97% residential, 3% commercial	82% residential, 18% commercial

Note: Participant counts are current as of September 2009.

Over the last three years, PG&E’s SmartAC Program has experienced the most rapid growth. In August 2009 PG&E filed an update application with the CPUC to slow program expansion and strive for cost-effective load impacts by focusing its marketing efforts on customers in the hottest areas of its service area and primarily promoting the less-expensive switch technology (offering the PCT technology to non-residential customers only). The terms of the 2008 Settlement Agreement authorized PG&E to install approximately 432,000 total devices by June 2011. In its August 2009 update application PG&E proposes to instead install approximately 269,000 total devices by December 2011 and focus its marketing efforts on customers with high air conditioner loads. PG&E is targeting its direct mailings to zip codes in hotter areas and analyzing customer data to identify customers that not only have central air conditioners but also use them. In its application, PG&E represents that the program continues to be cost effective. The CPUC is still reviewing this application.

Although we did not have data indicating what percentage of the residential participants were owners vs. renters, information from the program manager interviews indicated that the DLC programs primarily target owner-occupied housing. In interviews one program manager said that multifamily participation in DLC programs would be more cost effective with an “opt out” approach in which the whole apartment building would be recruited for the program and tenants would be automatically enrolled in the DLC program unless they affirmatively opted out. In this way load reduction per building would be maximized and there would be economies of scale

efficiencies with device installation. Some programs also require landlord approval before a customer can join the program.

Table 2-1 shows that of the three programs, the SDG&E program has the highest enrolled percentage of commercial customers. This may be due to the design of the Summer Saver program where the implementation contractor has considerable freedom in determining where (e.g., from what customer mix) to obtain load reduction for the program and there are no “participant count” targets, as there is for the PG&E program, for example. All the program budgets that PG&E has submitted with its settlement agreement have assumed five percent commercial participation. Although the SmartAC program is currently well below that level, an October 2009 interview with the PG&E staff program manager indicated that they plan to adhere to that goal and are launching new marketing initiatives to try to reach it.

Table 2-2 compares the AC usage and demographics of the respondents to the various participant surveys. It shows that respondents to the participant surveys were fairly similar in terms of the distribution of ages, genders, and educational levels. There were more PG&E and SDG&E participants in the higher household income bracket than SCE participants, although a small part of this may be an effect of the SCE income figures being three years older.

**Table 2-2
AC Usage and Demographic Comparison
of Respondents to Participant Surveys**

Respondent Characteristic		2008 PG&E SmartAC	2005 SCE Summer Discount	2008 SDG&E Summer Saver
Low AC user	AC used rarely/never	73%	29%	74%
Cycling exposure	Someone's usually home on weekday afternoons	81%	90%	74%
Age of respondent	18-34	7%	3%	5%
	35-64	48%	52%	50%
	65 and over	39%	43%	36%
Senior in the house?	Yes	51%	No info.	51%
Gender of respondent	Male	52%	No info.	47%
	Female	48%		53%
Highest education level of respondent	High school or less	20%	No info.	18%
	Assoc./vocational, some college	32%		23%
	4-year college degree	26%		22%
	Graduate, professional degree	21%		32%
Household income	\$30,000 or less	17%	21%	13%
	\$30,001 to less than \$75,000	30%	30%	15%
	\$75,000 or greater	40%	26%	33%
	DK, refused	14%	24%	39%

The most surprising difference among the programs is the percentage of participants saying that they used their air conditioning rarely or never. Table 2-2 shows that nearly three quarters of the PG&E and SDG&E participants said this while less than a third of the SCE participants did.

There are a few possible explanations for this. First, as discussed later in the report, SCE has a system for routing its high bill complaint customers directly to a dedicated call center that then tries to recruit them into the Summer Discount program. High bill customers are likely heavy air conditioning users. Second, as the table shows, a higher percentage of SCE participants said they were home on weekday afternoons. Third there are coastal areas of the PG&E and SDG&E service territories where air conditioning is not as needed as much. Although PG&E and SDG&E program managers have said in past interviews that they try to target the hotter sections of their service territories, PG&E's recent statements indicate that it's starting to find more effective means for doing this. "The other [SmartAC program] refinement that occurred is

that the 2008 M & E [Measurement and Evaluation] showed ... that we really have to be careful about where we market to because some places give us load and some places don't," said the PG&E program manager in the October 2009 interview. "So we developed a nice little filter for our mailing list that basically confines us to the hotter areas within zip codes. And that's really the other big change. We always did that before with pretty rough maps." PG&E also noted that it was also supporting analyses that would help the program better determine which customers actually use their air conditioners.

2.2.2 Control Devices, Cycling Options, Event Triggers, and Control Events

This subsection compares the three DLC programs as to the types of control devices and cycling options they offer to participants. It also summarizes the criteria they use to initiate control events and the frequency with which these control events have compared in the recent past.

2.2.2.1 Control Devices and Cycling Options

Table 2-3 shows that the SCE and SDG&E programs only offer an air conditioner control switch while the PG&E program has offered customers a choice between a control switch and a programmable communicating thermostat (PCT, also known as a "smart thermostat."). Under the terms of its settlement agreement, PG&E can use PCTs for up to 40 percent of its installed load control devices, although this proportion can be adjusted based on measurement and evaluation findings. In its August 2009 filing PG&E said that for cost-effectiveness reasons it would try to maintain its current mix of load control equipment offered at approximately 80 percent switches and 20 percent PCTs.

**Table 2-3
Control Devices and Cycling Options
Offered by the California IOU DLC Programs**

Program Characteristic	PG&E SmartAC	SCE Summer Discount	SDG&E Summer Saver
Control devices	~ 80% AC control switches ~ 20% smart thermostats	100% AC control switches	100% AC control switches
Cycling options	Residential - 50% cycling Commercial - 33% cycling <i>Smart thermostat</i> - max 4 degree increase	<i>Residential</i> - 50%, 67%, 100% cycling options <i>Commercial</i> - 30%, 40%, 50%, 100% cycling options <i>Base plan</i> - up to 15 control events <i>Enhanced plan</i> - unlimited # of control events	 <i>Residential</i> 50%, 100% cycling options, weekday vs. 7-day options <i>Commercial</i> 30%, 50% cycling options weekday vs. 7-day options

Table 2-3 also shows the cycling options offered by the three California IOU DLC programs. The cycling percentages listed in the table indicate the percentage of time that the air conditioners are cycled off during the control events. Therefore a 50 percent cycling option means that the air conditioner is cycling on and off at 15 minute intervals during a load control event. A 100 percent cycling option means that the air conditioner is turned off for the duration of the event. In addition to these variations in the cycling frequency, the SCE program also allows participants to choose between a “base plan” of up to 15 control events per season and an “enhanced plan” where they would be subject to an unlimited number of control events. The SDG&E program allows customers to choose between 5-day and 7-day options. As discussed in the next section, higher incentives are paid to participants who are willing to endure more frequent control events.

From a process evaluation perspective, both the AC control switches and the PCTs have their advantages and disadvantages (Table 2-4). The AC control switches are relatively inexpensive and easier to install with less inconvenience for program and the customer in terms of scheduling installation appointments. The PCTs are more expensive to purchase and install, but are viewed as desirable products by some customers that currently lack programmable thermostats. PCTs are also viewed as possible portals for home energy communications and control systems.

**Table 2-4
Advantages and Disadvantages
of Different Load Control Devices
from a Process Evaluation Perspective**

Load Control Device	Advantages	Disadvantages
AC control switch	<ul style="list-style-type: none"> o Relatively inexpensive equipment o Installation can be done more quickly with lower technical skills o Home or business entry not needed for installation 	<ul style="list-style-type: none"> o Cannot be marketed as product that could potentially improve home comfort or energy savings
Programmable communicating thermostat (PCT)	<ul style="list-style-type: none"> o Is viewed as product that could potentially improve home comfort or energy savings by some customers currently without programmable thermostats o With enhanced features, could be used as home energy communications and control device 	<ul style="list-style-type: none"> o Relatively expensive equipment o Installation takes longer and requires higher technical skills o Home or business entry needed for installation

While the PG&E SmartAC program has more load control device choices than the other DLC program, Table 2-3 shows that its menu of cycling options is much less than complicated than those offered by the SCE and SDG&E programs. As will be discussed later in this report, a larger menu of cycling options can present challenges for marketing and customer education efforts.

2.2.2.2 Criteria for Initiating Control Events

All the California IOU DLC programs have control event “triggers” based on system emergencies declared by the California Independent System Operator (ISO). The programs can also call events for local emergencies, to test the devices, and for other discretionary reasons. Table 2-5 below summarizes these criteria for initiating control events.

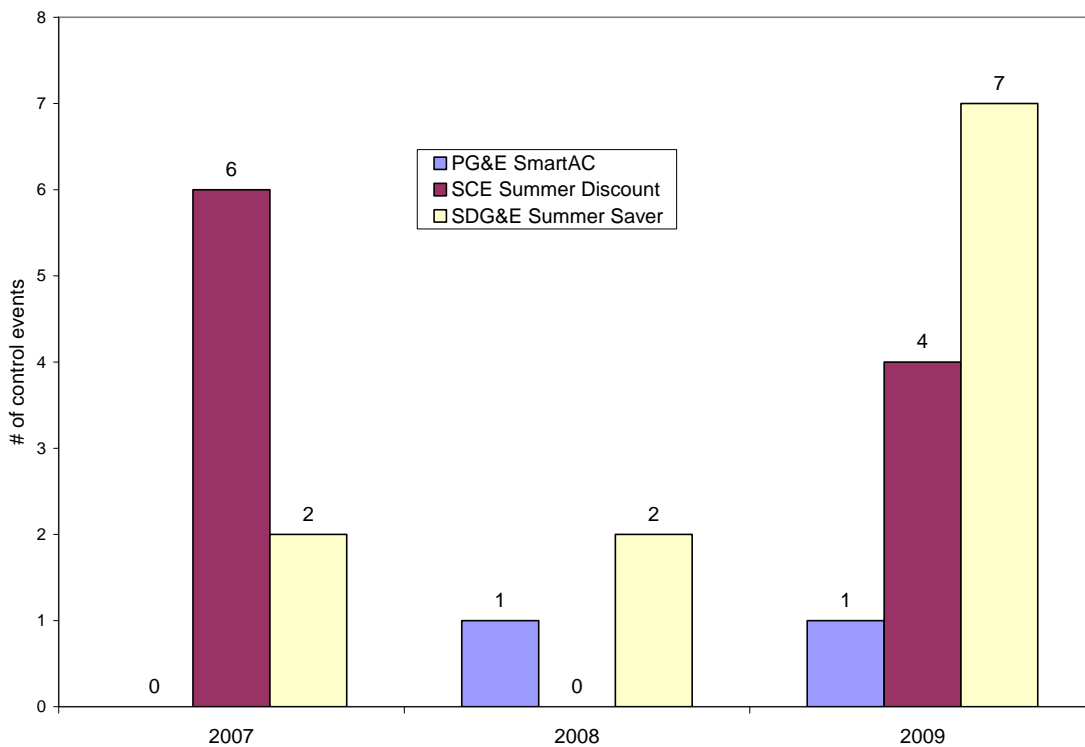
**Table 2-5
Criteria for Initiating Control Events**

PG&E SmartAC	SCE Summer Discount	SDG&E Summer Saver
<p>o Triggers for this program include:</p> <ul style="list-style-type: none"> - California ISO Stage 1 condition, emergency or near-emergency situations, or during limited program testing; or - Other system peak loading conditions, or transmission or distribution system loading conditions. <p>o PG&E may on a limited basis conduct operational tests on a segment of customer devices.</p> <p>o PG&E also may call a control event at its own discretion.</p> <p>o Customers in the SmartRate Program may request PG&E to activate their switch or PCT when the customer is participating solely in a SmartDay event.</p>	<p>o Triggers for this program include:</p> <ul style="list-style-type: none"> - After the California ISO has (i) forecasted a Stage 1 emergency and publicly issued a warning notice; (ii) has taken all necessary steps to prevent further degradation of its operating reserves; and (iii) notified SCE that a Stage 1 emergency is imminent; or - After the ISO has declared a Stage 2 emergency; or - When a declaration by SCE of a Category 1, 2, or 3 Storm Alert exists which may jeopardize the integrity of SCE's distribution facilities. <p>o SCE may also conduct up to two tests per cycling season for a maximum of 30 minutes each.</p> <p>o SCE also may call a control event at its own discretion</p>	<p>o Triggers for this program include:</p> <ul style="list-style-type: none"> - California ISO Stage 1 emergencies, - California ISO Stage 2 emergencies, and - Local emergencies. <p>o SDG&E also can call a control event at its own discretion.</p>

2.2.2.3 Frequency of Control Events

Figure 2-1 shows the frequency of control events that were called by the IOU DLC programs over the 2007-2009 period. Over this period the SDG&E program had 11 control events, the SCE program had 10 control events, and the PG&E program had two control events including one test event. In an October 2009 interview the PG&E program manager explained the infrequency of control events as due to the SmartAC program as being an “emergency trigger” program. “This is a program that’s still an emergency trigger,” she said. “There are many forces around to change it to a price trigger, but we’re not there yet.” 2009 was the most active year during this time period with 11 control events across the three programs.

Figure 2-1
2007-2009 Control Events
Initiated by the California IOU DLC Programs



Note: The 2008 PG&E control event was a test event.

2.2.3 Program Incentives

The three IOU DLC programs differ in the way that they pay customers for participating in the program (Table 2-6). PG&E sends the customer a one-time sign-on “thank you” payment for each device installed when they join the program as well as a free “smart” thermostat for those that choose that option. SCE provides customers an electric monthly bill credit during each program operating month of the summer season that the customer is still in the program. SDG&E provides customers a single billing credit after the program season is over. For all three programs the participants receive incentives for participating in the program regardless of whether control events that are called. While the PG&E program pays participants only once, the SCE and SDG&E programs provide incentives to participants each year they participate in the program.

**Table 2-6
Financial Incentives
Offered by the California IOU DLC Programs**

Incentive Characteristic	PG&E SmartAC	SCE Summer Discount	SDG&E Summer Saver
Incentive payment form	One-time check	Monthly bill credit	Yearly bill Credit
Incentive levels	One-time \$25 payment Free smart thermostat Considering testing higher incentive	<i>Residential Base Plan</i> 50% - \$0.05/ton-day 67% - \$0.10/ton-day 100% - \$0.18/ton-day <i>Commercial Base Plan</i> 30% - \$0.014/ton-day 40% - \$0.042/ton-day 50% - \$0.07/ton-day 100% - \$0.20/ton-day Enhanced plan pays double rates of base plan, \$150 max incentive	<i>Residential</i> 50% - \$12/ton-yr 100% - \$46/ton-yr \$10/yr extra for weekends <i>Commercial</i> 50% - \$15/ton-yr 30% - \$9/ton-yr \$10/yr extra for weekends Minimum - \$25/year

Table 2-6 also shows that the programs differ in their incentive levels. PG&E currently pays its customers \$25 and is considering experimenting with a \$50 value for residential and a \$100 value for nonresidential customers. SCE’s incentive is based on the size of the customer’s air conditioning equipment and the cycling level the customer opts for. SCE also pays double bill credits to participants who opt for the enhanced (more frequent) cycling plan. SDG&E also bases the incentive levels on equipment size and cycling level and pays an extra \$10 for participants who are willing to be cycled on the weekends.

From a program design perspective each of these payment methods have their advantages and disadvantages. Sending a check to participants is a very tangible form of program appreciation and indeed PG&E refers to it as a “thank you payment.” Participants are much more likely to notice or appreciate a check than a bill credit. Mailing a check also provides another participant “touch point” – an opportunity to send reminders and program information to participants. However, the greater tangibility of the check can also work to its disadvantage. For example, if customers are more likely to look forward to a check than a bill credit, they are also more likely to be disappointed if the payment does not arrive in a timely manner.

One advantage of SCE’s monthly bill credit over SDG&E’s yearly bill credit is the ability to compensate customers pretty quickly for any discomfort they might experience. The manager of the SDG&E Summer Saver program acknowledged this presented a challenge for his program. He said:

Another big thing about Edison that I know that they do, if there was an event in June, they give you their incentive at the end of June. ... If you’re experiencing an event, remember you’re going to be reimbursed for your pain at the end of this month. That might be a message on hold that they might hear. That’s something that the reps on the phone may tell the customers. And then the customers do see it right away. Here we don’t issue the credits out until mid-November.

Because both SCE’s and SDG&E’s bill credits are based on the size of the participant’s equipment, their programs cannot tell participants ahead of time exactly how much they will receive – like the PG&E program can. The implications of this are discussed later in the report.

2.2.4 The Structure of Program Implementation

The three direct load control programs differ as to which key attributes of their programs are managed in house vs. outsourced, as Table 2-7 shows. This is likely a reflection of the different ages of the programs. Since the PG&E and SDG&E programs are very new, they have to rely more on contractors since they have to “hit the ground running” and cannot wait for in-house staff to gain the necessary program implementation experience.

SDG&E’s Summer Saver program has primarily outsourced all its key program functions to a single contractor -- Comverge Inc. However, while Comverge is responsible for developing the marketing pieces and their messaging, SDG&E does review these to insure that they meet SDG&E standards for “look and feel.” These reviews might cover phrasing, color schemes, font

types, and logo placement. The SDG&E staff also helps promote the program through county fairs, etc.

**Table 2-7
Program Implementation Structures
of the California IOU DLC Programs**

Program Function	PG&E SmartAC	SCE Summer Discount	SDG&E Summer Saver
Marketing, recruitment	Initially outsourced, now primarily in-house	Primarily in-house	Primarily outsourced
Installation/maintenance of control devices, scheduling appointments	Outsourced	Outsourced	Outsourced
Customer interface (program hotline/website)	PG&E hosts program website, other functions outsourced	In-house	Outsourced

PG&E’s SmartAC program had used a similar outsourcing model as SDG&E in when it began its program in 2007, but it moved its marketing and customer acquisitions function in-house only a few months after beginning the program. The main reason for the shift was PG&E’s concerns that marketing efforts were not producing the levels of new participation needed to meet program goals. However, after it made the shift the staff discovered other advantages of the shift. One of these including easier coordination with PG&E’s other marketing efforts. “PG&E is currently really trying to work on a holistic communication plan,” said one PG&E staff person. “And I think that if I could do it again, I would probably keep the marketing in-house from the beginning because you have so many different programs, you really need to coordinate with them.” Another advantage noticed by the PG&E staff has been quicker approval of marketing materials.

SCE has most of its key program functions in-house. For marketing it does use an outside firm for help developing its “creatives” but “it’s really out of our marketing department that generates the pieces” said the Summer Discount program manager. While PG&E and SDG&E have outsourced their program call center functions to contractors (Good Cents and Converge respectively), SCE has instead created a dedicated program call center out of its general call center. SCE has calls from customers with high bill complaints routed to this dedicated call center where the Customer Service Representatives are trained to try to recruit the customers into the DLC program. SCE also has trained its general call center staff to ask customers during

the move-in and move-out processes whether they have a central air conditioner and, if so, whether they might be interested in the Summer Discount program. Interested customers are then sent to the specially-trained program-dedicated call center staff for recruitment. The SCE program manager claimed that 25 percent of their program participants come from this dedicated call center. “To me, the call center is a critical part of promoting the program,” said the SCE program manager.

It is important to point out that while all three IOUs outsource key program functions to contractors, they retain responsibility for overall program management. Our interviews of program staff found that they constantly monitor the status of enrollments and installations and are very interested in surveys of participant satisfaction. They meet with contractors frequently and are quick to express their dissatisfaction if they believe that aspects of their programs are not being implemented in an efficient or effective manner.

2.3 Findings Concerning Program Marketing and Information

This section summarizes findings from the four process evaluation reports and the October 2009 interview with the PG&E SmartAC program manager concerning program marketing and information efforts.

2.3.1 Marketing Methods

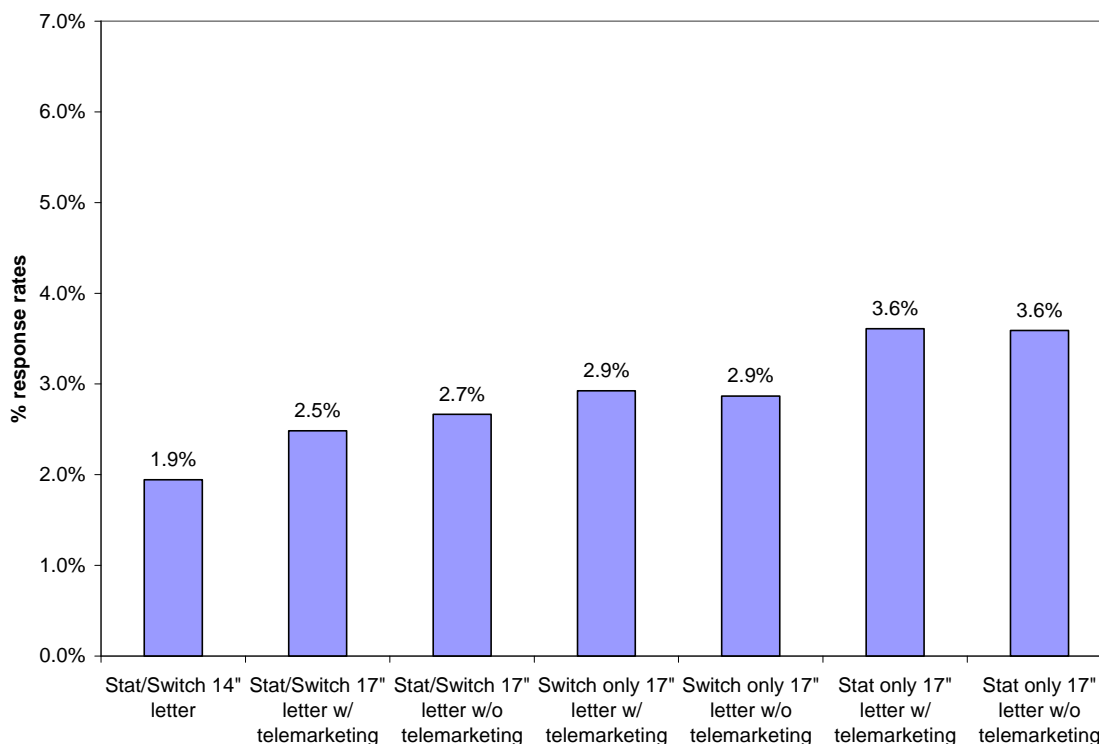
All three of the California IOU DLC programs have relied on direct mail as their primary method for recruiting new participants and informing them about how the program works. The program managers and staff noted that direct mail has a number of advantages over other marketing channels such as radio, television, and newspapers. These include:

- *Relatively inexpensive:* Direct mail is considerably less expensive than television advertising and door-to-door canvassing and also less costly than radio, newspapers, or telemarketing;
- *Easily targeted to individual customers:* The ability to target only certain types of customers can allow the program to meet certain objectives. For example, as noted above, PG&E is hoping to make the SmartAC program more cost effective by targeting its mailings to customers in hot climate zones and to customers who use their central air conditioners. PG&E also conducted an ancillary services pilot program in which it targeted its marketing only to customers on specific feeders associated with specific substations. These aggressive marketing efforts could be used to demonstrate that DLC programs can provide load relief for overtaxed parts of the utility’s transmission and distribution system. SCE has a similar effort where it targets the Summer Discount program to zip codes where the utility

needs load relief. Finally as the IOUs become more sophisticated in developing demographic and psychographic profiles of their customers, this will allow them to customize specific marketing messages to specific customer types;

- *Results are easily measured:* By putting special identification codes on mailings the DLC programs can measure the relative success of different marketing messages or mailer formats. Figure 2-2 shows the results of seven test mailings – each with about 20,000 pieces -- which PG&E conducted about the same time during the summer of 2007. The results show that marketing pieces that featured the thermostat only were more effective than those that featured only the switch or which featured both control devices. The results also show that telemarketing did not increase the effectiveness of the mailings;
- *Pace of the outreach is easily controlled:* The size of the response from direct mail pieces can be more accurately predicted and controlled than mass marketing channels such as television, radios, and newspapers; and
- *More information can be conveyed:* Direct mail pieces can provide much more information on how a DLC program works – including answers to frequently-asked questions – than any television, radio, or newspaper advertisement can. This is especially important for DLC programs with complex cycling options such as the SCE Summer Discount and SDG&E Summer Saver programs.

**Figure 2-2
Test Mailing Results
from PG&E SmartAC Program**



Although the California IOU DLC programs rely mostly on direct mail to recruit new participants, they are using other marketing channels. The SDG&E Summer Saver program, which has been the most successful at recruiting commercial customers, has relied mostly on “feet on the street” -- door-to-door to canvassing – to enlist these customers. PG&E also experimented with door-to-door canvassing for its ancillary services pilot program. PG&E additionally conducted media events (press releases and press conferences) at the same time of major direct mailings to try to improve response rates. SCE used television and radio ads in the spring of 2008 to promote its Summer Discount program. PG&E and SCE have both experimented with telemarketing. Finally all the utilities try to promote their programs through community events – such as county fairs – as well as through community partners.

2.3.2 Measuring the Effectiveness of Program Marketing and Education

There are a number of ways to measure the effectiveness of program marketing and education efforts for DLC programs. Some of these that will be discussed in this section include:

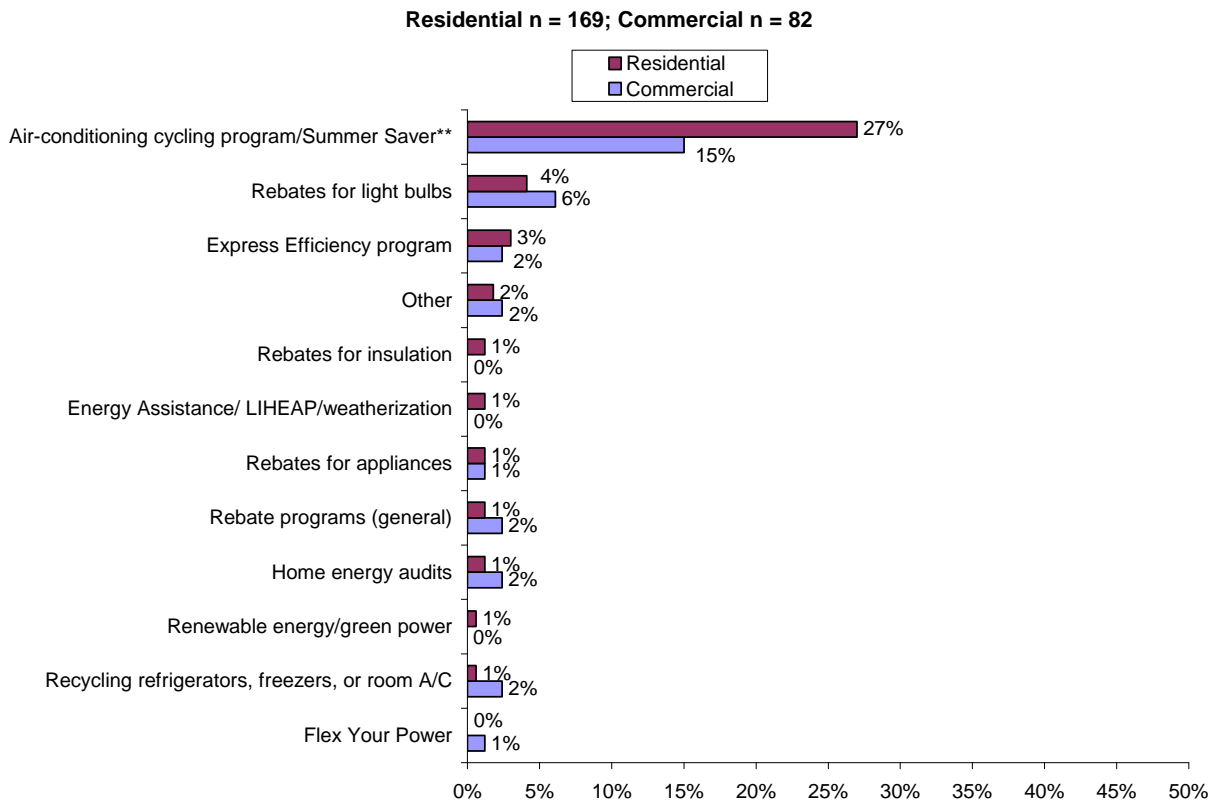
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- What percentage of those who were marketed to were aware of the program;
 - How participants first heard about the program;
 - What program marketing messages were recalled;
 - Whether respondents knew how the program worked; and
 - Whether respondents were satisfied with the program information.

2.3.2.1 Program Awareness among Those Targeted by Marketing

The SDG&E Summer Saver program was the only one that included in its evaluation scope a survey of non-participants -- customers who had received program marketing information but had not joined the program. Figure 2-3 and Figure 2-4 show the levels of unaided and aided awareness of the Summer Saver program by the residential and commercial non-participants.¹ They show that even when asked the aided questions, only a little more than half the residential customers and a little more than a third of the commercial customers claimed awareness of the Summer Saver program.

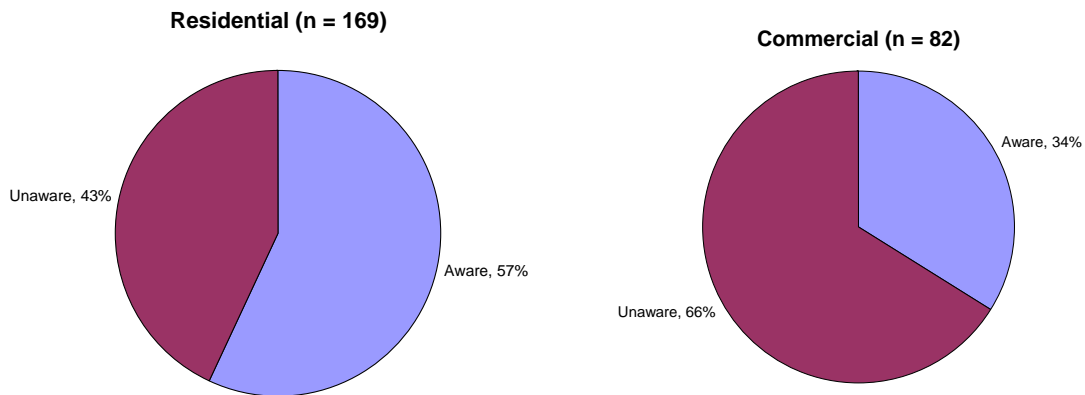
¹ The unaided awareness levels are based on responses to the question: "What, if any, SDG&E programs or services have you heard of that help customers save energy or reduce energy use during peak usage hours?" The aided awareness levels are based on responses to the question: "What, if any, SDG&E programs or services have you heard of that help customers save energy or reduce energy use during peak usage hours?"

Figure 2-3
Unaided Non-Participant Awareness
of Summer Saver and Other SDG&E Programs/Services
by Customer Type



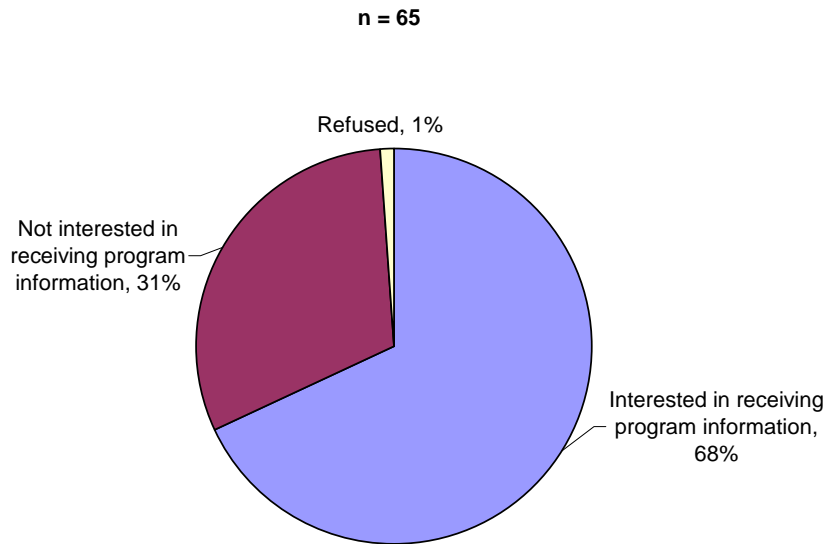
Note: ** Differences between residential and commercial response levels are statistically significant

Figure 2-4
Aided Non-Participant Awareness
of SDG&E Summer Saver Program
by Customer Type



Without non-participant survey results from the other IOU DLC programs is difficult to determine whether SDG&E's 57 percent aided awareness for residential non-participants or 34 percent aided awareness for commercial non-participants is a good or bad result. However, the SDG&E Summer Saver process evaluation did try to measure how much of a missed opportunity there was with these program-unaware customers. The survey gave non-participants who said they were unaware of the Summer Saver program a short description of the program and then asked them if they were interested in receiving information about the program. Figure 2-5 shows that over two thirds of them expressed interest in receiving the program information. The level of interest among the commercial non-participants was even higher (82% expressing interest, n=50). While it's not clear what percentage of these interested respondents would have actually joined the program, the high level of interest indicates that improving marketing effectiveness and increasing program awareness should have a payoff.

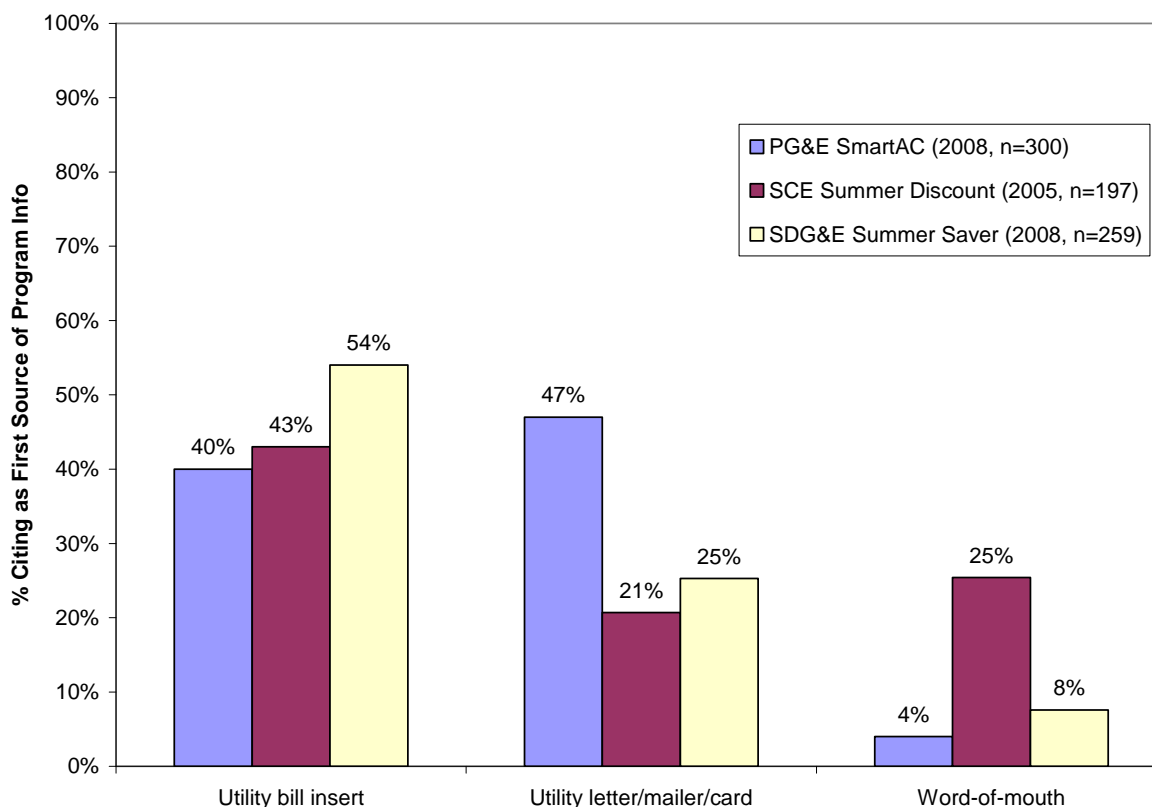
Figure 2-5
Percent of Previously Unaware Residential Non-Participants
Interested in SDG&E Summer Saver Program Information



2.3.2.2 Sources of First Program Awareness

Another way to measure marketing effectiveness is to find out how participants first heard about the program. However, as discussed in the previous section, all three IOU DLC programs rely on direct mail as their primary marketing channel. Therefore results such as those shown in Figure 2-6 are not particularly surprising. These show that utility bill inserts and utility direct mail (survey respondents and surveyors are not always careful to distinguish between the two) are the most-cited first sources of program information. The chart also shows that word-of-mouth tends to grow in importance as a DLC program matures. The more than 20-year-old SCE program has much higher word-of-mouth referrals than the five -year old SDG&E program or the three-year-old PG&E program.

Figure 2-6
Comparing the Most-Cited First Sources of Program Information
of the California IOU DLC Programs



One marketing challenge that DLC programs will face in the future is reduction in the size of bill insert messaging. For example, SCE has recently switched from bill inserts to windows on the billing form for key messaging. This new format reduces the amount of program information that can be conveyed.

2.3.2.3 Recall of program marketing messages

Another way to measure marketing effectiveness is to measure how accurately program marketing messages were recalled by targeted customers. Figure 2-7 shows marketing message recall by 2007-2008 PG&E SmartAC participants and Figure 2-8 shows message recall by 2008 SDG&E Summer Saver participants and non-participants (the SCE process evaluation report did not contain results of this kind).

Figure 2-7
What Program Marketing Messages Were Recalled
by 2007-2008 PG&E SmartAC Participants

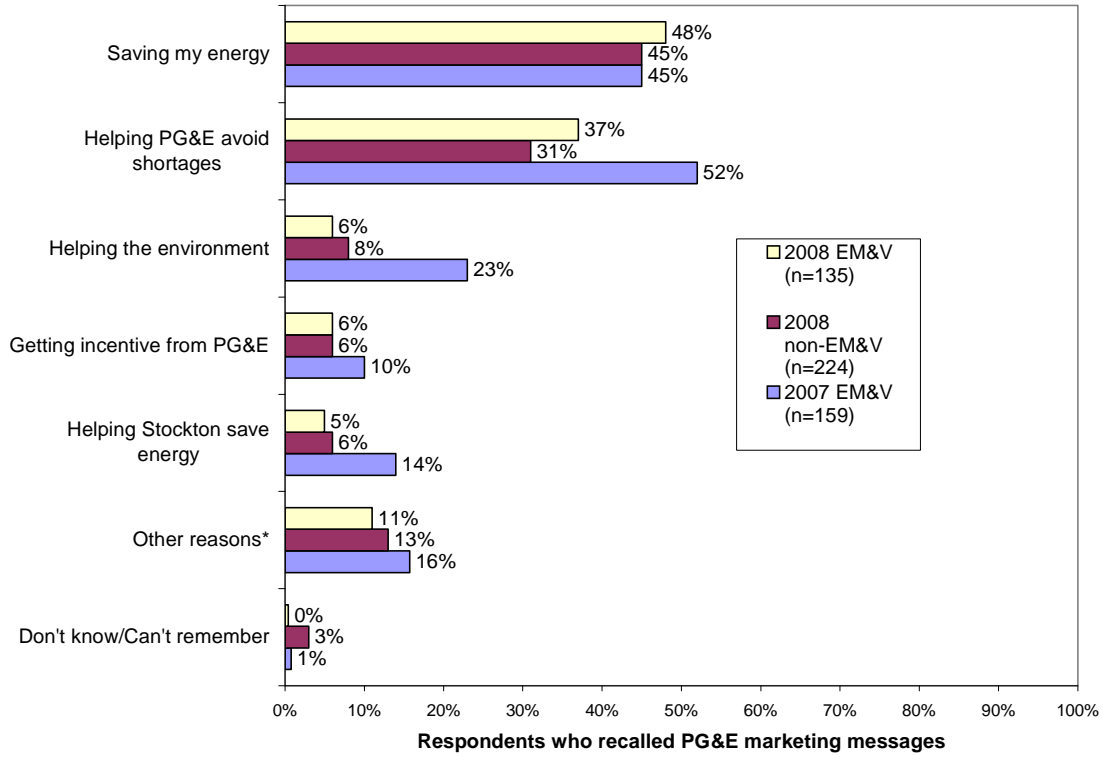
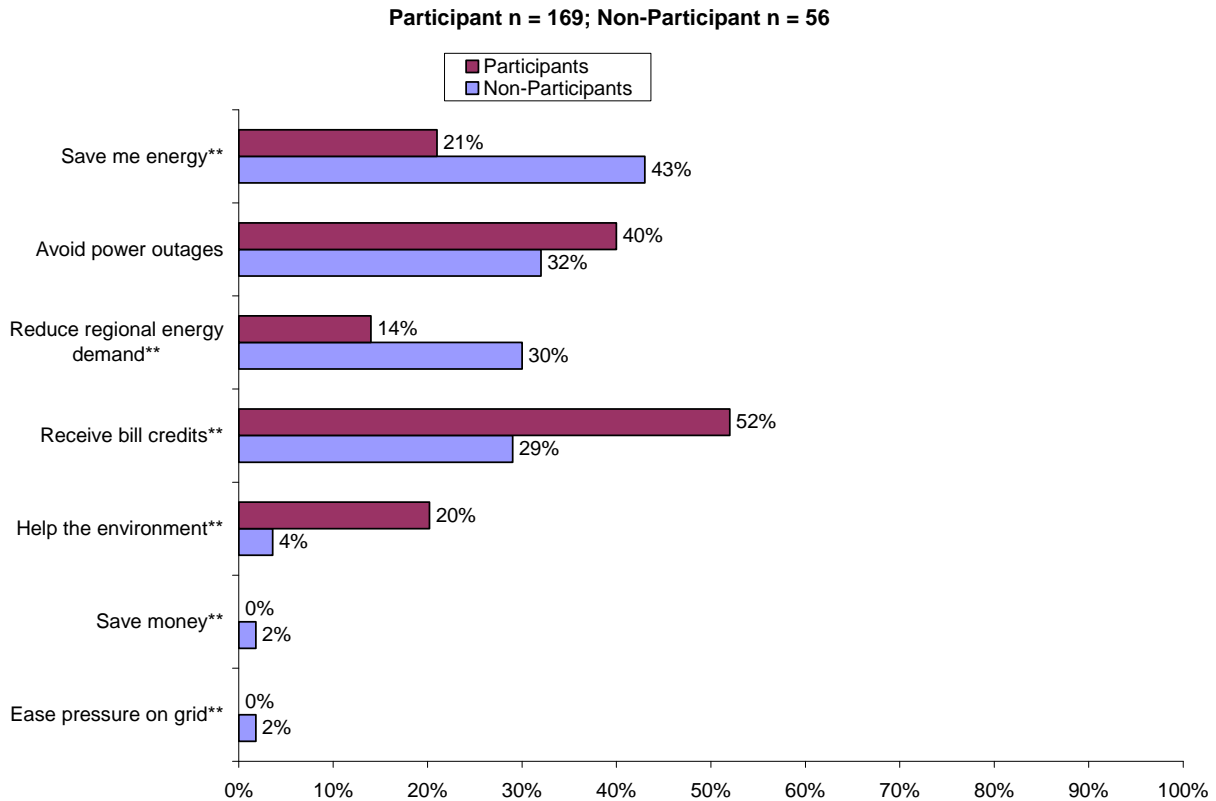


Figure 2-8
What Marketing Messages Were Recalled
by 2008 SDG&E Summer Saver Participants and Non-Participants



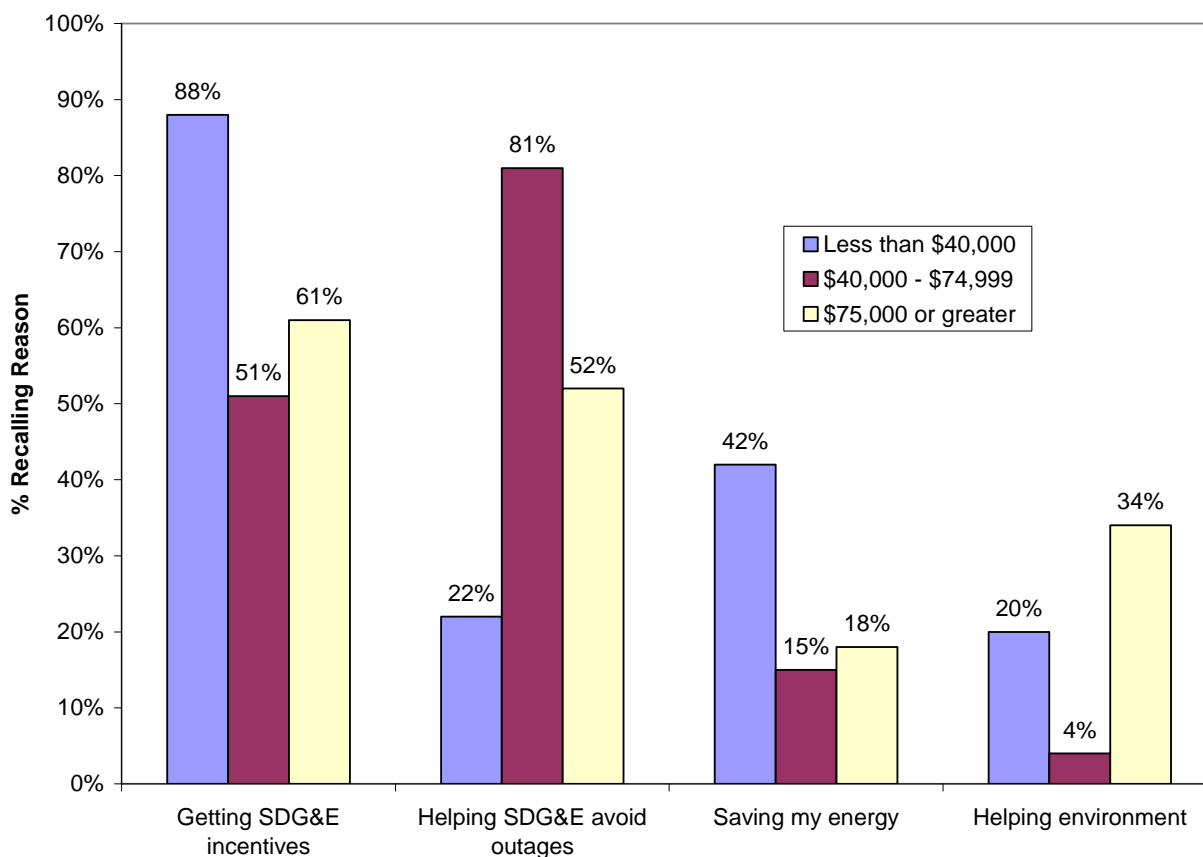
Interestingly “saving energy” was recalled by a large percentage of both the PG&E and SDG&E respondents even though neither utility promoted energy savings in their marketing materials. We have seen similar results from other evaluations of DLC programs. One possible explanation is that customers assume that a device that reduces air conditioner energy consumption would ultimately result in energy savings and they are likely not aware of “snapback” effects.

Of the published process evaluation reports that were used as sources for this DLC comparison report, the evaluation of the SDG&E Summer Saver program was the only one that included in its evaluation scope a survey of non-participants -- customers who had received program marketing information but had not joined the program. This allowed a comparison between participant and non-participant recall of program marketing messages. Perhaps not surprisingly, non-participant recall of the Program’s marketing messages was less accurate than participants recall. As shown in Figure 2-8, Summer Saver program participants were less likely to recall

messages that were not part of the program's marketing materials, such as saving them energy and reducing regional energy demand. At the same time participants were more likely than non-participants to correctly recall themes that were emphasized in program marketing, such as receiving bill credits and helping the environment.

One of the marketing best practices discussed below is for DLC programs to customize marketing messages and languages to customer subgroups. The process evaluation of the SDG&E Summer Saver program provided a good example of how this can be useful. Figure 2-9 shows that residential participants recalled very different program marketing messages based on their household income, even though all received the same marketing materials. Those in the lowest income range were much more likely to recall the message about receiving the SDG&E incentives. Those in the higher income range were more attuned to the environmental message.

Figure 2-9
SDG&E Summer Saver Residential Participant
Recall of Marketing Messages by Income



2.3.2.4 Whether Respondents Knew How the Program Worked

Fairly comparing the three California IOU DLC programs on how effectively they explained their programs is difficult. This is because the program designs are so different. For example, when SCE Summer Discount and SDG&E Summer Saver participants were asked about the size of their bill credits, 55 percent from both programs said they did not know. In contrast only 13 percent of PG&E SmartAC participants claimed ignorance of their incentive level. Yet since PG&E participants received a \$25 check in the mail while SCE/SDG&E participants received monthly or annual bill credits, it's not surprising that the PG&E participants claimed better recall.

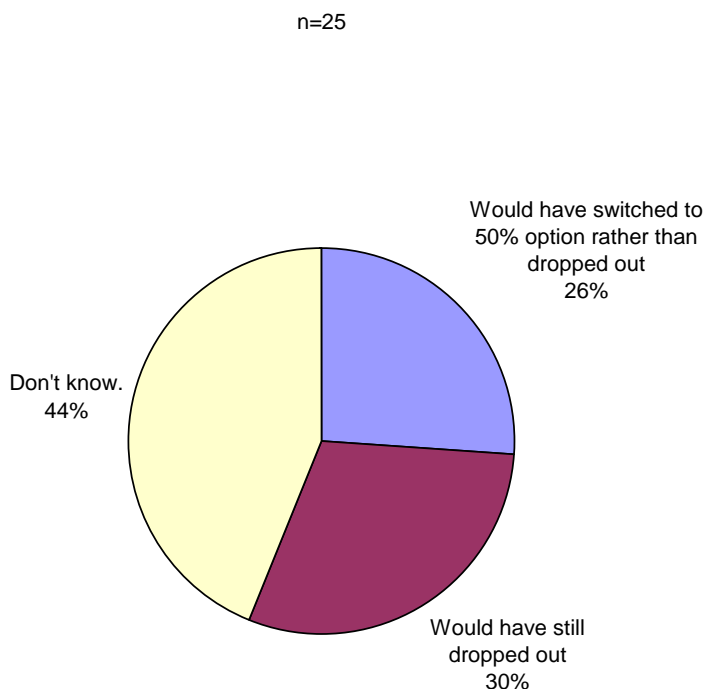
Since the SCE and SDG&E programs have more complex program designs – with multiple cycling options per customer type – they inherently have a tougher challenge of educating their

customers on how their programs work. However, the process evaluations found that both these programs needed to improve their educational efforts.

- When asked how many hours per day that SCE could interrupt their conditioner during the summer months, 40 percent of the base plan participants and 42 percent of the enhanced plan participants said that they did not know. Only five percent of the base plan participants and only one percent of the enhanced plan participants gave the correct response.
- When asked how many days over the summer period that SCE could interrupt their conditioner during the summer months, 52 percent of the base plan participants and 50 percent of the enhanced plan participants said that they did not know. Only one percent of the base plan participants and about a quarter of the enhanced plan participants gave the correct response.
- Eighty percent of SDG&E residential participants and 86 percent of SDG&E commercial participants did not know which cycling option they had signed up for.
- Only forty-one percent of SDG&E participants said they knew that they could switch from one cycling option to another.
- Although the SDG&E program literature mentioned that participants should expect to be cycled 10-12 times per season, only 29 percent of participants said they recalled how often SDG&E said that the Program would activate the control device on their air conditioner. Of those who claimed recall of this information, only a small percent accurately recalled the number of events mentioned in the Program literature. The median estimate was five events.

Of the published process evaluation reports that were used as sources for this DLC comparison report, the SDG&E Summer Saver program evaluation was the only one to contain a survey of customers who had dropped out of the program. These surveys found evidence that better program information might have kept some of these dropouts in the program. For example, Figure 2-10 shows that about a quarter of the residential Summer Saver dropouts who had been on the 100 percent cycling option said that they would have switched to the 50 percent cycling option rather than drop out if they had been aware of it. Another 44 percent were not sure if they still would have dropped out if they had been aware of this option.

Figure 2-10
Whether SDG&E Summer Saver Residential Dropout Customers
Who Were on the 100% Cycling Regimens
and Were Unaware that 50% Cycling Options Were Available
Would Have Switched to These 50% Cycling Options
Had They Been Aware of The
Rather Than Drop Out of the Program



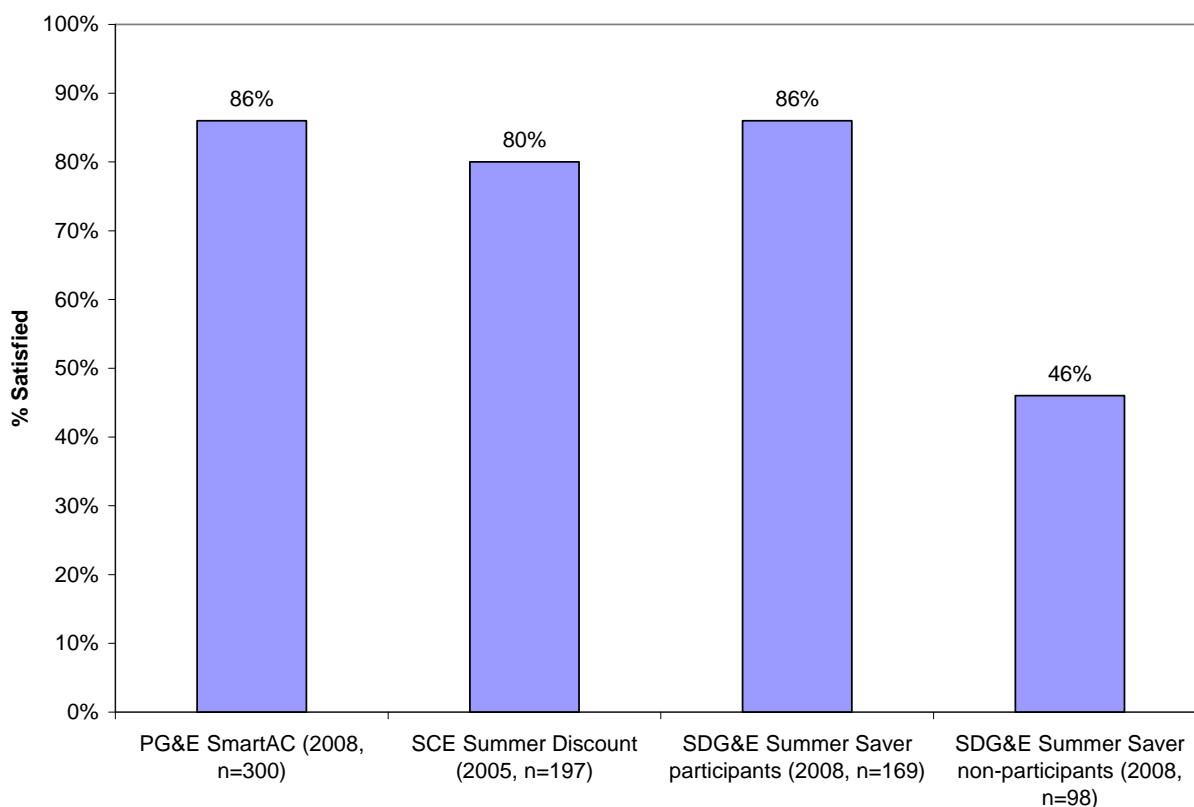
The survey of SDG&E Summer Saver dropouts also found that only 18 percent of them said they recalled how often SDG&E said that the program would activate the control device on their air conditioner. When asked why they dropped out, the dropouts mostly cited discomfort factors. This suggests that many of the dropouts might have joined the program with an unrealistic conception of how often SDG&E would be cycling their air conditioners.

2.3.2.5 Satisfaction with the Program Information

Another way to assess the effectiveness of program materials is to simply ask respondents how satisfied they were with the program information they received. Figure 2-11 compares average

satisfaction ratings from participants of the three IOU programs along with SDG&E non-participants. Not surprisingly the SDG&E non-participants gave the lowest satisfaction ratings. The non-participants' most-cited reasons for dissatisfaction with the SDG&E program information included insufficient information and the information not being attention-grabbing.²

Figure 2-11
Comparing Participant Satisfaction
with Information Provided by the California IOU DLC Programs



While the above satisfaction ratings address information that the participants or non-participants received (usually in the mail), the process evaluation surveys also asked respondents whether they ever sought additional program information, either through a phone call or email. This is another test of the effectiveness of the sent program information – e.g., whether the recipients

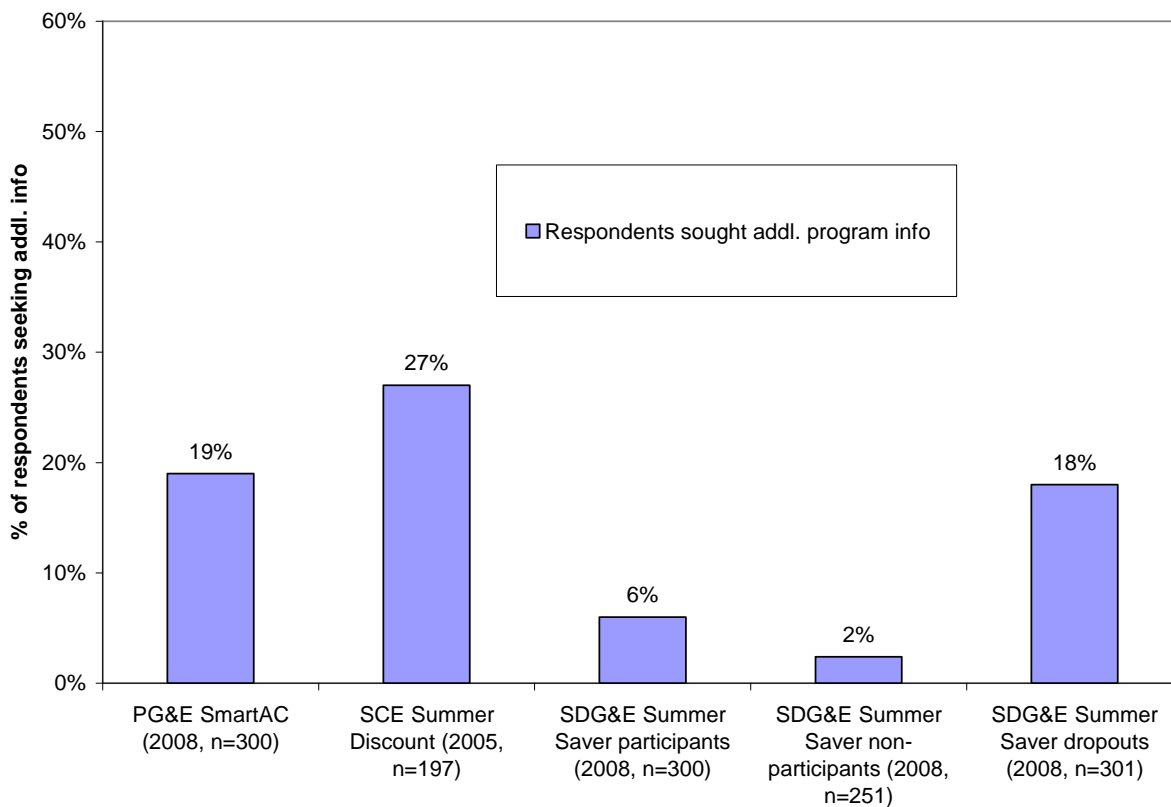
² The SDG&E Summer Saver dropouts were not asked about their satisfaction with the program information, but they were asked whether anything was unclear about how the program worked. Thirty-eight percent of them said something was unclear.

needed more information than they received. Figure 2-12 shows the responses to this question by participants from the three IOU DLC programs as well as the SDG&E non-participant and dropout participants.

The low percentage of SDG&E non-participants seeking additional information is understandable when one considers that a large percentage of the non-participants were not even aware of the Summer Saver program and many of those who were aware were likely not interested enough to learn more about the program. The fact that the SDG&E dropouts were three times more likely than the SDG&E participants to seek additional information is probably somewhat an outcome of self-selection. Participants who were unhappy with the information they received were more likely to drop out and those that remained were generally satisfied with the adequacy of the information. However, this could also be interpreted as another indicator that, as discussed in the previous subsection, better program information could have allowed the Summer Saver program to retain some of its dropout customers.

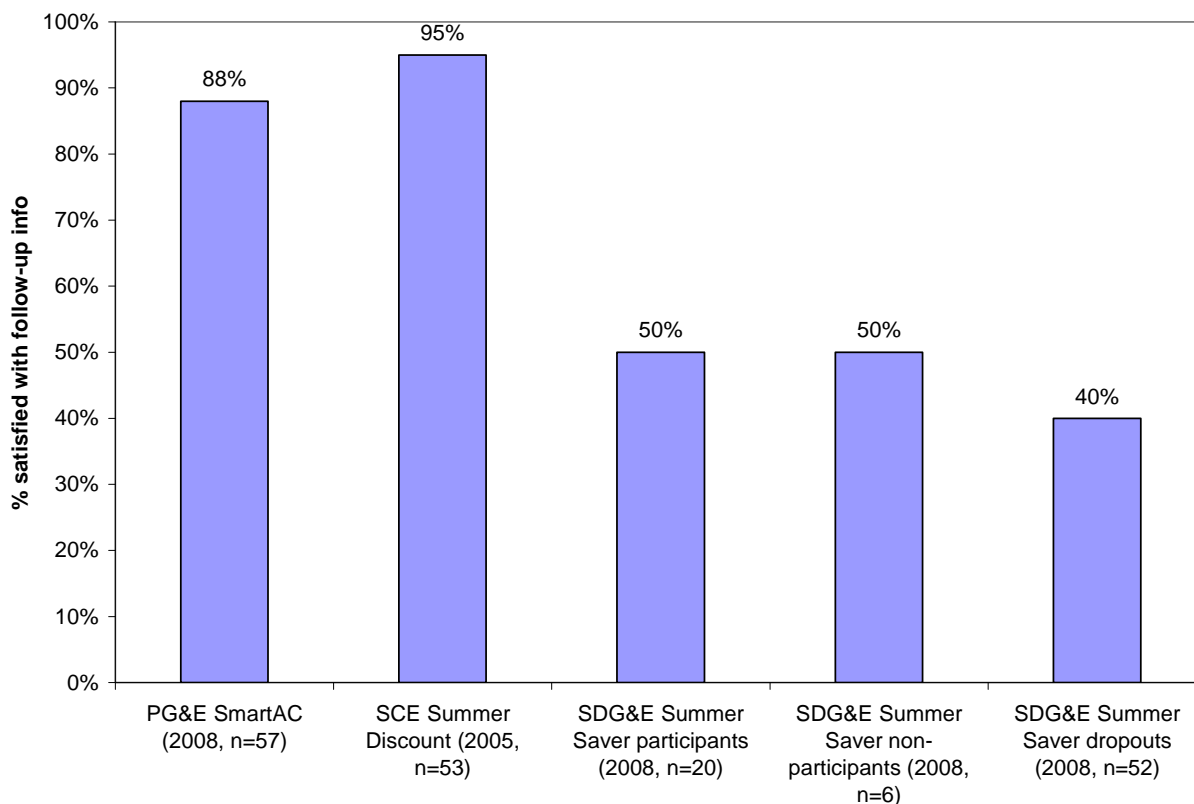
One problem with this indicator as a metric of the effectiveness of program information is that respondent satisfaction with the program information does not mean that the information was effective. The SDG&E Summer Saver participants provide the best example of this. Only six percent of participants said that they sought additional information. Yet, as the previous subsection explained, a high percentage of these participants were not familiar with key program parameters.

Figure 2-12
the % of Respondents
of the California IOU DLC Programs
Seeking Additional Program Information



Another test of the effectiveness of program information is how satisfied respondents were with the responses they received to their phone or email inquiries. Figure 2-13 shows that the PG&E and SCE respondents had high levels of satisfaction but the SDG&E respondents did not. It should be noted that the SDG&E participant survey was conducted not long after many participants had endured a control event during a very intense heat wave. Therefore many of those that had called the Summer Saver program during this event were uncomfortable and seeking relief and therefore were more apt to be dissatisfied with any responses they received from the program call centers.

Figure 2-13
Comparing Participant Satisfaction
with Responses by the California IOU DLC Programs
to Phone or Email Inquiries



2.3.3 Marketing Best Practices

The project scope for the SDG&E Summer Saver process evaluation included a study of DLC program best practices both within and outside California. The following are some of the best practices identified in this study:

- **Direct mail best practices**
 - *Coordinate direct mailings with DLC program press events:* Program managers for PG&E's, Nevada Power's, and Toronto Hydro's DLC programs said that they had much higher recruitment rates when their direct mailings were coordinated with program press releases or press conferences that attract local media stories.

- *Vary the look of marketing materials often to avoid reader fatigue:* PG&E's SmartAC program has frequently changed the appearance and content of its marketing materials to avoid reader fatigue. It has even changed the look of the envelopes it uses for program marketing.
- *Test marketing materials through focus groups and frequent pilot mailings:* SCE's DLC program uses focus groups to test whether customers can recall important program information after reading program materials. PG&E's program will often test market multiple variations of direct mail pieces simultaneously through small mailings and will then use success rates to determine which of these pieces to use for larger mailings.
- *Customize marketing messages and languages to customer subgroups:* For example, the surveys of Summer Saver participants and non-participants found that bill credit messages were more appealing to lower-income customers while environmental messages resonate more with higher-income customers. SCE has used market research to identify 750,000 of its customers as environmentally conscious and sends environmentally-focused mailings to these customers. SCE also has developed Spanish-language program materials to increase participation among Hispanic customers.
- *Target customers with high propensities to join DLC programs:* Commonwealth Edison has discovered that seniors and lower-income customers have a higher propensity to join its DLC program and therefore targets these customers in its mailings. Many of the DLC programs also target customers who have moved into houses where DLC control devices are already installed.
- *Use sweepstake offerings and special limited-time gifts to attract participation:* PG&E has had a lot of success attracting new participants through sweepstakes entries for Energy Star appliances and a Toyota Prius. Toronto Hydro and FP&L have used limited-time offerings of iPods or gift cards to enhance participation levels.
- *Use multiple touch points:* DLC program managers recommended using multiple opportunities to remind participants of their participation and provide them with key program information. Some of the typical "touch points" include after the customer signs up, when the control device is installed, before the start of the cooling season, and when the program incentive payment is mailed out. Some programs even send "birthday" letters to customers on the anniversary of their joining the program.

- *Avoid marketing to low-usage customers:* DLC program managers recommended against marketing to low-usage customers that are not likely to provide enough “bang for the buck.”
 - *Include positive results from surveys in marketing pieces:* The survey of SDG&E Summer Saver participants found that 85 percent would recommend the program to friends, family, or neighbors. There it was recommended that such positive survey results be used in future Summer Saver mailings.
 - *Personalize the mailings:* Toronto Hydro has found greater direct mail success rates when customer personal names are used instead of generic “dear homeowner” type salutations.
 - *Try to find better balance between providing necessary program information and making marketing materials too dense:* Using focus group approaches to test customer recall of program materials, as the SCE Summer Discount program had done, can help find the balance between too much information and not enough. It should be possible to develop materials that hammer home the key messages (e.g., “If you’re uncomfortable you can switch to a lower cycling option”), while still providing frequently-asked-question sections that provide answers for other common questions.
- **Improve call center performance:**
 - *Improve call center training:* Of the dropouts who had called or emailed the SDG&E Summer Saver program seeking additional information, only 40 percent said that they were satisfied with the responses they received. In addition, only 19 percent of dropouts said they were aware that the Summer Saver program had four different air conditioning cycling options. This kind of information should have been conveyed to them when they made the call to drop out of the program.
 - *Consider routing high bill customers to a dedicated DLC program call center:* SCE has had great success creating a dedicated call center for their DLC program within its larger utility call center. SCE has calls from customers with high bill complaints routed to this dedicated call center where the Customer Service Representatives are trained to try to recruit the customers into the DLC program. The SCE program manager claimed that 25 percent of their program participants come from this dedicated call center.

- **Use staff from other demand response and energy efficiency programs to promote the DLC program:** Interviews with program managers of many DLC programs indicated that they are cross-marketing their DLC programs with staff from other demand response and energy efficiency programs.
- **Frequently survey participants, dropouts, and non-participants:** The nation's largest DLC program – FP&L's On Call – frequently surveys its participants as a way of informing and improving its marketing efforts. "We annually, at a minimum ... survey customers who join the program," said the FPL program manager. "We find out what made them join, what appealed to them, those types of things. And then, we work with our marketing group to develop key messages around the things that seem to appeal to customers about the program." This report also demonstrates the usefulness of surveying dropouts not only to find out why they dropped out, but also to determine whether they had the necessary program information (e.g., knowledge of cycling frequency, knowledge of lower cycling options) that could have retained them. Surveying non-participants is useful for testing the effectiveness of program marketing efforts. Finally regular participant surveys are useful ways to benchmark program performance over time.
- **Adopt an opt-out approach for move-ins.** The FP&L and ComEd DLC programs have had success automatically enrolling into their programs those customers who move into a new house where a control device is already installed. To be removed from the program, these customers must notify the program.

2.4 Findings Concerning Participant Comfort and Program Satisfaction

2.4.1 Participant Comfort

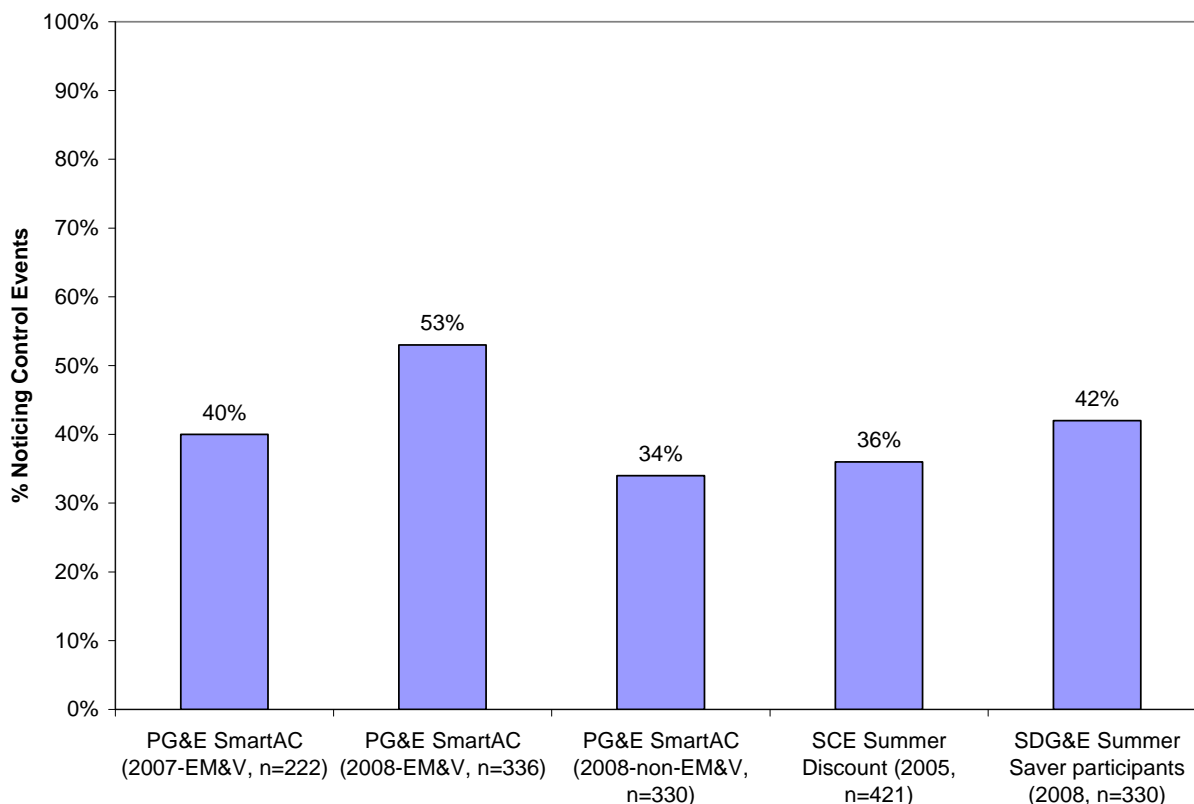
Two ways to measure participant comfort during DLC program control events include: 1) whether the DLC program participants even noticed the control events; and 2) whether those that noticed the control events reported being uncomfortable.

2.4.1.1 Noticing the Control Events

The percentage of IOU DLC program participants noticing the control events were all in the same general range, as Figure 2-14 shows. As discussed in the program design section of this report, for the general participant populations (as opposed EM&V test groups) the SDG&E and SCE programs tend to cycle more than the PG&E program does. However, the PG&E EM&V

participants were exposed to many more control events than their non-EM&V counterparts – thus the higher percentage noticing the events.

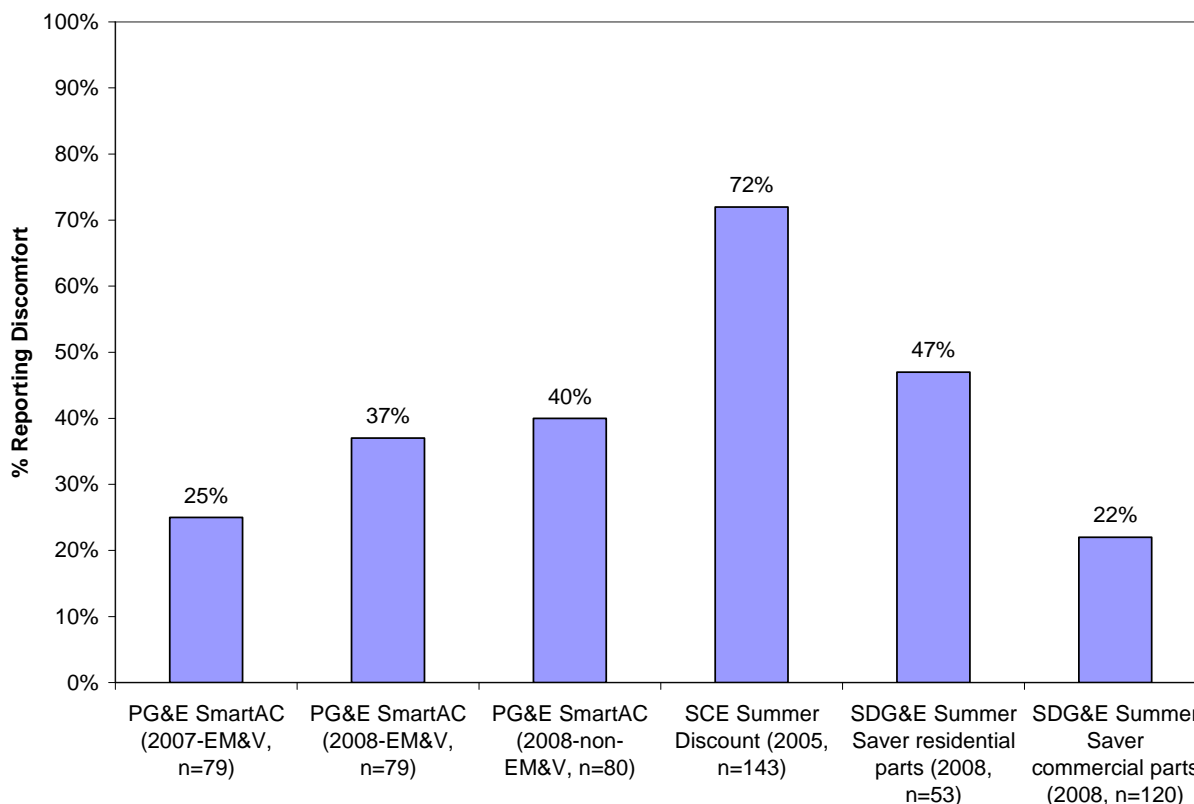
Figure 2-14
% of California IOU DLC Program Participants
Noticing Control Events



2.4.1.2 Comfort Levels during Control Events

The process evaluation surveys asked participants who had noticed the control events whether they or other members of their household (for commercial participants it was them, their co-workers, or customers) experienced discomfort during these events. Figure 2-15 shows that the SCE participants reported the highest level of discomfort.

Figure 2-15
% of California IOU DLC Program Participants
Noticing the Control Events
Who Reported Discomfort During Control Events



Why were the SCE participants reporting such a higher level of discomfort? The SCE process evaluation report indicates that the Summer Discount program only initiated four control events in 2004 and 2005. Yet we have no information on the heat intensity during these control events.

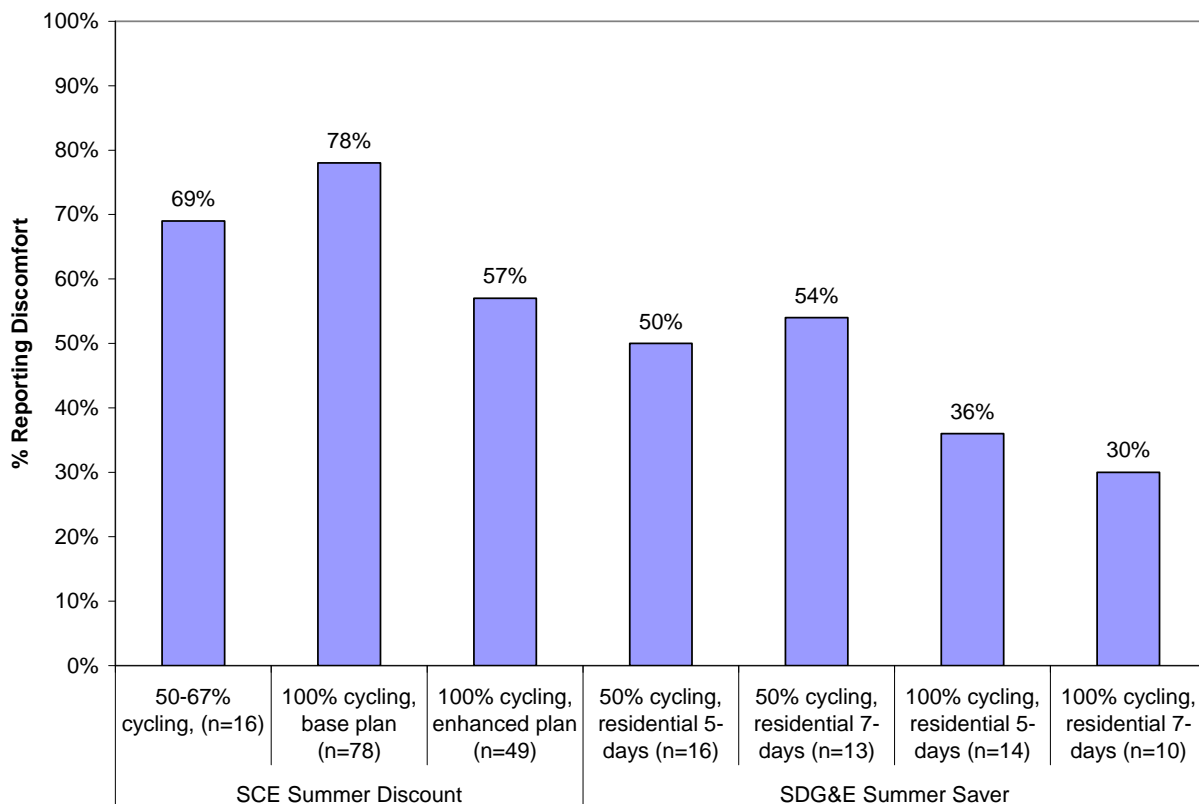
Another possible explanation is that SCE simply has a higher percentage of its participants on the 100% cycling options. According to the SCE process evaluation report, in 2005 88 percent of the program participants were on 100% cycling options. In contrast in 2008 only 15 percent of SDG&E participants were on 100% cycling options.

The reason that this is only a possible explanation -- rather than a likely explanation -- is that one of the most interesting findings from these process evaluation reports was that reports of discomfort were higher among participants who were on less-intense cycling options (Figure 2-16). This seems counterintuitive -- that customers who have their air conditioners totally off during a control event would be more comfortable than those who have their air conditioners on

half the time. One possible explanation for this is that participants may be selecting themselves into the program cycling options based on their natural level of heat tolerance. Participants who have a high level of heat tolerance may be choosing the 100% cycling options while those who are less heat-tolerant are choosing the 50% cycling options and then finding even this lower cycling level is unbearable.

A possible alternative theory – that participants on the more intense cycling options may simply not be home as often, was not supported by the data. SCE participants on the enhanced option actually reported being home more often than those on the base options. For the SDG&E participants, there were not statistically significant differences between those on the 50% cycling option and those on the 100% cycling option in terms of the percentage reporting themselves home during control events.

Figure 2-16
% of SCE, SDG&E DLC Program Participants
Reporting Discomfort During Control Events
by Cycling Options



2.4.1.3 Other Indicators of Participant Discomfort

While the comfort-related questions above were asked of participants from all three DLC programs, the process evaluations also asked some other comfort-related questions that were unique to that evaluation:

- PG&E SmartAC:
 - *Experience vs. expectation:* Another measure of participant comfort and satisfaction is whether the experience of the control event was better or worse than they had expected. On average, about a third of the 2008 SmartAC program participants found the experience better than they expected and only five percent or less found the experiences worse than they expected.
 - *Likelihood of opting out of opting of future control events:* A third way to measure participant comfort is to determine how likely they are to opt out of future control events. After reminding 2008 SmartAC program participants about the opt-out option, surveyors asked them how likely they would be to tell PG&E not to activate their control devices during future control events. Less than a fifth of the 2008 participants indicated some likelihood of opting out of future control events. However, this likelihood level was almost twice what it was in 2007.
 - *Seniors vs. non-seniors:* PG&E staff asked KEMA to take a closer look as to whether participant reactions to control events varied depending on whether the participant were seniors or not. We could not find any statistically-significant differences between seniors and non-seniors in their reactions to these control events.
 - *Switches vs. thermostats:* PG&E staff also asked KEMA to look at whether participant reactions to control events varied based on the type of control device the participants were using (e.g., switch vs. thermostat). Switch participants were much more likely to recall control events than participants who used thermostats as control devices. However, there were no statistically-significant differences between the two groups in terms of their comfort levels during these control events.

- SCE Summer Discount
 - *Considering leaving the program due to control events:* The process evaluation of the SCE Summer Discount program asked participants who had noticed the control events: “Have you considered leaving the program as a result of the interruptions of

the past summer?” Only 10 percent of the respondents (n=143) said that they had considered this.

- *How many control events before they leave the program:* The process evaluation of the SCE Summer Discount program also asked participants who had noticed the control events: “How many times would SCE have to interrupt your air conditioner during the summer months before you considered leaving the program?” Only 17 percent of the participants said that they would leave the program after 10 events or fewer.
- SDG&E Summer Saver program:
 - *Customer willingness to switch to more intense cycling options:* The process evaluation of the SDG&E Summer Saver program asked participants who were on the 50% cycling, weekday regimen, who had been home during cycling events and said that they had been comfortable during these events, whether they would be willing to have SDG&E also cycle them weekend days for an additional bill credit of \$10. Fifty-seven percent of them said that they would. However, when these same people were asked whether they would be willing to go to the 100% cycling options for bill credits of \$115 to \$194 per year. None of them said that they would be.
 - *Reasons for dropping out:* As discussed later in this section, discomfort was cited most often as the reason why SDG&E Summer Saver participants had dropped out of the program.

2.4.2 Program Satisfaction

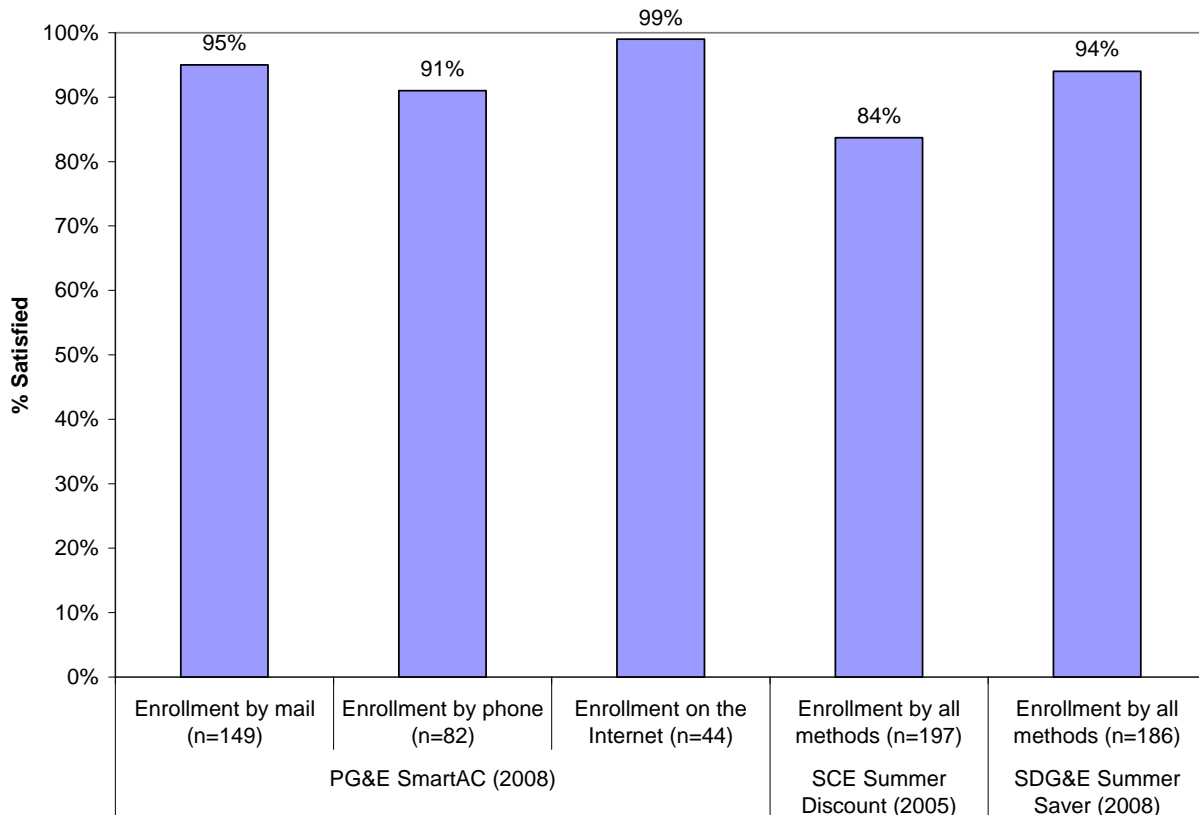
This section summarizes findings from the process evaluation reports concerning satisfaction with the enrollment process, scheduling/installation process, incentives, and the programs as a whole.

2.4.2.1 Satisfaction with the enrollment process

The California IOU DLC programs offered customers three different ways to enroll – through a mail-in card, through a call to the program hotline, and online through the program website. The most popular method was the mail in-card (53% for PG&E SmartAC participants and 57% for

SDG&E Summer Saver participants).³ Figure 2-17 shows that satisfaction levels were very high across the board for the program enrollment processes.

Figure 2-17
Comparing Participant Satisfaction
with the Enrollment Processes
of the California IOU DLC Programs



2.4.2.2 Satisfaction with the scheduling, installation process

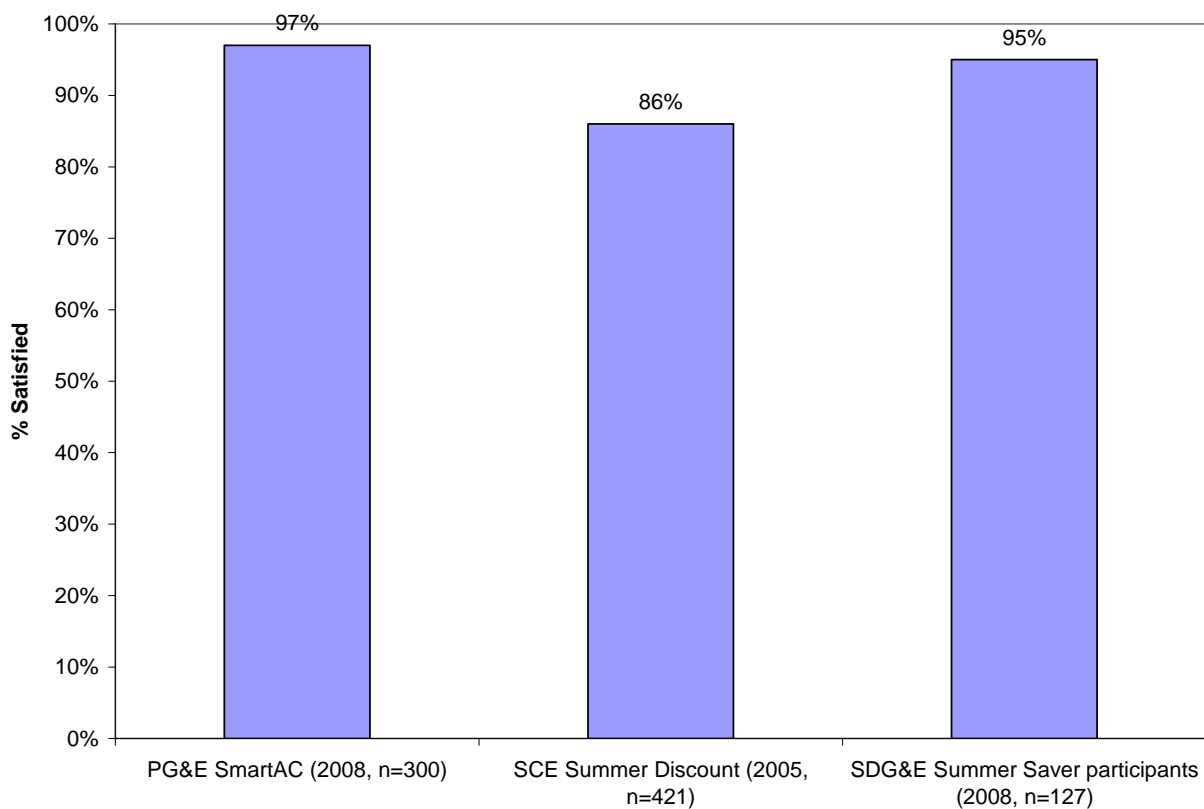
Installing a load control switch on the compressor of an air conditioner is not a very intrusive process and usually can be done without requiring the participant to be home. However, the installation of a programmable thermostat does require entry into the home and therefore the scheduling of an appointment. Despite this greater inconvenience to the homeowner, however,

³ The SCE process evaluation did not break down enrollments by enrollment method.

the PG&E SmartAC program – the only one of the three to use programmable thermostats as load control devices – had very high satisfaction ratings, as Figure 2-18 shows.

This high PG&E satisfaction rating was somewhat surprising, not only because of the thermostat component of the program, but also because interviews with PG&E SmartAC staff had reported long delays in installations during the third and fourth quarters of 2007. In its evaluation of the 2008 SmartAC program KEMA discussed a number of possible reasons why these reported device installation problems did not show up in the survey results. These possible reasons include self-selection effects, timing effects, the possibility that the participants did not notice or care about the installation delays, and the possibility that the problem was exaggerated in the first place.

**Figure 2-18
Comparing Participant Satisfaction
with the Scheduling, Installation Processes
of the California IOU DLC Programs**

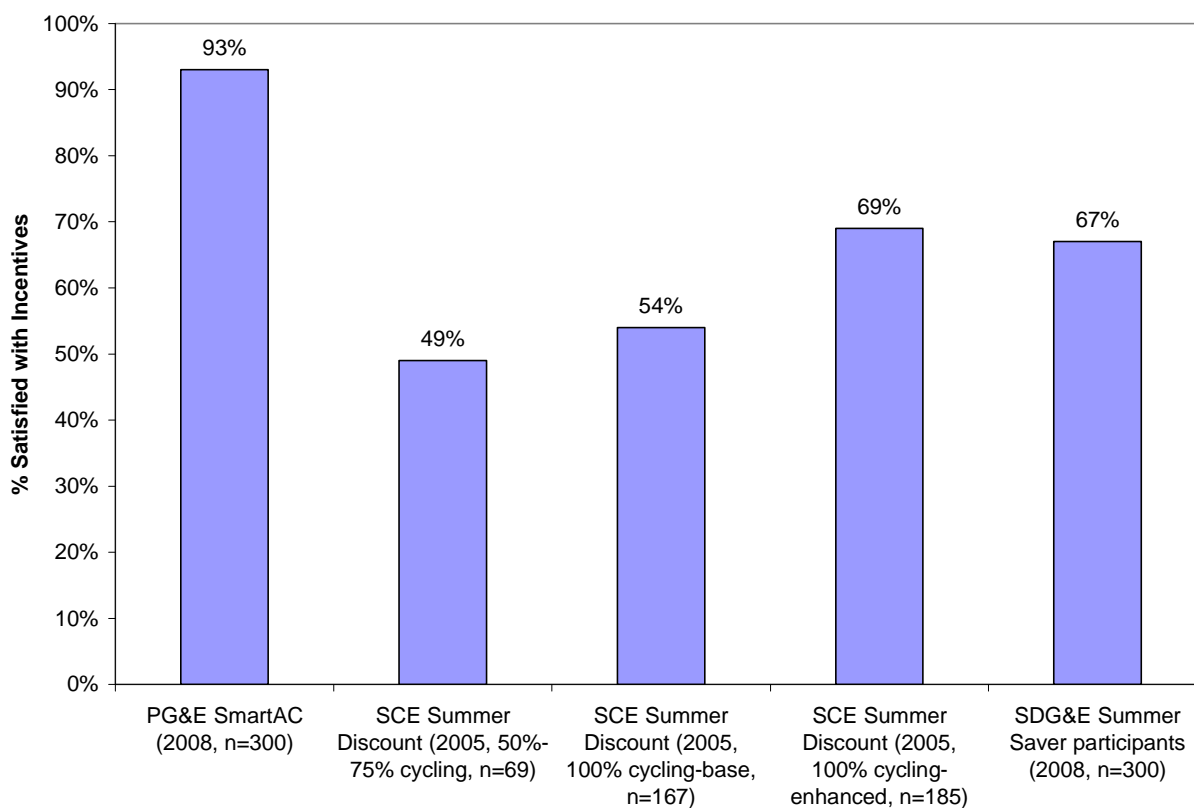


2.4.2.3 Satisfaction with the incentive levels

The program design section of this report discussed how different the incentive structures of the California IOU DLC programs are from each other. They differ in the form of the payment (PG&E check and sometimes programmable thermostat vs. SCE/SDG&E bill credit), the frequency of the payment (one-time for PG&E vs. every cooling season for SCE/SDG&E), the timing of the payment (upon joining for PG&E, monthly for SCE, after the end of the cooling season for SDG&E) and the payment amounts (\$25 for PG&E, up to \$150- \$194 for SCE/SDG&E depending on cycling level). These differences must be kept in mind when comparing participant satisfaction levels with incentives across the California IOU DLC programs.

Figure 2-19 compares the satisfaction levels of the California IOU DLC programs. It shows that while the vast majority of the PG&E participants were satisfied with their rebate levels, only one half to two thirds of the SCE and SDG&E participants were. The SCE process evaluation provided no explanation for these relatively low satisfaction ratings except to point out that satisfaction levels increased as incentive payments increased (participants on the 100% enhanced plan receive double the incentives of those on the base plan).

Figure 2-19
Comparing Participant Satisfaction
with Financial Incentives
Provided by the California IOU DLC Programs



One possible theory for the lower SCE and SDG&E satisfaction levels is that since participants cannot know the amount of bill credits they will receive ahead of time (they are based on equipment size), they are disappointed when the bill credits they receive are not what they expected. The SCE evaluation did ask participants to estimate their monthly bill credits and then compared them to the actual credits. Table 2-8 show that those in least-satisfied participant group – the 50-67% cycling group – who estimated their bill credits were actually very accurate

This casts some doubt on the theory that SCE incentive satisfaction levels in this group were lower due to actual credits being less than expected.

However, there are two caveats. First only 27 of the 69 participants in the 50-67% cycling group provided estimates for their monthly credits. Just because these 27 respondents were accurate, on average, does not mean that other 42 respondents that did not provide estimates were not disappointed with the credits they received. Second just because the average estimates were very close to the average actuals does not mean that any given estimate was so close to the actual bill credit. The table does show that, on average, the participants in the two 100% cycling groups underestimated their actual bill credits. This may partially explain their higher satisfaction ratings.

Table 2-8
SCE Summer Discount Participants
Estimates of Monthly Bill Credits vs. Actuals

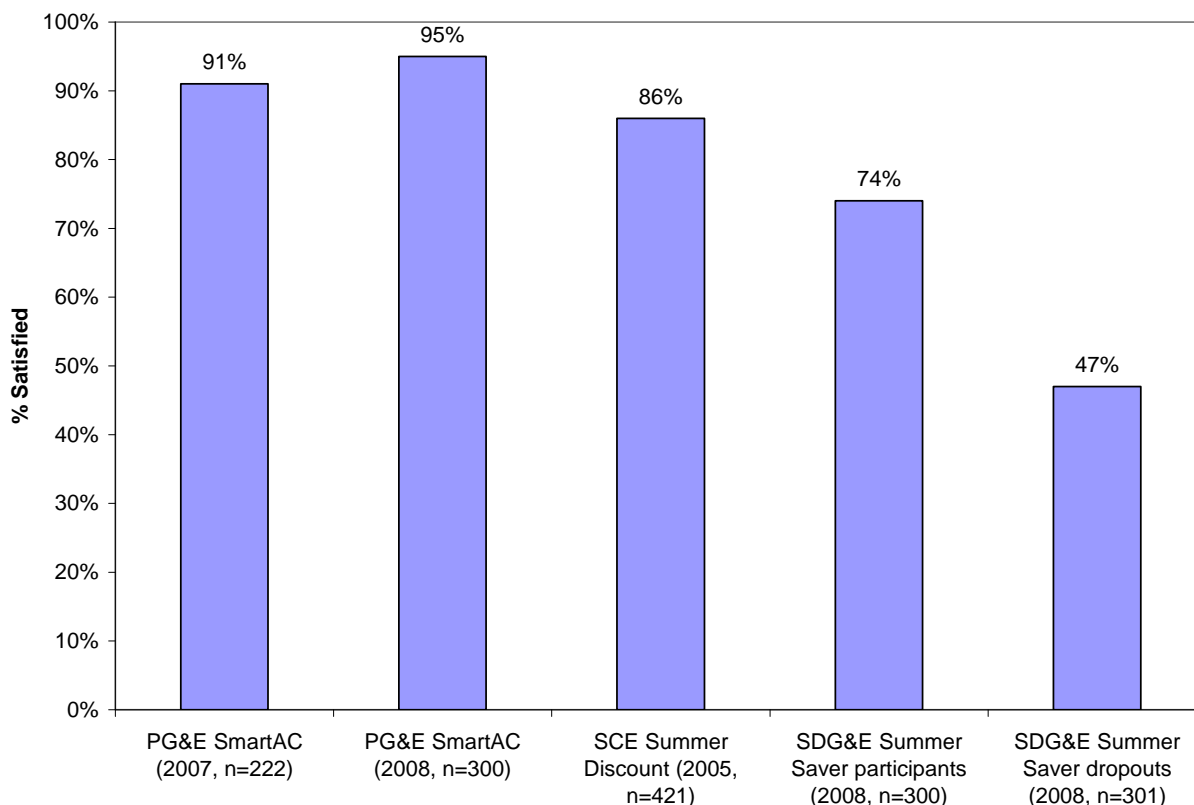
Cycling Option	Average estimated monthly bill credit	Average actual monthly bill credit
50%-67% cycling (n=27)	\$ 19.93	\$ 19.94
100% cycling, base option (n=83)	\$ 20.86	\$ 24.01
100% cycling, enhanced option (n=72)	\$ 37.58	\$ 49.95

Another possible explanation for the lower SDG&E satisfaction levels is the timing of the survey. As noted earlier, the SDG&E participant survey was conducted not long after many participants had endured a control event during a very intense heat wave. Therefore when asked the question: “Are these bill credits enough compensation for SDG&E to be able to activate your Summer Saver device 10-15 times per year?,” it is not too surprising that 18 percent said “No” and another 14 percent were not sure.

2.4.2.4 Overall Program Satisfaction Levels

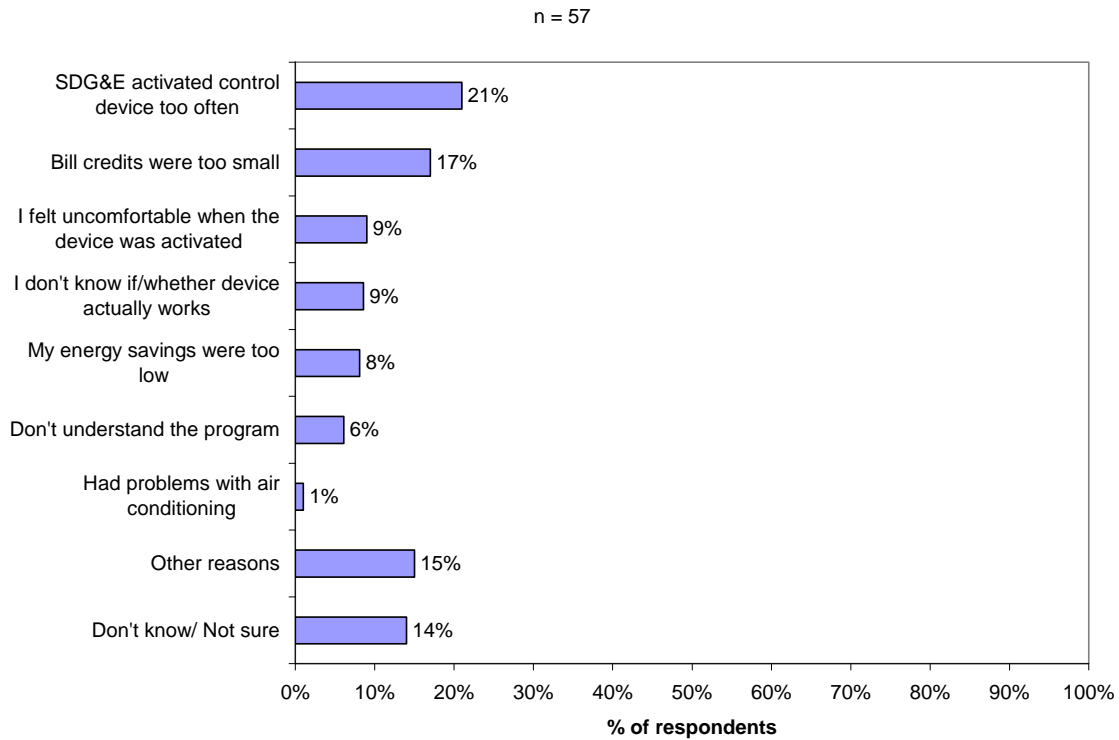
In addition to being asked about their satisfaction with various program processes, participants were also asked to give their ratings for the California IOU DLC programs as a whole. Figure 2-20 shows that overall program satisfaction levels were high for PG&E and SCE program participants, but lower for the SDG&E participants. The SDG&E process evaluation was the only one to survey dropout customers and somewhat surprisingly nearly half of the dropout customers said they had been satisfied with the program. As discussed later, most dropped out of the Summer Saver program because of discomfort during control events.

Figure 2-20
Comparing the California IOU DLC Programs
On Participant Satisfaction with the Overall Program



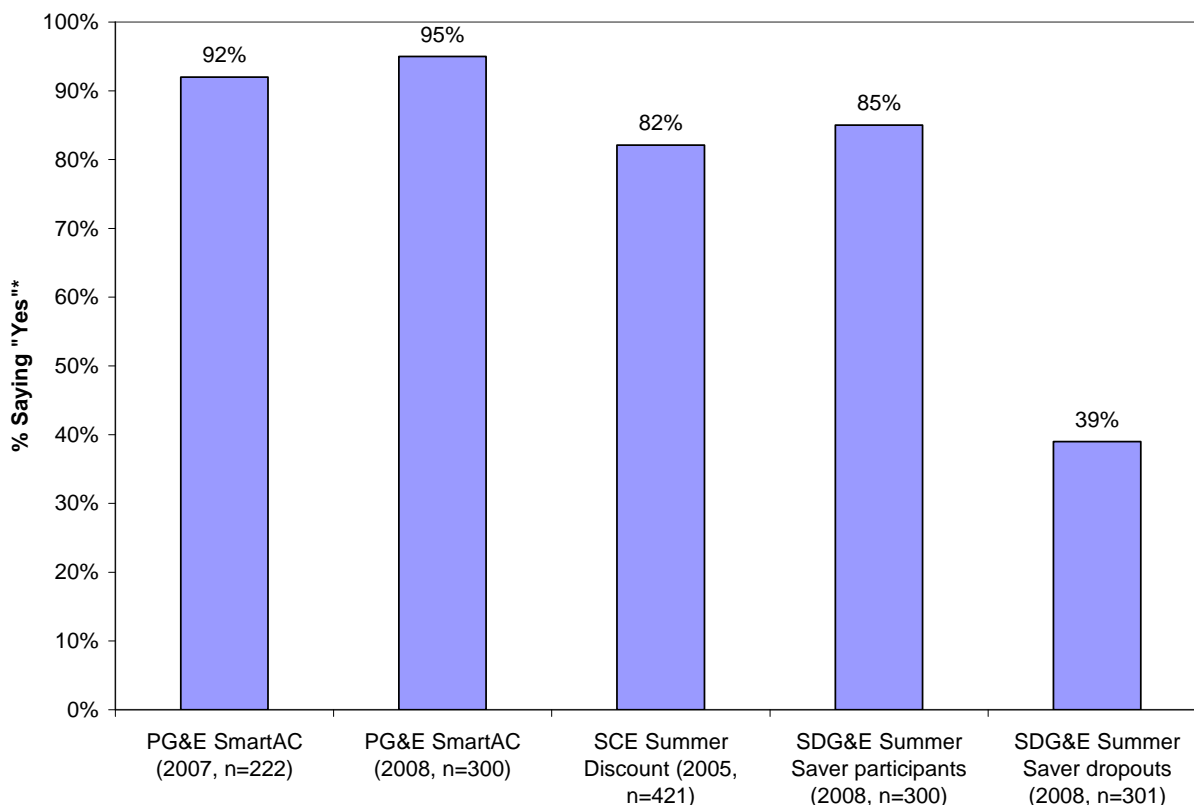
The SDG&E process evaluation asked the Summer Saver participants who were less than satisfied with the program what their reasons were. Figure 2-21 shows that their most-cited reasons included SDG&E activating their Summer Saver devices too often and the bill credits being too small. Yet there were many other reasons.

Figure 2-21
Reasons for SDG&E Summer Saver Participant Dissatisfaction
with the Program in General



Another way to measure overall program satisfaction is to see what percentage of the participants would recommend the program to friends, neighbors, or co-workers. The percentage of participants saying they would recommend the program (Figure 2-22) was fairly close to those who said they were satisfied with the overall program although in this case SDG&E's participant percentage is a bit higher and its dropout percentage is a bit lower.

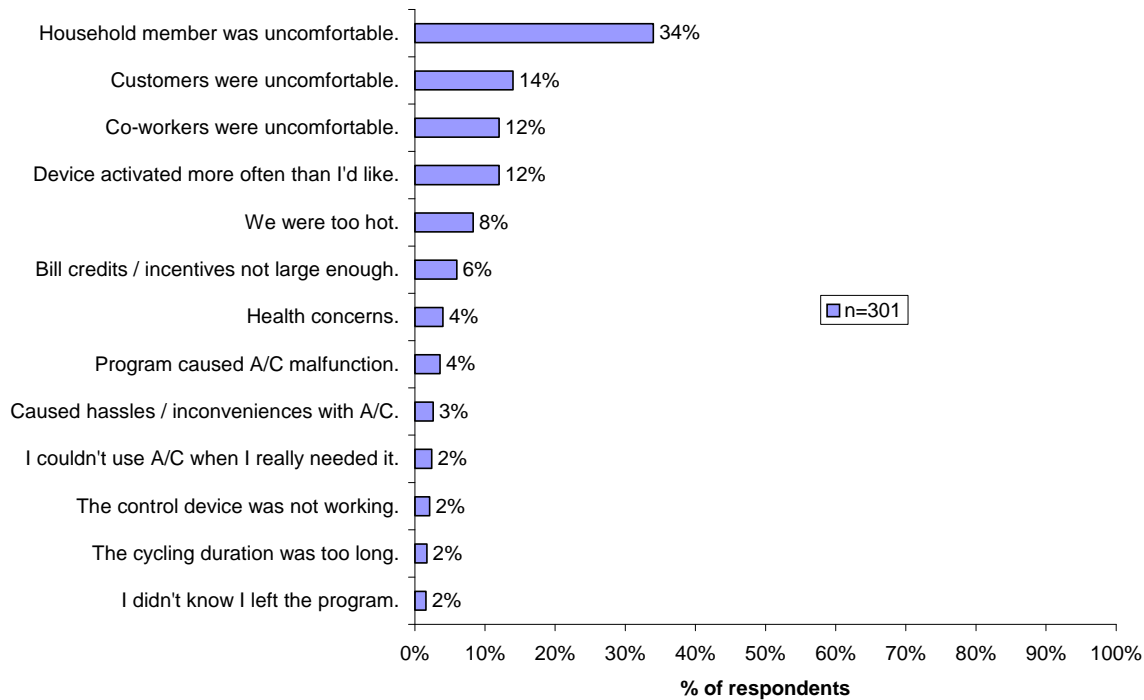
Figure 2-22
Comparing the California IOU DLC Programs
On Whether Participants Would Recommend Program to Others



Note: While the PG&E and SDG&E surveys asked: "Would you recommend this program to a friend, neighbor, or co-worker?" the SCE survey asked: "How likely are you to recommend the program to others?" The 82 percent represents the percentage who said: "very likely."

There is a risk of overestimating program satisfaction by only surveying program participants. This is due to self-selection effects, where the really dissatisfied participants have already left the program and those that remain are at least satisfied enough to have remained. That is why surveying of dropout customers is listed in this report as one of the marketing best practices. To SDG&E's credit the utility included in its evaluation scope a survey of dropout customers. This report has already discussed many useful results from this survey as well as from the non-participant survey that SDG&E also sponsored. However, from the program planning perspective the most interesting question for dropouts is: "Why did they leave the program?" Figure 2-23 shows that the main reasons the SDG&E dropouts left the program were related to discomfort during the control events.

Figure 2-23
Why SDG&E Summer Saver Dropout Customers
Left the Program



2.4.3 Concluding Observations on Program Satisfaction

Comparing participant satisfaction levels across the California IOU DLC programs shows that for some program processes – such as program enrollment, scheduling, and device installation – satisfaction levels were relatively high and fairly comparable across the different programs. Yet for the program incentive levels the satisfaction levels were general much lower with more variation across the different programs. As discussed above, these may be explained by how different the incentive structures of the California IOU DLC programs are from each other. They differ in the form of the payment, the frequency of the payment, the timing of the payment, and the payment amounts.

Finally there was some variation (74% – 95%) across the different DLC programs in terms of overall program satisfaction ratings. Some of this may be due to the timing or frequency of the control events. For example, the PG&E SmartAC program -- which had the highest overall program satisfaction ratings -- also had the fewest control events. Discomfort during control

events was also the most-cited reason for participant dissatisfaction. There is also a risk of overestimating program satisfaction by only surveying program participants. This is due to self-selection effects, where the really dissatisfied participants have already left the program and those that remain are at least satisfied enough to have remained.