Process Evaluation of SDG&E's 2006–2008 Non-Residential Energy Efficiency Programs
Volume II of III: Program-Specific Results

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1.1 Program Overview

1.1.1 Program Summary

The Codes and Standards (C&S) program is a cross-cutting statewide program that promotes code revisions for the Title 20 Appliance Standards and Title 24 Building Standards in California. SCG and SDG&E pooled their funds for a joint C&S program under a single project manager. Notably, in the 2006-2008 cycle, the C&S program is transitioning from an information-only program to a resource acquisition program with energy saving goals. Energy savings are allocated for code and standard modifications that are driven by the utility C&S efforts.

The main thrust of the program is the preparation of technical assessments of its proposed appliance standards and building code upgrades, called Codes and Standards Enhancement (CASE) studies, which determine the energy, economic, performance, and environmental benefits for each measure. The C&S program works closely with the code-making body, the California Energy Commission (CEC), to select its CASE study topics in order to increase the probability of adoption. The C&S program contracts with engineering teams to conduct the technical analysis and write the standards documentation.

CASE study results are presented to the CEC in public workshops and meetings and draft code language is presented at a final draft standards workshop. At public workshops, the C&S program assumes an advocacy role to promote its code and standard enhancements to both the CEC and industry stakeholders. Key stakeholders include equipment manufacturers, standards enforcement agencies, government institutions, agencies responsible for standard enforcement such as building departments, architects, engineers, designers, and building industry associations. After the public workshops, the formal rulemaking is managed by the CEC, which releases the proposed standards to the public for a period of 45 days. Public comment is heard, the standard language is revised accordingly, and the commission proposes 15-day language to be adopted into the 2008 Title 20 and Title 24 standards.

Furthermore, non-compliance with standards remains as one of the program's greatest challenges in their pursuit of higher energy savings in California. Code compliance depends on outside factors such as the level of code enforcement and industry knowledge of code revisions. The program works to encourage compliance with Title 20 and Title 24 by supporting training seminars for code officials, builders, appliance designers, and other industry actors.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Jerine Ahmed	SDG&E	jahmed@semprautilities.com	213-244-5606

1.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the Codes and Standards program in order to develop and refine the program logic and theory. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested through in-depth interviews with program actors. Initial research included an interview with the program manager and a review all available program documents (PIP, program

narratives, draft of California Public Utilities Commission impact evaluation plan, and draft CASE study documentation). The logic model is Figure 1-1 and the corresponding program theory is in Table 1-1 below.

Figure 1-1
Program Logic Model for SDG&E 3004 – Codes and Standards

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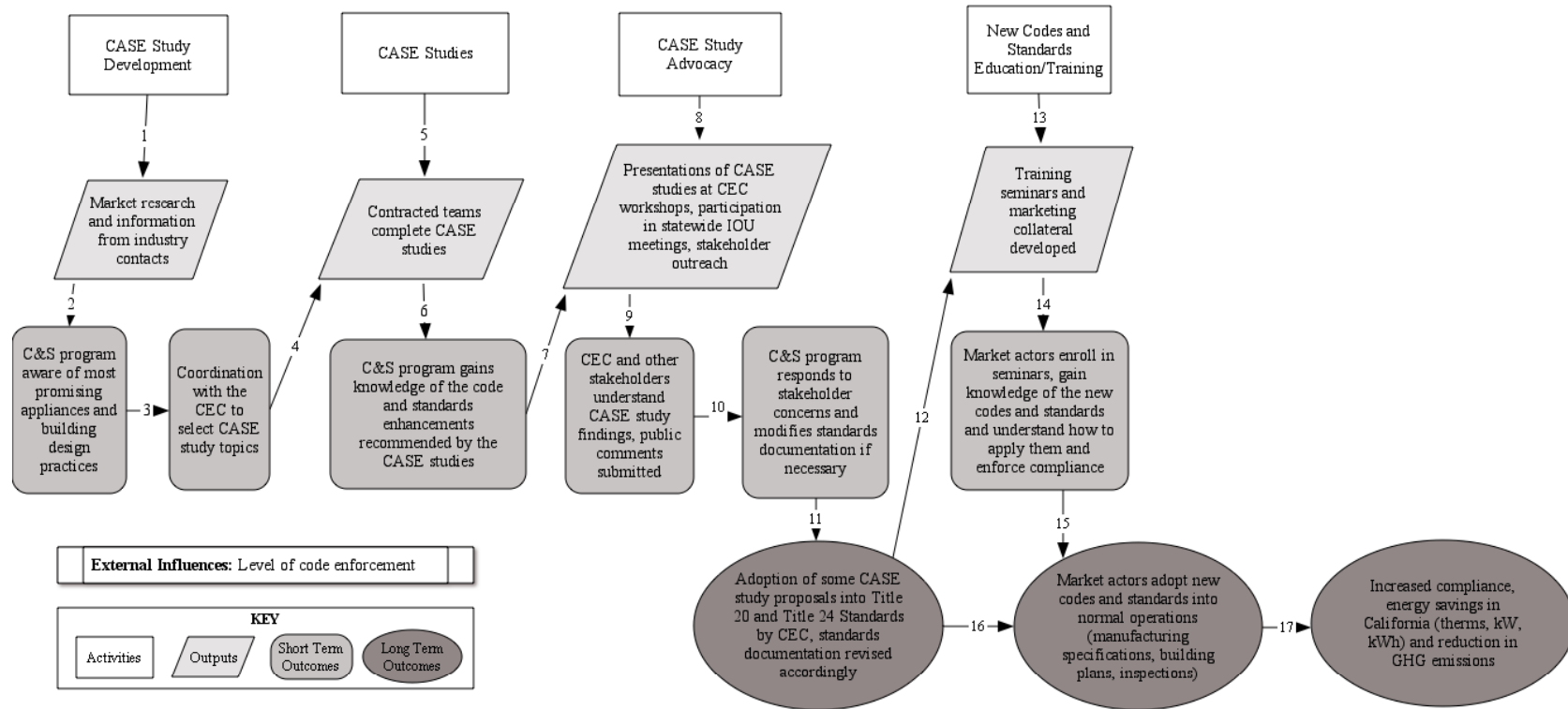
Table 1-1
Program Theory Description for SDG&E3004 – Codes and Standards Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	The Codes and Standards (C&S) program depends on its industry contacts and market research to learn about the most promising appliances and building standards that could be adopted into California's Title 20 (appliance standards) and Title 24 (building codes). Program staff members initially determine the feasibility of suggested code enhancements by evaluating the candidate's market penetration, time in the market, and number of vendors. A key source of information is participant data from other IOU energy efficiency programs. The data can reveal which pre-code appliances and building standards strategies have become mature and are ready for codification. Brainstorming sessions are held to create a list of viable code enhancements. During this process, the C&S program also looks for additional opportunities; for example pursuing locally adopted energy standards with local governments to exceed Title 24 standards.	Number of industry contacts utilized Number and variety of efficient appliances and building standards considered Number of brainstorming meetings held	C&S program files Screening documents

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
2	After conducting this market research, the C&S program gains knowledge about which appliance standards and building standards practices should be considered for further research.	Number and variety of feasible appliances and building standards identified from market research Value of the market research	C&S program files Interviews with C&S program managers Final IOU screening documents
3	The C&S program wants to devote program funds only to CASE studies that the code-making body, the California Energy Commission (CEC), will consider for code and standards modifications—where federal preemption of state standards will not occur. Therefore, the C&S program shares its research with the CEC. In addition, the C&S program is highly coordinated among IOUs to effectively utilize the limited funds and also avoid duplication of efforts. After coordinating with the IOUs and CEC, the C&S program understands which technologies have the highest chances of being adopted into Title 20 and Title 24, and thus selects CASE studies accordingly.	Number of efficient appliances and building standards discussed among the IOUs and with the CEC. Number of CASE studies supported by the CEC	Communication with CEC Staff Statewide IOU meetings

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4,5	C&S program managers hire contracted teams to complete CASE studies targeted at specific Title 20 and Title 24 enhancements. The CASE studies investigate the economic, technical, cost-effectiveness and feasibility issues associated with each proposed appliance and building standard. During this period, stakeholders are engaged and their concerns are addressed.	Number of CASE studies initiated and completed Drafts of CASE studies reviewed by C&S program managers	C&S program files
6	After the CASE studies are completed, the C&S program is aware of the best practices associated with each proposed appliance and building standards and is ready to share its results with the CEC and the public.	Value of the CASE study, as determined by the C&S program staff members	Interviews with C&S program managers Program files
7, 8	The C&S program works with stakeholders and the CEC to gain support for its CASE study findings. Advocates present the C&S proposals to the CEC, stakeholders, and other IOU C&S programs.	Number of CASE studies filed with the CEC Number of C&S presentations at CEC workshops and meetings Number of public comments recorded on each CASE study Level of C&S involvement with the codes and standards adoption process Number of statewide IOU C&S meetings held	Program files CEC website Interviews with program managers

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
9	Due to C&S advocacy efforts, the CEC and other stakeholders become aware of the CASE study findings and proposed codes and standards revisions. Stakeholders participate in this process.	Number of attendees at the CEC workshops and meetings Number of public comments filed (Stakeholders: manufacturers, government institutions, standard enforcement agencies of various jurisdictions, architects, engineers, and manufacturing/building associations)	Program files CEC website
10	The C&S program gains new knowledge of stakeholder concerns and responds to industry input. If appropriate, the C&S program will hold further stakeholder meetings and conduct additional research. The CASE study is revised to incorporate necessary changes after the workshop.	Effectiveness of response to comments and concerns of industry stakeholders Additional research conducted Standards documentation revisions	Interviews with stakeholders Program files CEC website
11	CASE study advocacy is convincing and effective. C&S CASE study findings influence Title 20 and Title 24 revisions. Standards documentation is updated to match the language in the code changes.	Number of CASE study findings adopted into Title 20 and Title 24 by the CEC Updated standards documentation	Program files CEC website Interviews with C&S program managers Standards documents

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
12, 13	Many market actors lack sufficient knowledge about codes and standards revisions. The C&S program develops training seminars for code officials, builders, developers, engineers, and equipment designers to educate them about revisions to Title 20 and Title 24. Marketing collateral is created to advertise the seminars.	Number of training seminars created Number of marketing pieces created and distributed (e-mail, web site access, newspaper and trade association advertisements, and mailings)	Program files
14	Marketing collateral is convincing and reaches its target audience. Market actors enroll in the training seminars and gain new knowledge about revisions to Title 20 and Title 24 and understand how the code enhancements apply to their daily operations.	Effectiveness of the marketing collateral Self report of seminar attendees about knowledge gained	Survey of training seminar attendees
15	The training seminars accelerate the adoption of the appliance standards and building code revisions in the mainstream market. Training seminars also lead to compliance and enforcement of the standards.	Self report of seminar attendees about implementing code revisions Number of seminar attendees	Survey of training seminar attendees
16	After the Title 20 and Title 24 revisions are formally approved, a natural adoption of the measures occurs. Market actors begin to implement new codes and standards into daily practice.	Self report of market actors	Survey of market actors

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
17	As the Title 20 and Title 24 revisions are adopted into appliance and building standards, energy efficiency increases in California leading to increased gas and electric savings and reduced peak demands and GHG emissions.	Energy savings from compliance with new appliance and building design requirements	Impact evaluation

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1.2   2006 – 2007 Program Activities

1.2.1   Savings Summary

Table 1-2 summarizes the progress toward goals for the SDG&E C&S program through Q4 2007, which shows that the program has achieved two-thirds of its electric and gas savings goals. Notably, these savings are pre-determined and will be adjusted after the CPUC impact evaluation.

Table 1-2
Savings Summary (Q1 2006 through Q4 2007)[1]

Net Annual kWh Achieved	% of Goal	Summer Peak kW Achieved	% of Goal	Therms Achieved	% of Goal
20,193,333	67%	5,767	67%	186,667	67%

1.2.2   Budget Summary

The SDG&E C&S program expenditures through Q4 2007 are listed in Table 1-3 below. All together, the C&S program has utilized 23 percent of its total operating budget. Notably, once CASE studies are initiated, contract amounts for the CASE studies are committed. The program expenditures only include the billing amounts for CASE studies and not the unpaid committed amounts. For SDG&E, an addition of approximately $525,000 will increase the percentage of budget spent to about 70 percent.

Table 1-3
Expenditure Summary (Q1 2006 through Q4 2007)

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
$271,834	$1,188,805	23%

1.2.3   Participation Summary

The key actors in the 2006-2008 program cycle are as follows:

- C&S program managers
- Contracted and subcontracted engineering teams to conduct CASE studies
- Stakeholders who provide input on CASE study proposals
- Members of the California Energy Commission

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[1] Data from SDG&E Energy Efficiency Dec 2007 Monthly Report (http://eega2006.cpuc.ca.gov/)

1.2.4 Summary of Program Status

As summarized in Table 1-4, SDG&E contracted with three engineering firms (Heschong Mahone Group, Davis Energy Group, and ECOS consulting) to conduct seven CASE studies in the 2006-2008 program cycle. Six of these CASE studies addressed Title 24 building code revisions and only one will be submitted for the pending Title 20 2008 appliance rulemaking. With a goal of 12 CASE studies, 11 have been initiated, including current RFPs.

2008 California Energy Commission Title 24 Building Energy Efficiency Standards

The 2008 Rulemaking on Building Efficiency was closing (in 45-day language phase) at the time of this process evaluation. Four CASE studies were completed for the 2008 Rulemaking and presented at CEC workshops in 2006 and 2007. All four of these CASE studies are referenced in the 45-Day Language Express Terms[2] code revisions and interviews with the program managers indicate that all of the CASE studies will lead to final Title 24 code revisions.

1. Residential Pool Pumps
2. Hardwire Standby Loads
3. Indoor Lighting
4. Outdoor Lighting

The remaining two—Residential Ventilation Cooling and Improved Residential Water Heating Distribution Design—are still in-progress for the next code revision cycle, the 2011 Rulemaking on Building Efficiency and only preliminary work has been completed. In addition, a second phase of Hardwire Standby Loads will also be targeted at the 2011 rulemaking.

2008 California Energy Commission Title 20 Appliance Energy Efficiency Standards

Furthermore, the 2008 Rulemaking on Appliance Efficiency had not started at the time of this process evaluation, which will focus on general purpose lighting and battery chargers. The Commercial Gas Clothes Dryer CASE study is the only active SDG&E project for the 2008 appliance rulemaking and was presented at the initial CEC workshop on Jan 15, 2008. Due to timing, revisions to Title 20 are not addressed by this evaluation.

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[2] Summary of 2008 Building Energy Efficiency Standards Changes, California Energy Commission, December 17, 2007: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/index.html

Table 1-4
CASE Studies SDG&E 2006-2008 C&S Program

Code Cycle	CASE study	For 2008 code revisions	In 45-Day Language Express Terms	Prime Engineering Firm
Funded by SDG&E				
Title 24	Residential Pool Pumps*	✓	✓	Davis Energy
Title 24	Hardwire Standby Loads*	✓	✓	ECOS
Title 24	Residential Ventilation Cooling			Davis Energy
Funded by SDG&E and SCG				
Title 24	Indoor Lighting*	✓	✓	Heschong Mahone
Title 24	Outdoor Lighting*	✓	✓	Heschong Mahone
Title 24	Improved Residential Water Heating Distribution Design			Davis Energy
Title 20	Commercial Gas Clothes Dryers	✓	N/A	Heschong Mahone

*PG&E is the lead utility in this effort. SDG&E contributed funding, attended progress meetings, and critiqued draft standard documentation.

1.3 Findings, Conclusions and Recommendations

1.3.1 In-Depth Interviews

The primary evaluation tasks for this process evaluation included a site visit to a statewide IOU C&S meeting in San Francisco on November 27, 2007 and in-depth interviews with contracted engineering teams that conducted the CASE studies, CEC board members, and key industry stakeholders that participated in the code revision process. Interviews were conducted in January 2008. A total of 11 in-depth interviews were conducted and the interviews were based on a series of open-ended questions that explored:

- CASE study methodology and reporting activities

- Coordination among the utility, stakeholders, and the CEC

- Stakeholder role

- Challenges faced

- Areas for program improvement

The evaluation team also reviewed all available project documentation. The following section will detail the interview findings for each completed CASE study for the 2008 Title 24 Building Energy Efficiency Standards: Residential Pool Pumps, Hardwire Standby Loads, Indoor Lighting, and Outdoor Lighting

1. Residential Pool Pumps CASE Study

Contracted Engineering Firm: Davis Energy Group

Methodology

PG&E led the Residential Pool Pump CASE study, while SDG&E provided additional funding, attended meetings, and critiqued report drafts. Documents reviewed for this evaluation include the CASE study draft report and the PowerPoint presentation prepared for the CEC Workshop on July 12, 2006. In addition, the evaluation team interviewed the Davis Energy Group project manager and key stakeholders who participated in the code revision process.

The CASE study's methodology used a simulation model to determine the flow rate and power demand with various pump, pipe, filter, cover, control, and cleaner designs.

Coordination with the Utility

PG&E's workplan for the Davis Energy Group included specific milestones and monthly reports. The Davis Energy group submitted reports on the five stakeholder meetings and a draft CASE report to PG&E and SDG&E for feedback. SDG&E requested a specific analysis for pool covers, which was added into a revised CASE study draft. The utility project managers were active throughout the code revision process, attending stakeholder meetings and CEC workshops, and providing guidance on code revision language.

Stakeholders

Notably, pool pump standards under Title 24 had not been updated for over 30 years and therefore this code revision cycle will significantly impact the daily operations of industry actors. With this in mind, the Davis Energy Group said that it made it a priority to incorporate all relevant stakeholder groups in the pool product manufacturing industry from the beginning. A Residential Pool Pump CASE study planning meeting was held on March 21, 2006 including representatives from APSP, Aqua Pool & Spa, Hacienda Pools, Ikeric, Pentair, and SPEC. Four additional stakeholder meetings took place throughout the code revision process. The Davis Energy Group project manager said that PG&E's strong rapport with the pool industry and large database of contacts, built through its pool pump rebate program and classes on how to make pools more efficient, greatly facilitated the stakeholder process. She also commented that the stakeholders provided an important gauge of the industry's status and the "process has really benefited from having these people at the table."

The evaluation team spoke with several key industry representatives who contributed to code revision process. A stakeholder from Pentair Pool Products said that that PG&E and the Davis Energy Group handled stakeholder input well and were very receptive to the suggestions of the group. A representative from the California Spa and Pool Industry Education Council said that due to extensive interaction among PG&E, the Davis Energy Group, the CEC, and industry groups, the final code revisions reflected industry input. Similarly, a respondent from the Association of Pool and Spa Professionals said that enough industry meetings were held to incorporate stakeholder input, but it took some time to find all the right people.

Challenges

During the 45-day review period, the Davis Energy Group said that it realized that it missed the pipe manufacturers. Pipe manufacturers are distinct from the other stakeholder groups because they are not specific to the pool industry and Davis Energy group initially did not know who to call. While the CEC was dissatisfied with the timing of these last-minute changes that stalled the process, the pipe manufacturers offered advice that resulted in pool standards with greater energy savings.

Furthermore, the Davis Energy Group project manager recommended that the utilities provide a more specific template or good examples for the standards documentation (i.e., CASE study, Measure Information Template, ACM manual) that is submitted to the CEC.

2. Hardwire Standby Loads CASE Study

Contracted Engineering Firm: ECOS Consulting/Energy Solutions

Methodology

PG&E was the lead utility on the Hardwire Standby Loads CASE study, which is still in-progress. However, the project did contribute to some 2008 code revisions to Section 119: Mandatory Requirements for Lighting Control Devices, which will mandate that all lighting control devices are tested and listed in the 2008 Title 24 standards. The CASE study draft and the PG&E PowerPoint presentation for the CEC Workshop on July 12, 2006 were available for review and the evaluation team interviewed the PG&E project manager and the Energy Solutions project manager. SDG&E contributed funding and attended progress meetings.

The CASE study will continue in the 2011 code revision cycle to advocate for minimum efficiency requirements for non-residential control devices. CASE study methodology includes interviews with market actors, standby load device testing, and a cost-effectiveness analysis. Areas of research include garage door openers, doorbell transformers, sprinkler systems, and illuminated street signs. Code revisions for illuminated street signs will be proposed for the upcoming Title 20 appliance efficiency 2008 rulemaking.

Due to the timing of this evaluation, further research could not be conducted.

2. Indoor Lighting CASE Study

Contracted Engineering Firm: Heschong Mahone Group

Methodology

PG&E also led the Indoor Lighting CASE study, which aimed to determine lower power densities levels and to reduce total lighting consumption for non-residential buildings. Documents reviewed for this evaluation include the CASE study draft report and the PowerPoint presentation prepared for the CEC

Workshop on July 13, 2006. The evaluation team interviewed the project manager from Heschong Mahone, the CEC staff member for lighting, and a CEC consultant for lighting studies.

Integrated Lighting Concepts conducted most of the technical analysis. The CASE study's methodology included interviews with industry actors, a life cycle cost analysis of CMH lamp technology, field inspections of pre-code compliance, and retail store computer modeling. Key elements of the code revision proposal included replacing Halogen lights with Ceramic Metal Halides and re-evaluating the credit allocation system and categories in the Illuminating Engineering Society handbook.

Coordination with the Utility

PG&E and SDG&E project managers were active throughout the code revision process, attending stakeholder meetings and CEC workshops, and providing guidance on code revision language.

Stakeholders

Non-residential indoor lighting was a controversial topic in the code revision process as many industry players were concerned about how more stringent regulation would affect their businesses. Once a preliminary CASE study was completed, stakeholder meetings were held to solicit stakeholder input (mostly large lighting conglomerates). The Heschong Mahone project manager said that the stakeholders provided a lot of good feedback to move forward. Interim communication took place through e-mails and phone calls. Heschong Mahone replied to each letter from the National Electrical Manufacturers Association and responded to the concerns of Auerbach + Glasow by analyzing the lighting designs of the firm's architectural projects.

Challenges

A key challenge with the indoor lighting CASE study was managing divergent opinions between PG&E and the CEC's principal lighting consultant who argued that the stringent code revision proposals did not adequately reflect stakeholder input. Once the CASE study was submitted to the CEC, the discussions continued for another year to resolve this disagreement and eventually the CASE study was re-opened and modified.

6. Outdoor Lighting CASE Study

Contracted Engineering Firm: Heschong Mahone Group

Methodology

The Outdoor Lighting CASE study was led by PG&E and additional funding and review was provided by SDG&E. Documents reviewed for this evaluation include the CASE study draft report and the PowerPoint presentation prepared for the CEC Workshop on May 18, 2006. The evaluation team interviewed the PG&E program manager, the project manager from Heschong Mahone, the subcontracted team from Clanton Engineering, the CEC staff member for lighting, and the CEC's principal consultant for lighting studies.

The Clanton Engineering team developed a model lighting ordinance to analyze energy efficiency and also performance aspects such as glare and light pollution. The CASE study's methodology included both hypothetical tests and site visits to 26 properties. The goal of the study was to reduce the lighting power densities of outdoor lighting while meeting visual performance criteria. Clanton Engineering was able to utilize test methods that had already been developed from previous work in 2005 and re-check the lighting power density values. The team determined that the values were too high could be revised lower in the 2008 standards to reap higher energy efficiency gains. The CASE study also included an innovative layering regulation design that allowed a minimum lighting allowance and then an additive depending on the type of hardscape and the population density zone. The Heschong Mahone project managers said that this layering method was well-received by about 80 percent of the involved stakeholders. An additional part of Clanton's Engineer's work was to create a consistent set of standard values from the Illuminating Engineering Society handbook.

Clanton Engineering said that it would like to pursue controls for lighting, uniformity, and the effect of flight light in future studies.

Coordination with the Utility

The utility project managers were active throughout the code revision process, attending stakeholder meetings and CEC workshops, and providing guidance on code revision language.

Stakeholders

Like with indoor lighting, the outdoor lighting was a political process that navigated the many concerns of industry players. Clanton Engineering said it worked directly with the stakeholders and relied on its industry experience to reach all the major lighting conglomerates and the National Electrical Manufacturing Association (overall about 95 percent of the lighting industry). The results from the model lighting ordinance, including spreadsheets and all calculations, were presented to the stakeholders for immediate feedback. Notably, the Clanton Engineering team was able to placate one concerned representative from Acuity Brand by analyzing all of her building designs. Clanton Engineering said that the various stakeholder groups provided important input throughout the processes to ensure that industry players would be satisfied with the code revision outcomes.

Challenges

No additional challenges were reported.

1.3.2 Conclusions

The following general conclusions are drawn from the in-depth interviews presented in this report:

- **A key program challenge is identifying all the relevant stakeholders to incorporate into the code revision process.** The utility strives to integrate all appropriate parties in the code revision process so that the final code revisions will reflect the technical needs of the industry. However, given the large and varied groups of stakeholders involved in the building and appliance industries, it is difficult to recognize and communicate with all the appropriate market actors and other industry experts. Some industries, such as lighting and pool products, have central trade

groups that can facilitate this process. An additional challenge for the utility is to negotiate the inherent bias of industry actors such as trade groups, which protect their major constituents, with the utility's goal of pragmatically increasing energy efficiency in California.

- **Key stakeholders who are initially omitted can complicate and elongate the CASE study process later on.** The CEC's rulemaking process is a public process and allows stakeholders to participate up to the final code adoption meeting. The C&S program always tries to include relevant stakeholders in the process from the beginning; however, some stakeholders do not participate in the beginning and show up during the later phases of rulemaking. Late-arriving stakeholders with arguments that the CEC deems valid often force the utilities to redefine their CASE study research at the last moment. Sometimes, the concerns of late-arriving stakeholder groups may not be fully addressed due to CEC deadlines. Overall, managing new and legitimate industry opinions at the end of the code revision process is a challenging experience for the utilities, the stakeholder groups, and the CEC.

- **The C&S program can utilize information from other energy efficiency programs to solicit stakeholder participation.** CASE studies projects that are based on technology already incorporated into the utility's energy efficiency programs have access to a strong base of attentive stakeholders. For example, PG&E had already formed strong relationships with the pool industry through its pool pump rebate program and classes on how to make pools more energy efficient. With the Residential Pool Pumps CASE study, the C&S program was able to use these partnerships in order to attract a large group of knowledgeable stakeholders who were interested in energy efficiency.

- **The strong relationship between the C&S program staff and CEC representatives benefits the process.** The C&S program works closely with the CEC to select their CASE study topics. In addition, CEC representatives participate in meetings with the utility staff and their contracted engineering team to offers interim feedback on the CASE studies, often playing a constructive devil's advocate role. As a result, the utilities are rewarded for their efforts as most CASE study proposals are adopted into the final code revisions. In addition, the C&S program keeps the CEC informed about their funding limits for each CASE study, so the CEC can draw a line and prevent stakeholders from making unrealistic requests.

- **SDG&E CASE studies are of high value to the CEC.** Interviews with the CEC staff and utility project managers indicate that SDG&E CASE studies are commissioned to highly qualified and experienced consultant teams, who undergo a rigorous RFP progress to win the project. According to the CEC staff, the CASE studies provide cogent technical analyses to support their proposed language to Title 20 and Title 24 standards. The C&S program also engages in extensive stakeholder outreach, which helps the CEC's to smooth and streamline the code revision process. CASE studies are the key drivers of these codes changes in California and are of high value to both the CEC staff and the state.

- **The format of the standards documentation submitted to the CEC varies.** The utilities have a basic template for the CASE studies and the Measure Information Template. However, because of the loose guidelines, the format submitted to the CEC can sometimes omit important elements such as specific language for the code revisions or data values that can be inserted into the CEC's environmental impact spreadsheet.

1.3.3 Recommendations

Based on the interview findings, we make the following recommendations:

- **Research the CASE study scope with all appropriate stakeholders earlier.** A CASE study report represents a large investment in time and technical research. Once the CASE study is formally presented to the CEC, it difficult to broaden research to incorporate important stakeholder feedback that is outside the original project scope. The primary barriers to modifying the CASE study after submission are CEC deadlines, funding, and fundamental disagreement among the various players. Sometimes, stakeholders are not brought in until a CASE study draft has been completed, at a point where it is difficult to amend the original project scope, if deemed necessary. Through more preliminary stakeholder meetings and outreach, industry actors can help define the research questions that are being asked and ensure that the project direction aligns with the technical needs of the industry.

- **Maintain continuous communication about CASE study results with all stakeholders for all CASE studies**. Responding to stakeholder concerns is a primary task of the C&S program and lively discussion is expected in the often controversial Title 20 and Title 24 code revision process. However, maximizing the transparency of the process by keeping stakeholders continuously informed about CASE study results and draft code language can minimize last-minute and unexpected stakeholder outrage. Draft code change proposal documents are available on the CEC website for interested parties. Other potential communication methods include quarterly meetings and e-mailed interim reports. As one example, the Outdoor Lighting CASE study team presented all spreadsheets and calculations to the stakeholders for feedback immediately, and as a result, was able to address industry concerns early-on.

- **Continue to collaborate with other utility energy efficiency programs when selecting CASE study technologies.** SDG&E has a broad database of industry contacts and customer information built through their rebate and training programs. The C&S program should continue to work with other energy efficiency programs to identify which technologies are pre-code technologies are most successfully penetrating the residential and nonresidential market, and thus are the most viable options for code adoption. In addition to identifying viable pre-code technologies, the social infrastructure developed through other energy efficiency programs can also facilitate constructive and broad stakeholder involvement in the code revision process. A key partner is the Emerging Technology program, which conducts market feasibility, energy savings, and cost-effectiveness analyses. The C&S program is working closely with Emerging Technology program on the pending Hotel Key Card Room Controls CASE study (outside the scope of this evaluation), which will be completed for the 2009-2011 cycle. The evaluation of the technology is being performed by the Emerging Technology program and the results will be fed into the CASE study. Recently, the Emerging Technologies program has expanded its scope beyond testing innovative technologies to provide credibility for technologies already in the market, and this may be a key area for future collaboration.

- **Explore potential data collection opportunities with the CPUC impact evaluation.** In conjunction with data collection activities for its impact studies, there is an opportunity to collect other market data that can support future C&S research, such as information about incentives, technology penetration, problems with technology, and reasons for non-compliance.

- **Work with the CEC to create a more detailed template for all standards documentation.** The Codes and Standards program would benefit from clearer direction from the CEC staff to

expedite the code revision processes. Often, submitted CASE studies are missing specific language for the code revisions or for the ACM manuals. Additionally, the energy data submitted is often incompatible with what the CEC needs for its environmental impact analysis. More instruction will allow the utilities to provide the CEC exactly what they need and streamline the code revision process.

1.4   Best Practices Review by Program

1.4.1   Program Theory and Design

- *Is the program design effective?* The C&S program provides valuable technical research for the CEC. The general design seems to be effective as the program's CASE studies are leading to code revisions. A gain in efficiency could be realized through increased interaction with all stakeholders at the initial stages of the process to provide feedback on the project direction in order to lesson the occurrence of unexpected changes at the end of the code revision cycle.

- *Is the market well understood?* CASE studies are assigned to engineering teams with experience in the field. In addition, the C&S program solicits stakeholder input so that the code revisions will reflect the technical needs of the industry. However, involving all the relevant stakeholders is a persistent challenge, and often missed stakeholder groups emerge at the end, during the 45-day language phase. Stakeholder input is often constrained by the CEC schedule.

1.4.2   Program Management

1.4.2.1   Project Management

- *Are responsibilities defined and understood?* The engineering teams conducting the CASE studies coordinate frequently with the utilities and the CEC. Expectations are clearly defined by scopes of work with milestones, tasks, and associated deliverables. A common request from the CEC and its contracted teams is a more specific template for standards documentation.

- *Is there adequate staffing?* No staffing deficiencies were reported.

1.4.2.2   Reporting and Tracking

- *Is data easy to track and report?* Formal program documentation, including CASE studies, public comments, and code revisions, is posted on the public California Energy Commission website. However, interim results are not always available for public consumption, and therefore stakeholders may not be aware of new data or altered code revision proposals until the CEC workshops or the 45-day language phase. Increasing interim communication with industry stakeholders can help to decrease surprise conflicts with industry players at the end of the code revision process.

- *Are routine functions automated?* Not addressed in this evaluation.

1.4.2.3 Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* Not applicable.

- *Does the program verify reporting systems?* Not applicable.

- *Are customers satisfied with the product?* Not applicable.

1.4.3 Program Implementation

1.4.3.1 Participation Process

- *Is participation simple?* Yes, the CEC workshops are open to the public.

- *Are participation strategies multi-pronged and inclusive?* Not applicable.

- *Does program provide quick, timely feedback to applicants?* Not applicable.

- *Is participation part of routine transactions?* Not applicable.

- *Does the program facilitate participation through the use of internet/ electronic means?* Yes, announcements of workshops and available documents are posted on the California Energy Commission website.

- *Does the program offer a single point of contact for their customers?* Yes, the California Energy Commission website.

- *Are incentive levels well understood and appropriate?* Not applicable.

1.4.3.2 Marketing and Outreach

- *Use target-marketing strategies?* Not applicable.

- *Are products stocked and advertised?* Not applicable.

- *Are trade allies and utility staff trained to enhance marketing?* Not applicable.

2. SDGE 3010: Energy Savings Bid

2.1　Program Overview

The Energy Savings Bid Program (ESB) provides incentives for energy-efficient retrofits or replacements of existing equipment at SDG&E customer sites. Participants may be either customers or energy-efficiency service providers (EESPs) acting as project sponsors for activities at customer sites. To qualify, a project must save at least 500,000 kWh per year for electric projects or 25,000 therms per year for gas projects. A project may consist of a single site, or may be aggregated from multiple sites belonging to multiple customers, and may include a variety of measures. While only large customers typically have enough savings to self-sponsor a project, small customers may participate indirectly through an EESP.

The program includes a Tax-Exempt Company (TEC) component directed at municipalities, military and K-12 schools. This component is promoted through the Center for Sustainable Energy (CCSE),3 which in some cases fills the role of project sponsor.

The program is designed to be flexible: The project sponsor proposes a project and desired incentives. Incentives may cover up to 100% of the project's measure costs, up to certain limits ($/kWh saved or $/therm saved) that vary by measure type. The incentive paid is based on actual savings, determined by measurement and verification (M&V), which is mandatory for all projects.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Gerald Humphrey	SDG&E	GHumphrey@SempraUtilities.com	858-654-1190
Program Assistant	Kathleen Polangco	SDG&E	KPolangco@SempraUtilities.com	858-654-8798

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[3] Formerly known as the San Diego Regional Energy Office, or SDREO.

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Figure 2-1
Program Logic Model for SDGE3010 – Energy Savings Bid Program
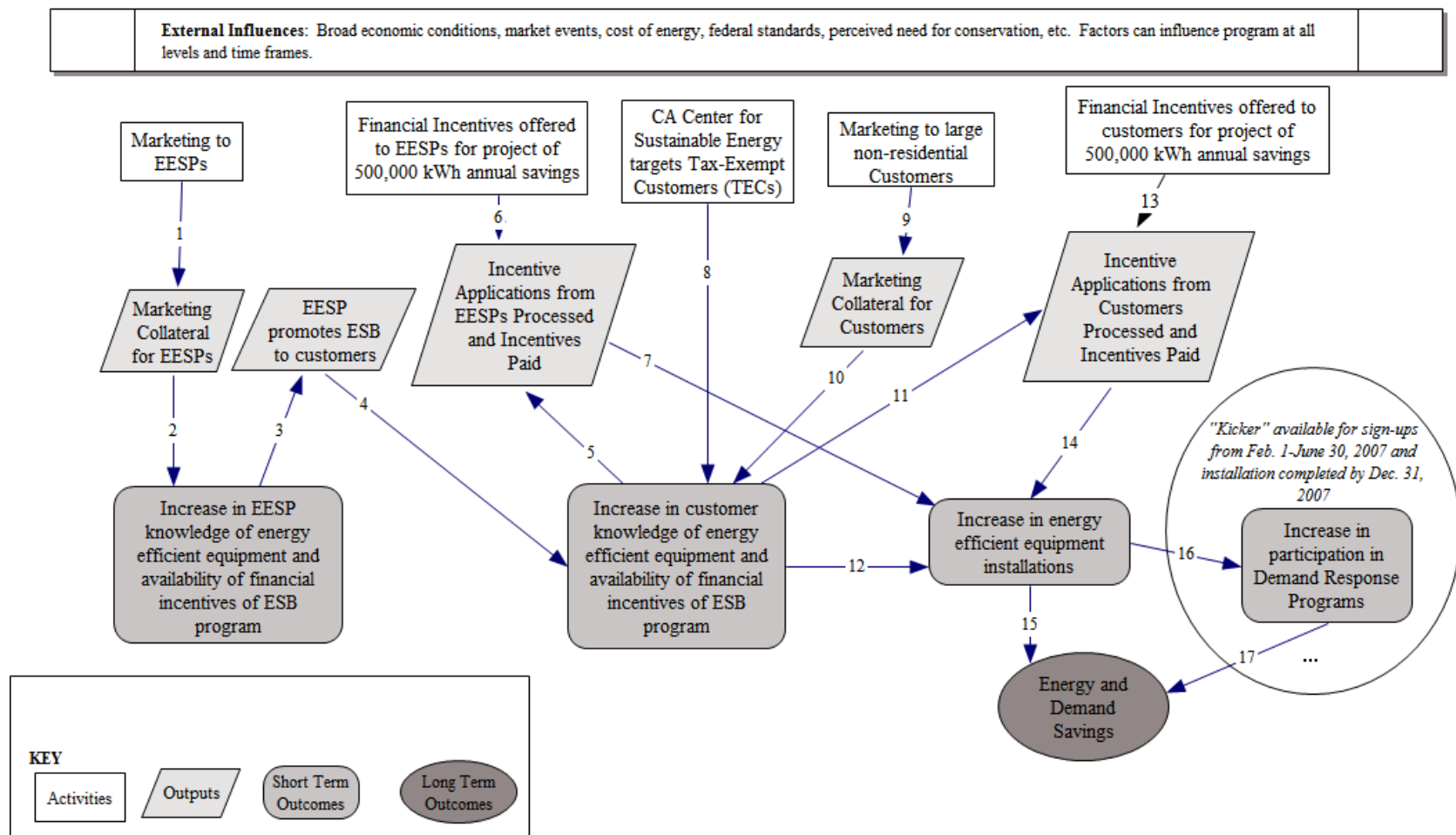
Table 2-1
Program Theory Description for SDGE3010 – Energy Savings Bid Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Energy-efficiency service providers (EESPs) are unfamiliar with energy efficient equipment and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of EESPs reviewing the marketing collateral.
2	Program marketed to Energy Efficiency Service Providers (EESPs) through direct mailings, email, seminars, internet web page, direct contact with Account Executives, and meetings with contractors and trade associations.	Increase in EESP knowledge of energy efficient equipment and availability of financial incentives of ESB program	Self-report of EESPs who do not participate in the program. Number of EESP program participants.
3	EESPs recognize a business opportunity to step in and act as project sponsor for the customer in participating in the program. The customers may be hesitant to participate on their own, or the projects may be too small to qualify on their own.	Number of EESPs promoting the program	Self-report of EESPs who do not participate in the program. Surveys with EESPs on how they have used the information.
4	EESPs market the program to utility customers	Customers are aware of program	Customer participant survey
5	Increased awareness, knowledge and attitudes of energy efficiency on the part of both EESP and customer lead customer to enter into agreement with EESP that EESP will apply for incentives for customer's project (act as project sponsor). Agreement may be initiated either by customer seeking out EESP or by EESP seeking projects. The EESP can aggregate smaller projects from several customers and apply to the program as a single combined project.	Number of EESPs who apply for incentives Satisfaction with application process	Program tracking database EESP participant survey Customer participant survey

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
6	Program provides financial incentives, up to 100% of project cost for energy-efficiency projects. Eligibility requirement for project of energy savings of at least 500,000 kWh annually. Projects can be unique and innovative, with the incentive amount proposed by the project sponsor. Incentive amount determined by project cost, including technical assistance services provided and project benefits defined as kWh and kW savings.	Number of EESPs who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database EESP participant survey
7	Incentive motivates EESPs to promote and install energy efficiency measures	Measures installed	Program tracking database
8	CA Center for Sustainable Energy provides technical assistance to tax-exempt customers (TECs) in the form of energy audit consultation, project design assistance, RFP development, funding identification, contractor coordination, facility staff education, and incentive proposal.	Customers are aware of program Number of customers who apply for incentives	Customer participant survey Program tracking database
9	Large non-residential customers, including public agencies, are unfamiliar with energy efficient equipment and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of customers reviewing the marketing collateral.
10	Program information delivered to customers through direct mailings, email, seminars, internet web page, and direct contact with Account Executives.	Increase in customer knowledge of energy efficient equipment and availability of financial incentives of ESB program	Self-report of customers who do not participate in the program. Customer participant survey Number of customer participants.
11	Increased awareness, knowledge and attitudes of energy efficiency lead customers to apply for incentives.	Number of customers who apply for incentives Amount of incentives Satisfaction with application process	Program tracking database Customer participant survey

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
12	Increased awareness, knowledge and attitudes of energy efficiency lead customers to adopt energy efficiency measures.	Number of customers who adopt energy efficiency measures Measures installed	Program tracking database
13	Program provides financial incentives, up to 100% of project cost for energy-efficiency projects. Eligibility requirement for project of energy savings of at least 500,000 kWh annually. Projects can be unique and innovative, with the incentive amount proposed by the project sponsor. Incentive amount determined by project cost, including technical assistance services provided and project benefits defined as kWh and kW savings.	Number of customers who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database Customer participant survey EESP participant survey
14	Incentive motivates customers, including public agencies, to install energy efficiency measures	Measures installed	Program tracking database
15	The installation of improved high efficiency equipment results in energy and demand savings.	M&V identifies equipment installed and documents energy and demand impacts	Reports of gross energy savings and demand reduction
16	Additional incentive motivates customers to participate in an Energy Demand Response program. *This "kicker" available for sign-ups Feb. 1-June 30, 2007 and installation completed by December 31, 2007.*	Number of customers who enroll in Demand Response program	Program tracking database Customer participant survey
17	Customer participation in a Demand Response Program results in energy and demand savings.	Documented energy and demand impacts	Reports of gross energy savings and demand reduction

2.2 2006-2007 Program Activities

2.2.1 Savings Summary

As of December 2007,[4] the ESB program has achieved:

Table 2-2
SDGE3010-Energy Savings Bid Savings and Goals

	Demand Reduction (Summer Peak kW)	Energy Savings (Net annual kWh)	Gas Savings (Net annual therms)
Installed savings (Inception to 12/2007)	9,746	58,990,432	1,118,850
Total commitments (Inception to 12/2007)	30,561	183,596,270	1,363,332
Program projected (Compliance Filing)	34,902	169,459,500	594,353
Percent of Program Projected (Installed + Committed)	115%	143%	418%

2.2.2 Budget Summary

As of December 2007, the ESB program has spent:

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[4] From SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008.

Table 2-3
SDGE3010-Energy Savings Bid Program Expenditures and Budget

	Budget
Program expenditures (Inception to 12/2007)	$12,107,282
Total commitments (Inception to 12/2007)	$30,559,129
Adopted program budget (Compliance Filing)	$50,943,289
Percent of Program Projected (Installed + Committed)	84%

2.2.3 Participation Summary

As of September 2007, the 06-08 ESB tracking database (Track-it-Fast) showed

- 60 contracts
- 38 project sponsors
    - 17 vendor project sponsors
    - 21 self-sponsoring customers
- Approximately 380 customers[5] participating through a project sponsor
- 516 project sites
- 1,089 measures

Vendor-sponsored projects tend to be larger than self-sponsored contracts, averaging over $600,000 in contracted incentives compared to under $170,000 for self-sponsored projects. Figure 2-2 shows the breakdown of both contracts and contracted incentive dollars between vendor-sponsored projects, self-sponsored projects and projects sponsored by CCSE.

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[5] Customers were identified by both site name and site contact. For example, if a group of schools within a single school district participated in a project and had a common site contact, the school district was counted as the customer rather than the individual schools. Some sites listed a vendor contact as the "site contact" in the program database. In the absence of additional information, these were assumed to be individual customers.

Figure 2-2
ESB Program Activity by Sponsor Type

Percent of contracts

Percent of contracted incentives
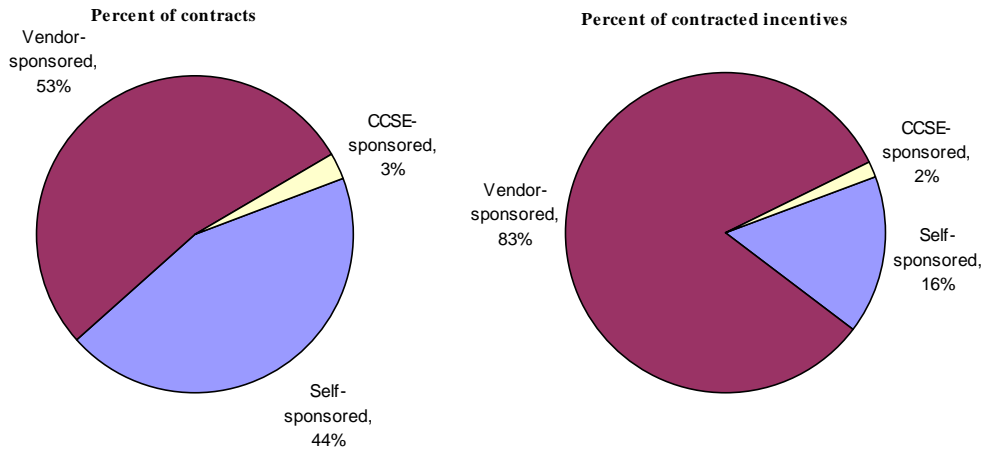
2.2.3.1 Aggregation

The ESB program allows project sponsors to aggregate customers and sites into a larger project even when the component sites do not meet the savings criteria individually. Figure 2-3 shows how the projects break down by degree of aggregation. Sixty percent of contracts include only one site, and only five percent include more than 50 projects. Fifty-nine percent of participating vendors aggregated at least some of their projects, while only 16 percent of self-sponsors did so.

Figure 2-3
Distribution of Projects by Degree of Aggregation (# of sites per project)
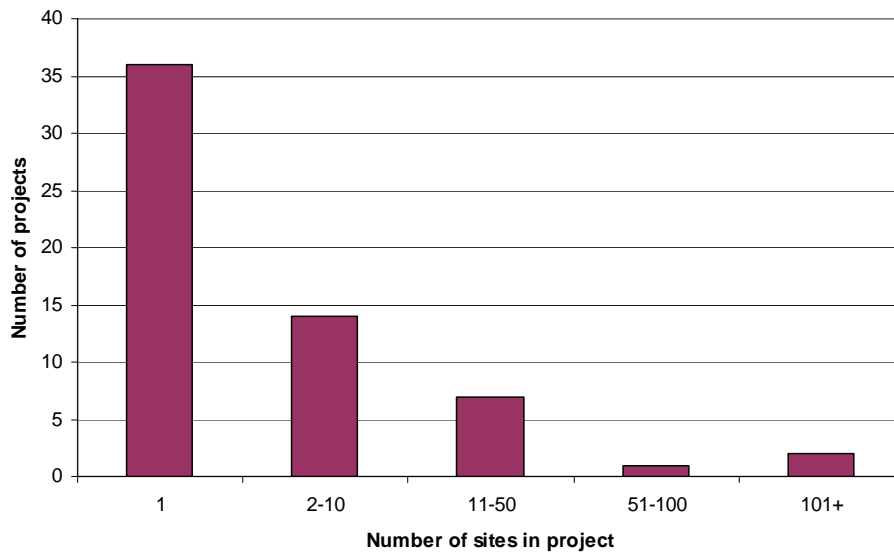
2.2.3.2   Vendor Tenure and Retention

Seven of the vendors that have sponsored projects in 06-08 have done more than one project with ESB. Of those seven, six first entered the program during the 04-05 program period, representing just under half of the 04-05 vendors. More than half of the vendors that participated in 04-05 have not (yet) participated in 06-08. Figure 2-4 shows the number of participating vendors and the number of contracts in the 04-05 and 06-08 program periods, broken out by vendor's participation period (04-05 only, 6-08 only, or both). Vendors that started out in 04-05 as particularly active participants (multiple contracts) typically have stayed with the program and have multiple contracts in the 06-08 period as well. The vendors who dropped out after 04-05 typically did so after only one project. So far, only two of the new 06-08 vendors have emerged as repeat participants, one through a second contract and one by repeatedly adding sites onto their existing contract.

Figure 2-4
Vendor participation in 04-05 and 06-08 ESB Program:
Number of participants and number of contracts by vendor participation period
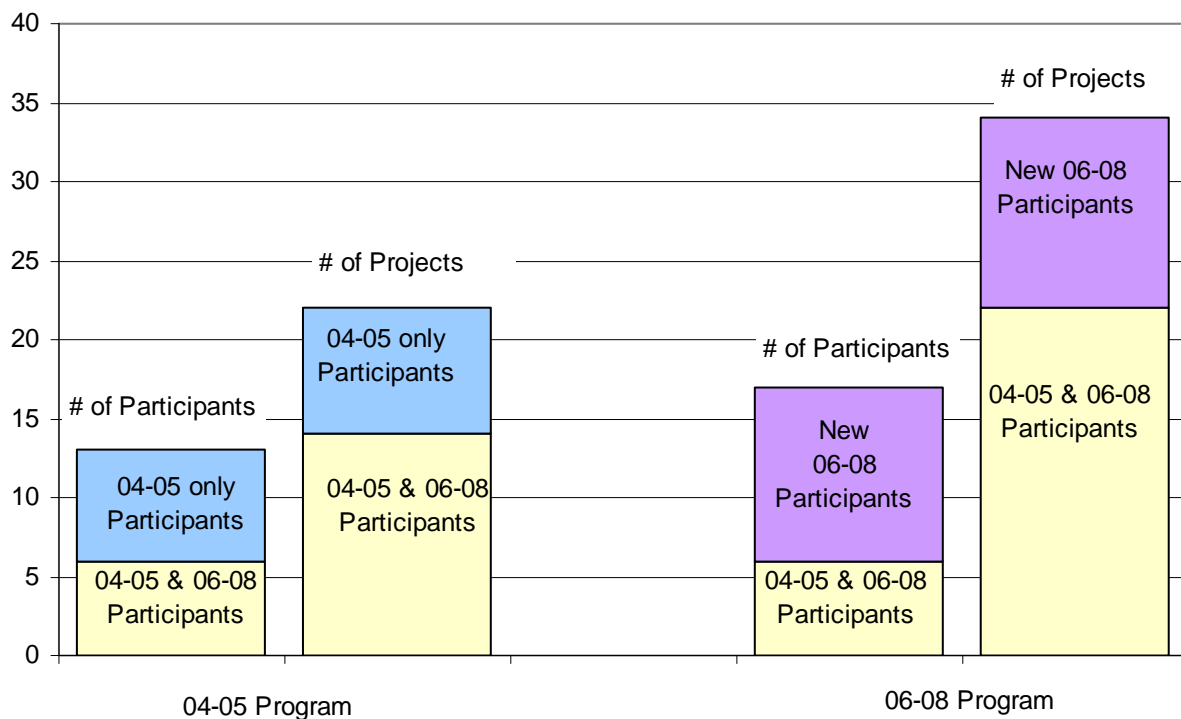
2.2.3.3   Program Activities by Measure Type

The program database categorizes measures as gas, lighting, HVAC, refrigeration and other. Other includes a number of mischaracterized measures (refrigeration, ventilation, etc.), but also Vending Misers, carbon monoxide sensors, and lab controls. Figure 2-5 shows the breakdown of contracted savings (as of September 2007) by measure type.

Figure 2-5
Distribution of Incentives by Measure Type (% of contracted incentive dollars)
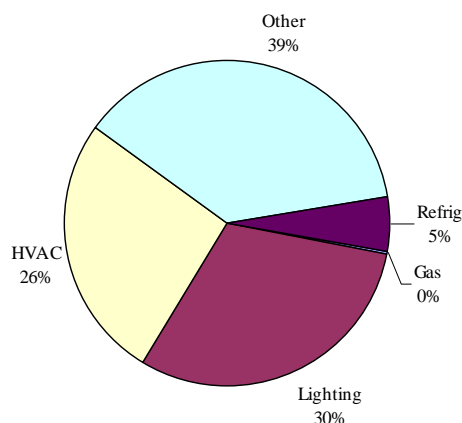
2.2.4 Summary of Program Status

(Implementation/marketing activities occurred thus far)

Energy Savings Bid is on track to meet or exceed to meet its goals for 06-08. The gas target had already been exceeded by a factor of two only a third of the way into the program. For electricity savings, current commitments put the program on track to exceed its targets. The committed savings may be reduced by project delays or cancellations, or be reduced based on the results of M&V, but even with pessimistic expectations in that regard the program should meet its goals.

Participating vendors have been active in initiating new projects or expanding old ones. The project manager continues to recruit new vendors, including some for new types of measures (such as server virtualization). Customers have been approached via emails drafted by the project manager and sent by SDG&E's account executives.

2.3 Findings, Conclusions and Recommendations

Specific to the ESB program, in-depth interviews were completed with the following stakeholders:

- Utility administrator and program staff (2 completed interviews)

- 2006-2008 customers that participated through a vendor or other service provider (16 completed interviews, out of approximately 380 unique participants[6])

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[6] Unique participants are defined as unique contact names, as listed in the program tracking database. In some cases, the same company had multiple applications across separate sites with different contact persons listed.

- 2006-2008 customers that acted as their own project sponsors (8 completed out of approximately 19 unique participants)

- Vendor or other service providers that acted as ESB project sponsors (12.5[7] completed interviews, out of 17 vendor sponsors listed in program tracking database)

- M&V contractors (2 completed interviews)

Stakeholders were surveyed for their satisfaction with program elements, effectiveness of SPC program processes, and perceptions of the energy efficiency market opportunities. In addition to interviews with stakeholders, the participant data in the program tracking database was analyzed to better understand the range of participant facility types, use of project sponsors and types of measures installed.

2.3.1 Experience with Project Sponsor Involvement

Project sponsors are an important component of any program targeting non-residential large comprehensive energy efficiency projects, due to the complexity of projects and because vendors and contractors already market heavily to this segment. Out of the 60 contracts listed in the program database for 06-08 (as of September 2007), 44 percent were self-sponsored, but they represented only 16 percent of incentive dollars.

2.3.1.1   Satisfaction with Project Sponsors

Out of the sixteen survey respondents who said they used a project sponsor on the project for which they received an ESB incentive payment, nine (or 56%) rated their satisfaction with their project sponsor as a 5 out of 5, with an average rating of 4.6. The lowest rating was a 3.5. Figure 2-6 summarizes the results graphically.

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[7] One interview was interrupted and the interviewer was unable to reach the respondent to complete the interviews. His responses are included for the questions to which he responded.

Figure 2-6
Customer Satisfaction with Project Sponsor
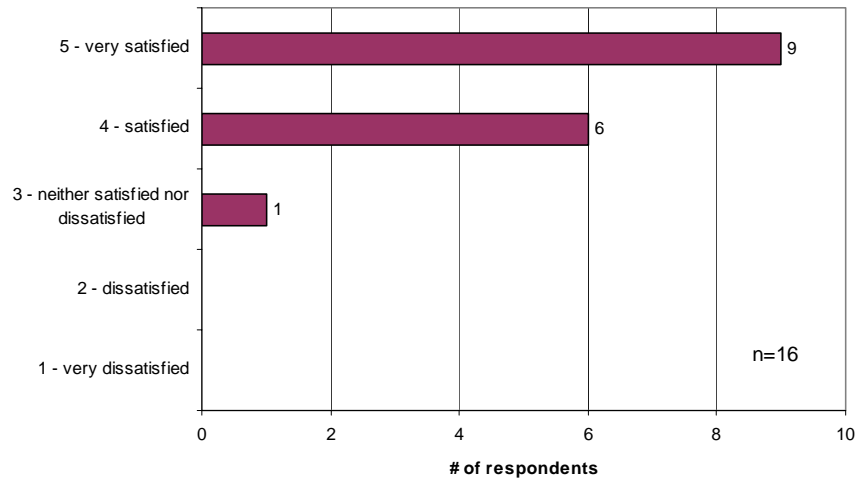
2.3.1.2   Overall Program Satisfaction

Customers participating through a service provider were asked to rate how easy it was to participate in the ESB program. On a 5 point scale (with 5 being very easy and 1 being very difficult), over 60% gave the program a 5, and over 90% rated the program a 4 or 5.

Figure 2-7
Ease of Participation for Customers Participating through a Project Sponsor
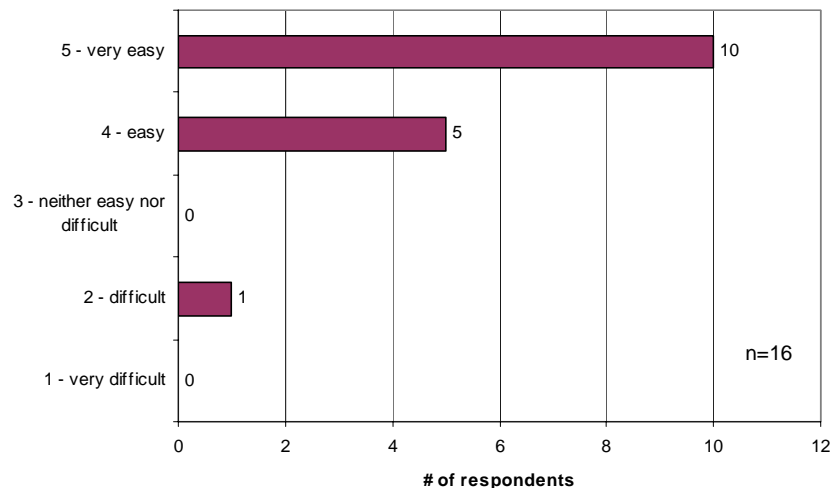
Project sponsors (both self-sponsors and vendors) were asked to describe their experience with the program. Their responses are summarized in Figure 2-8. Responses that were categorized as "very good"

("excellent," "extremely positive," "fantastic") were far more common among vendors than among self-sponsors. This may be attributable to their higher level of experience working with incentive programs: A number of vendors indicated that they essentially did not do projects without the assistance of incentives, while others did only a few. For these vendors, dealing with program paperwork and requirements is routine. They are also more likely to evaluate the program in comparison to other incentive programs.

"So far, so good" was a response given by project sponsors in the earliest stages of participation, and was therefore separated from the other "Good" responses.

Figure 2-8
Project Sponsors' Experience with Program
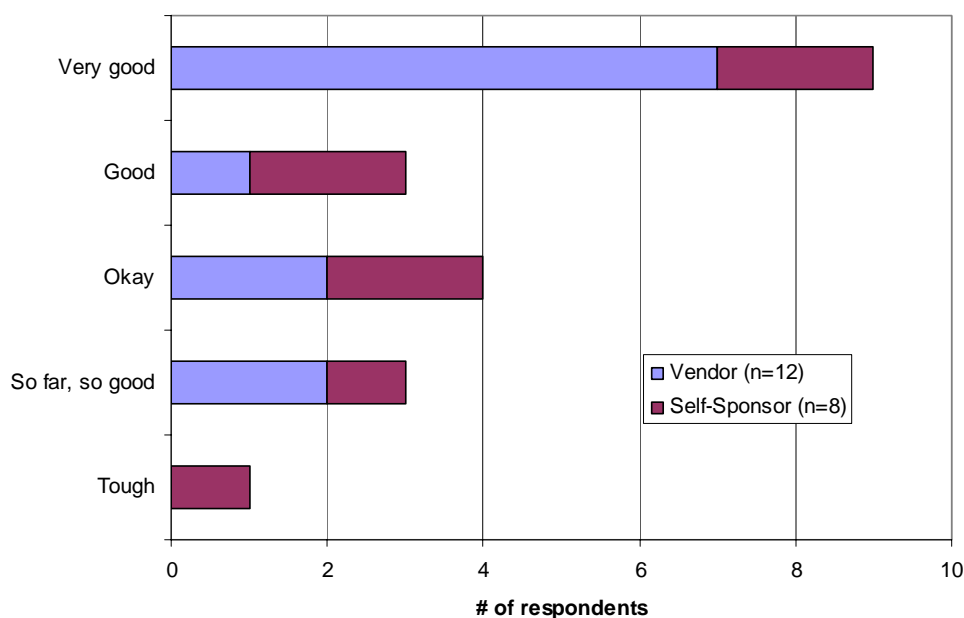
2.3.1.3   Satisfaction with Program Elements

Customers were asked what parts of the ESB program their company was most pleased with and the answers were grouped into general categories. Responses for self-sponsoring customers were analyzed separately from those participating through a service provider. By far the most responses for both groups were that participants were pleased to have received the financial support for energy efficiency initiatives. Among customers participating through a project sponsor, energy or dollar savings were also common responses, as were responses indicating happiness with the process or program overall. Two respondents were happy that the process "didn't require lots of involvement" and that "the contractor did everything," which we have summarized as "the process is easy." Two respondents that received new lighting mentioned lighting characteristics, such as brightness and color.

Notably, none of the self-sponsoring customers mentioned that the process was easy or that they were happy with everything. While the sample size for self-sponsors is smaller, their qualitative responses

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indicate that many found the process of managing the sponsor duties—the application, paperwork, and understanding their responsibilities under the program—to be difficult and frustrating.

The respondent, representing a local government, who indicated that he was happy with nothing about the program, was an interesting case. His experience as self-sponsor was very negative (he described the experience as "tough," alone among all the sponsors). Based on the program tracking database, the interviewer knew that his organization had participated twice, once as self-sponsor and once though the California Center for Sustainable Energy (CCSE). When asked to compare the two experiences, the respondent was unaware that the CCSE-sponsored project was part of ESB. He was aware of it only as a CCSE project, and was extremely positive about his second experience.

Figure 2-9 and Figure 2-10 provide detailed breakdowns of the responses for customers participating through a project sponsor and self-sponsors, respectively.

Figure 2-9
Program Elements "Most Pleased With"—Customers Participating Through a Project Sponsor
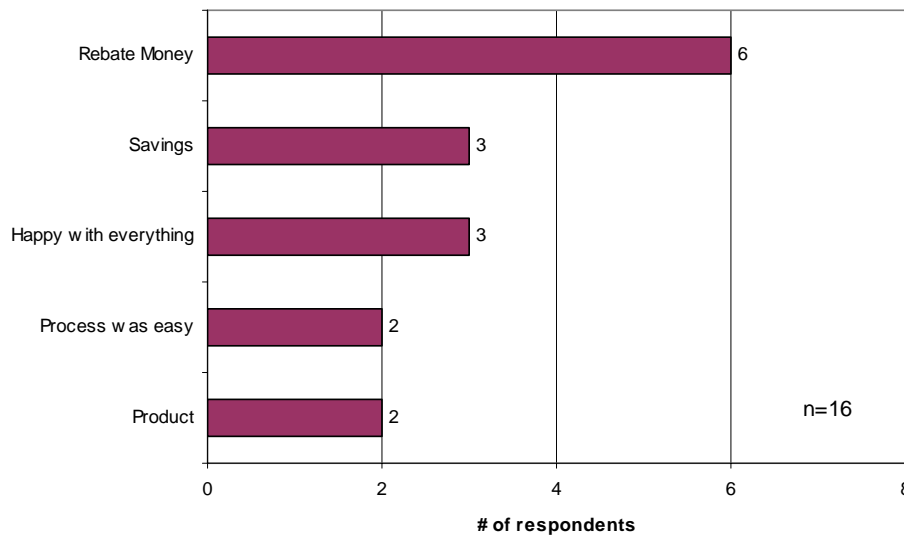
Figure 2-10
Program Elements "Most Pleased With"—Customer Self-Sponsors
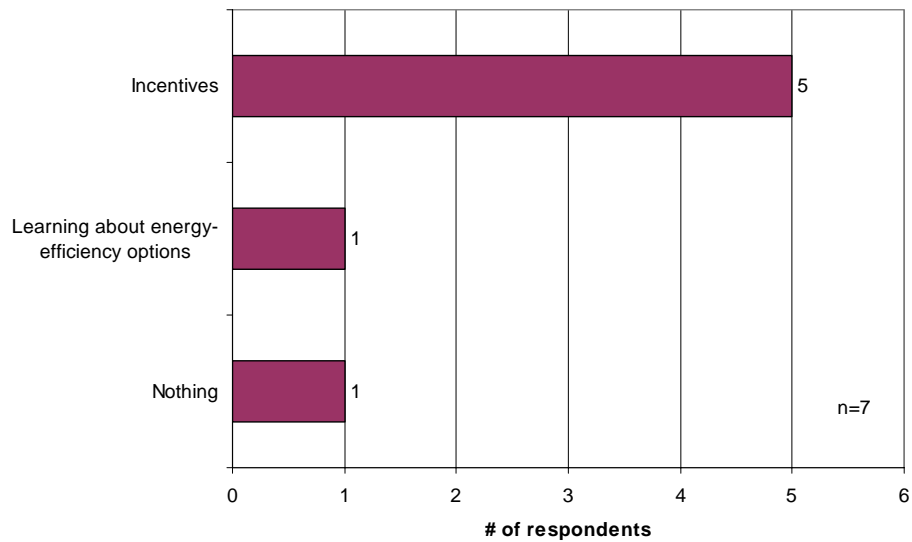
Vendors were similarly asked what program elements they were most pleased with. The most common responses were the easy paperwork and procedures, ESB program staff, and the flexibility of the program (in types of measures and the ability to aggregate sites). Two vendors mentioned that they liked how easy the program was for their clients. Results are shown graphically in Figure 2-11.

Figure 2-11
Program Elements "Most Pleased With"—Vendors
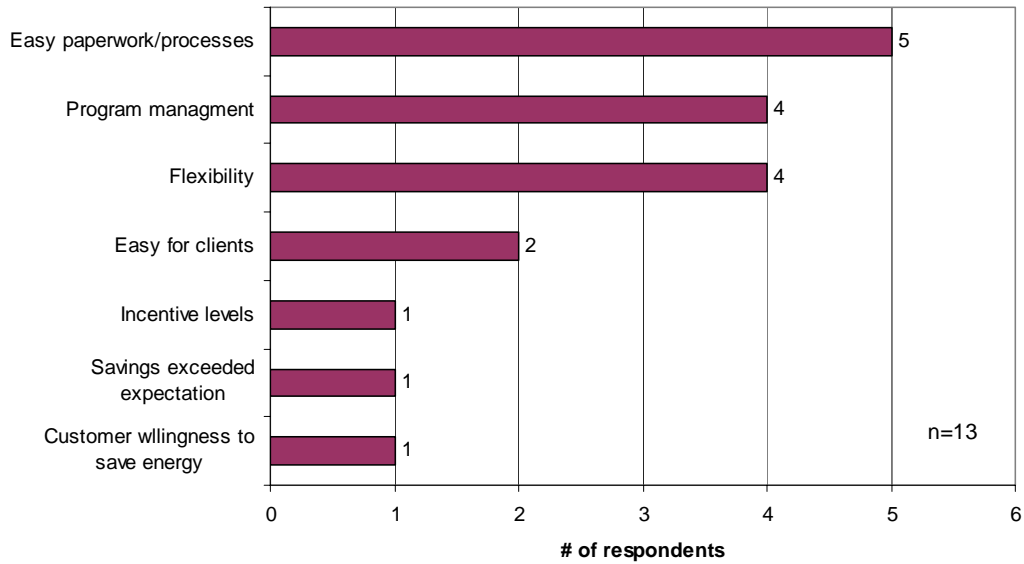
Note: Multiple responses accepted

Table 2-4
What parts of the ESB program have vendors been most pleased with?

General category	Sample of participant responses
Easy paperwork/processes	▪ Inspection process was easy. ▪ Paperwork is streamlined. ▪ Contrary to expectations, paperwork was manageable. Paperwork has been relatively easy. ▪ ESB paperwork is less compared to SPC. ▪ Good response on pre- and post- inspections.
Program Management	▪ Working with Jerry and Kathleen. Very professional, service oriented. ▪ Management has been great—qualified individuals who understand what's being installed. ▪ Good relationship with Jerry ▪ Jerry Humphrey very active. He makes the program run well. Prompt with communication.
Flexibility	▪ Ability to write own programs. Not prescriptive measure. Being able to put in any product if energy savings available. ▪ Ability to do new measures and projects ▪ SDG&E working with them (to qualify comprehensive projects and non-standard measures). Nature of projects. ▪ Program designed for vendor to aggregate projects
Easy for Clients	▪ Clients say it's very easy. ▪ Don't need to get a bunch of information from client.

2.3.1.4   Program Challenges

Participants and vendors were also asked what their company found most challenging about participating in the ESB program. Among customers participating through a project sponsor, the most common response was none or nothing. The next two most common groups of responses were challenges that would have occurred even without the involvement of the program: scheduling the actual work (e.g. working around business hours), and responses that were characterized as in-house issues (internal budgeting, etc.). Figure 2-12 summarizes the results graphically, while

Table 2-5 provides detail on the comments included in some of the groups.

Uncertainty of the size of the incentive was mentioned only once by a non-sponsor customer, and refers to the fact that the final incentive payment depends on the results of the M&V. Most vendors indicated that they typically bore the risk if verified savings were less than expected, but in some cases, the contract is written so that the customer bears the risk. Uncertainty about the size of the incentive came up more frequently for project sponsors than for customers participating through a vendor.

Figure 2-12
Biggest challenges—customers participating through a project sponsor
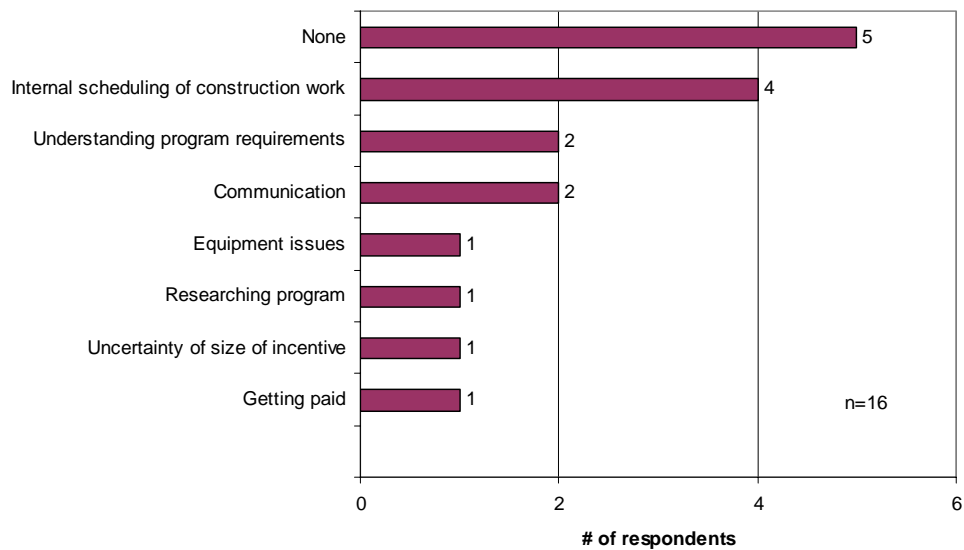
Note: Multiple responses accepted

Table 2-5
Most challenging part of program for customers participating through a project sponsor

General category	Sample of participant responses
Understanding program requirements	▪ Not getting increase in incentive when project was delayed. Incentive was higher at the time of installation than when contract was signed. ▪ Changing of rules. It was a moving target. [Other comments indicated that the vendor may have changed which incentive program it was using, rather than the problem lying with changes to the ESB program]
Communication	▪ Getting follow-up questions answered [not clear if this was questions to vendor or to SDG&E] ▪ This survey [the process evaluation interview]
Equipment issues	▪ Getting new equipment to work with old fan system.
Researching program	▪ Researching the program, finding vendors to work with. It was a learning process.

Project sponsors, both vendors and self-sponsors were asked both about what part of the program was the most challenging, as well as to describe any downsides to the program. There was some overlap between the responses, but while almost all respondents reported challenges, the most common response to the question about downsides to the program was that there were none. Because of the overlap in the types of responses, the responses to the two questions are presented on the same graph, but as separate bars so that the distribution of results can be compared. Results for self-sponsors are presented in Figure 2-13 and results for vendors are presented in Figure 2-14. M&V was one of the most common responses for self-sponsors, but was mentioned only twice (in response to these two questions) by vendors, once in the context of timing, which was grouped with other factors related to delay in payment. Paperwork was a frequently mentioned challenge in both groups, and getting paid (or getting paid in a timely fashion) was also mentioned by both. Vendors had a much wider range of responses than self-sponsors. Table 2-6 shows specific responses included in each group.

There is a natural tension between the vendors' needs and the program's needs. The vendors want incentive payment to come as soon as possible; smaller firms in particular have trouble carrying costs over long periods. The program can justify the high incentive levels it offers only through comprehensive measurement and verification. The vendors want to be paid for each installation as it is finished; the program wants to control its M&V and processing costs by lumping sites and measures together into payment groups. The vendor cannot be paid for anything in a group until all the sites and measures in that group have been measured and verified.

Figure 2-13
Biggest Challenges and Program Downsides—Self-Sponsors
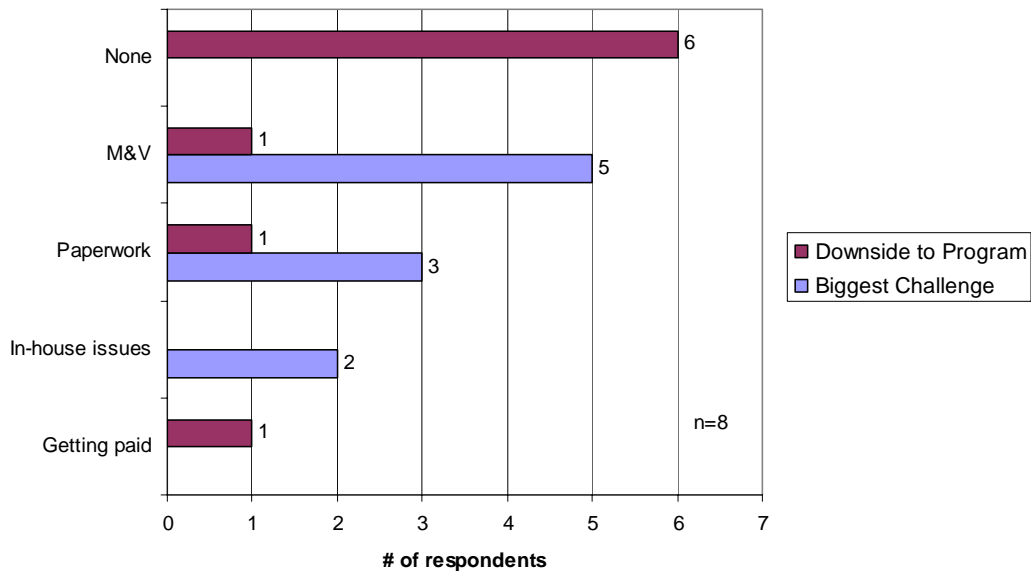
Note: Multiple responses accepted

Figure 2-14
Biggest Challenges and Program Downsides--Vendors
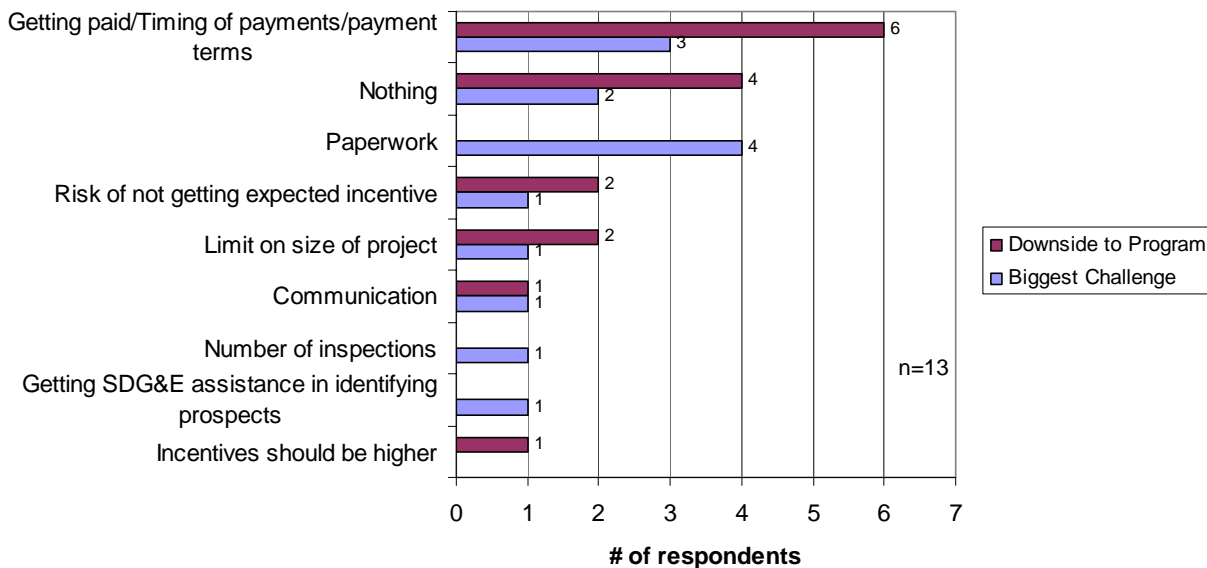
Note: Multiple responses accepted

Table 2-6
Most Challenging Part of Program and Program Downsides for Project Sponsors

General category	Sample of participant responses
Getting paid/timing of payments/payment terms	▪ Took a year to get full payment—too long for a small company. Wouldn't risk again. Need deep pockets. ▪ You have to spread out projects to not create cash flow problems. You're asked to lump projects together, so you need to complete additional projects before invoicing. We would rather invoice after each project completed. ▪ Getting KEMA to deliver results of M&V to SDG&E. They have lots to do and not enough staff. Then SDG&E processing—delay on post inspections. There are carrying costs, even before the 1st 60% payment. It's months before we get the final 40% ▪ Payments are sometimes an issue. Can't get incentive until everything done. You can't get a partial payment. Would like more flexibility on payments. ▪ Getting paid. Haven't gotten to that point on some projects.
Paperwork	▪ The first paperwork submission, because it was unfamiliar. ▪ Preparation of final energy savings report, the M&V portion. The process [M&V] provides value. [This comment from vendor that does its own M&V.] ▪ Providing documentation in format requested by program. Invoice must be in a different format.
Limit on size of project	▪ Restriction of 500 kW or more. Get rid of SPC; go with Bid unrestricted. ▪ Having to bundle a lot of customers.
Communication	▪ Miscommunication about amount of incentives (from CCSE). Incentive lower than expected even though savings higher than expected. ▪ There was internal conflict. Told one thing, something else happened. Spending unnecessarily on pre/post and M&V.
Incentive should be higher	▪ Because labs consume 5-10 times more energy than the same size office, you reap a lot of savings. But you only get 10 cents per kWh, the same as an office building. Would like higher incentive for most savings—bigger bang for the buck.

The program manager for the tax-exempt company component of the program (at the California Center for Sustainable Energy) identified the uncertainty in the incentive amount as a challenge. He mentioned both the M&V uncertainty, but also the uncertainty of the "custom" incentives. Because the incentives are set only after SDG&E can review the project description, CCSE has to win over customers without being able to offer concrete information about the amount of incentives that will be available.

2.3.1.5 Measurement and Verification

KEMA Services, Inc. (KSI) is the primary measurement and verification provider for the project. Projects through the TEC component of the program (that is, through CCSE) use a different provider, Alternative Energy Systems Technology, Inc. At least one vendor does its own M&V, subject to approval of the M&V plan and results.

The evaluation team interviewed two of the KSI staff, one who focuses on lighting projects and carbon monoxide sensors and one who focuses primarily on HVAC. Each was asked about the length of the M&V process. They identified the following issues:

- Verification of savings for weather-sensitive measures requires extended monitoring, at least 2-3 months.

- KSI was not routinely notified when a project was completed, delaying the start of the M&V process.

- Obtaining site access can be difficult and time consuming, both for installing and for retrieving monitoring equipment. End customers working through a vendor often do not have a financial incentive to expedite M&V (in cases where the vendor collects the incentive, and bears the M&V risk).

- Project sponsors may provide incomplete or inconsistent information about measures and usage, requiring follow-up and possible additional verification.

The procedure and responsibilities for requesting M&V are clearly laid out in the flow process for ESB projects. SDG&E first notifies the M&V contractor of the need for M&V prior to installation. At that time, any necessary pre-monitoring can be conducted and the contractor can review application forms and supporting calculations. After installation, the project sponsor notifies SDG&E, which conducts post-inspections and pay the first 60 percent of the incentive. SDG&E notifies the M&V contractor to complete M&V. Once M&V is complete, the final incentive is calculated based on verified savings, and the remaining incentive is paid.

These steps are straightforward for a single-site project, provided a project sponsor understands and remembers its responsibilities. For multi-site project, however, sites are grouped into payment groups. All sites in a grouping must be completed for incentives to be paid or for M&V to be initiated. Because SDG&E often receives completion notices on an individual site basis, the completion of a payment group may not be noticed and trigger the necessary next steps. This problem has been identified by program management, which is arranging for KSI to have access to the project tracking system. This will allow KSI to track payment groups directly.

2.3.1.6   ESB vs. SPC

Many ESB participants have participated or currently participate in the Standard Performance Contract Program (SPC), in either the SDG&E service territory or elsewhere. While comparisons between the two programs were not directly solicited, SPC was specifically mentioned by a number of respondents. In general, ESB participants preferred the higher incentive levels. Some also commented that the paperwork was less for ESB, in particular the paperwork burden on the end customer. Most vendors had switched over entirely to ESB, using SPC only where ESB is not available.

2.3.2 Recommendations

The Energy Savings Bid Program is on track to meet or exceed its goals for 06-08. Because ESB represents 20 percent of the total budget for SDG&E's efficiency program (by far the largest budget of any program), its success is particularly important to the success of the total portfolio of programs.

ESB has been very successful at addressing both new and innovative technologies (such as the CO sensors) and comprehensive custom projects. For example, the program provided incentives to an industrial customer for industrial electric furnaces that were designed by the customer. This type of custom incentive is a large part of what the program is designed to do, and from customer comments it seems to be very effective in that area. At the same time, the program has attracted vendors that deal in established technologies, such as strip curtains and T-8 lighting fixtures. These vendors often aggregate a number of smaller projects into a single ESB projects. In this way the program assists smaller customers, like liquor stores and dentists' offices.

Satisfaction with the program is high from both vendors and customers. Customers were most likely to report that they were pleased with the incentives, while vendors cited the ease of dealing with program paperwork and processes, the management of the program, and the program's flexibility. Nevertheless, participants did experience challenges with the program. Below are a number of recommendations for addressing some of those challenges.

2.3.2.1 Provide Additional Support to Self-Sponsoring Customers

Self-sponsors expressed a lower level of satisfaction with the program than customers participating through a project sponsor or vendor sponsors. Their level of engineering expertise and ability to navigate program requirements was typically lower than for participating vendors. Potential self-sponsors should be carefully screened and if possible diverted into participating through a vendor. Organizations that do self sponsor need more monitoring and assistance from SDG&E. SDG&E should be more pro-active in tracking the progress of the project installation so that post-inspections and M&V can be begun in a timely fashion, since self-sponsors are less likely to understand that they need to request these procedures before receiving payment.

2.3.2.2 Speed up the Payment Process

The program pays 60 percent of the contracted incentive upon post-inspection and up to 40 percent upon measurement and verification (the actual amount of the final payment is contingent on M&V; the actual payment may be less than the full 40 percent of contracted incentives). The most common group of complaints by vendors had to do with the amount of time it takes for them to receive the incentives, primarily with respect to the final 40 percent payment.

M&V is time consuming, and the time period for actual measurements cannot be reduced without adversely affecting the accuracy of the results. It may be possible, however, to reduce the total time for the process by reducing the time from project completion to the commencement of measurement, and from the completion of measurement to the issuance of the incentive check.

- Track project status and be pro-active in contacting project sponsors as projects approach critical points. This is particularly important for self-sponsors and first-time participants.

- As has been proposed, give M&V contractors access to the project tracking system, so that they can be more pro-active in arranging M&V as well.

- Provide information to project sponsors, in the form of case studies, about how their actions can speed up or delay M&V.

2.3.2.3　Program Tracking

While the program database is generally quite complete, the categorization of measure types contains a number of errors. A small number of measures have descriptions but no measure code at all. The "gas" measure code is almost completely unused, and the boundary between the "gas" an the "HVAC" measure code is unclear. The "other" category includes a large number of seemingly miscategorized measures, such as ventilation measures that should be included in HVAC. Of particular significance in terms of savings are the CO sensors being installed in parking garages as a ventilation control measure.

Categories need to be well defined and the definitions must be conveyed to sponsors when they provide measure information. In the quarterly report, ESB savings are reported as HVAC (electric), HVAC (gas), other (electric), other (gas), lighting, etc. Extending this convention to the tracking system would clarify the boundaries between the categories, and allow the "Gas" category to be dropped as a separate category. While this is not essential to program function, accurate data will allow for a more accurate characterization of the types of activities occurring under the program and facilitate reporting.

One piece of information not included in the primary tracking database is the name of the firm performing M&V. At least one vendor performed its own M&V, and two contracting firms provided M&V services for the program.

2.3.2.4　Case Studies

A set of case studies could be used by the program for several purposes. First, examples of successful projects could be used as marketing material for the program. Second, these could be used to convey "lessons learned" from past participants to new participants and prevent the types and mistakes and frustrations that might keep a new participant from becoming a repeat participant. Case studies would provide an opportunity to provide real-world warnings about potential payment issues (the most significant program downside for vendors) and offer ways to mitigate or manage those issues. Third, this type of information might help in the process of screening large customers for self-sponsorship: A large customer, well informed about the difficulties faced by past self-sponsors, can make a more informed decision on whether to self-sponsor or participate through a vendor.

2.4　Best Practices Review by Program

2.4.1　Program Theory and Design

- *Is the program design effective?* The ESB program represents the largest share of SDG&E's non-residential program savings. Although the impact evaluation for the 04-05 program is not yet complete, the measurement and verification integral to the program provide a reliable estimate of gross program savings.

- *Is the market well understood?* The ESB program has focused its marketing efforts both to large customers and to recruiting vendors to participate in (and market) the program. Not all large have the experience with energy-efficiency programs and their requirements to make direct participation (rather than participating through a vendor) a smooth process. Large customers also vary significantly in the level of facilities and engineering expertise available in-house, for example between and industrial firm specializing in forged and machined metal, a large property

management firm and a school district. The program would benefit from better screening of large customers for appropriateness for self-sponsorship, with some being directed to participating vendors instead.

2.4.2 Program Management

2.4.2.1 Project Management

- *Are responsibilities defined and understood?* The program has two staff people, with database management and M&V provided by subcontractors. On the program side, responsibilities are well defined and understood.

  On the individual project side, there have been significant misunderstandings of the responsibilities that fall on the project sponsor. While these responsibilities are clearly laid out in the contract, by the time a project is completed, some project sponsors have lost sight of their responsibility to request inspection and M&V, and to provide necessary documentation. These participants want the program manager to be more "pro-active" in telling them what to do. This problem is more common among self-sponsored projects, and less so among vendors, repeat participants, and sponsors with experience with other SDG&E programs.

- *Is there adequate staffing?* Until recently, the program had only two staff people. The program has now hired a temporary employee for administrative support, with the expectation that that position will be filled with a permanent employee. The additional administrative support person was necessary to free up the program assistant to handle reporting and the program manager to spend more time marketing.

2.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* The program database is mostly comprehensive. It is easy to navigate and extract data. One piece of information missing from the database that would have facilitated this evaluation was the name of the M&V provider (the program has a primary M&V contractor; the California Center for Sustainable Energy uses a separate subcontractor for the tax-exempt company component of the program; and some project sponsors do their own M&V).

- *Are routine functions automated?* While templates are used to create reports, the process is not automated.

2.4.2.3 Quality Control and Verification

- *Does the program manger have a strong relationship with vendors involved in the project?* Jerry Humphrey has a strong positive relationship with participating vendors. He was repeatedly described as responsive, helpful, knowledgeable, and prompt. Vendors who experienced conflicts with him nonetheless described him as by the book and fair.

- *Does the program verify the accuracy of application data, invoices and incentives to ensure the reporting system is recording actual installations by target market?* Energy Savings Bid requires pre- and post-post inspections *and* measurement and verification on all projects. On many projects this includes pre- and post-monitoring, sometimes for a period of months. For projects

involving multiple customers, sites and measures, a sampling approach may be taken, but *all* projects have some level of M&V. As a result, there is little opportunity for fraud or error.

- *Are customers satisfied with the product?* The program participants surveyed who used a project sponsor were generally quite satisfied with their experience working with their project sponsor. Program participants were not queried to their satisfaction with specific products installed.

2.4.3 Program Implementation

2.4.3.1   Participation Process

- *Is participation simple?* Customers participating though a vendor generally reported that the process was very easy. A significant minority of project sponsors (whether vendors or self-sponsors) reported finding the application and project set-up process challenging, with data collection and analysis cited as specific areas of difficulty. Repeat participants, however, reported that the process became easier once they had "climbed the learning curve."

- *Are participation strategies multi-pronged and inclusive?* Because of the way the program allows projects to be aggregated, there is significant diversity among the end customers in terms of size and type of business. ESB reaches both vendors and large customers through workshops, seminars and trade shows, as well as following up with past participants.

- *Does program provide quick, timely feedback to participants?* The measurement and verification process is time consuming, taking up to a year (depending on the type of measure). Because 40% of the incentive payment is withheld until after M&V is completed, this can create a cash-flow problem for some participants, depending on the size of the organization and its financial situation.

- *Is participation part of routine transactions?* SDG&E markets its program through its Account Executives (AEs) as part of their routine interactions with customers. Participating vendors market the program as part of their own sales efforts, often through cold calling or knocking on doors at targeted business types. Interviews with project sponsors and customers indicate that whenever new projects are being considered, incentives from utility programs are routinely researched.

- *Does the program facilitate participation through the use of internet/electronic means?* The program provides program applications, instructions and other program participation information on the SDG&E website. The program accepts and, in fact, prefers that data submissions be done via email (e.g. in an Excel spreadsheet)

- *Does the program offer a single point of contact for their customers?* Program manager Jerry Humphrey is the primary point of contact for participants except those in the tax-exempt company category, who work through CCSE. Some participants reported having direct contact with the M&V contractor during the M&V process.

- *Are incentive levels well understood and appropriate?* In general, incentive levels are well understood. There were a few exceptions. One participant complained that between the time they signed the contract and the time work began, the program had increased the incentive limits for the measures being considered, but SDG&E held them to contracted levels. Another found, after signing the contract with ESB, that incentives for the measure being installed were higher for the Express Efficiency Program than for ESB (this may have been due to a change in the Express

Efficiency incentive levels).

The incentives for ESB are very high compared to other incentive programs. This creates a risk that customers will complete projects under ESB that they would have been willing to do at a lower incentive level (e.g. through another program, such as SPC). ESB's lighting projects, in particular, involve mainstream technologies and could be done under a number of different incentive programs. The question of whether ESB projects could have been completed with lower incentive levels should be addressed under future impact evaluations. SDG&E should also consider how, beyond the stringent M&V requirements, it can direct customers to program with the lowest incentive levels necessary to get the project completed.

2.4.3.2   Marketing and Outreach

In general, it is believed that ESCOs, contractors and other energy service providers engage in extensive marketing of energy efficiency projects to large non-residential customers. Furthermore, large end users are often have facility managers and other staff dedicated to energy management initiatives. Therefore, the marketing efforts for the ESB program have been focused on seminars and trainings, personal networking, and information dissemination through account executives.

- *Use target marketing strategies?* The ESB program does not have specific hard-to-reach goals. ESB directly targets large customers (projects must save 500,000 kWh or 25,000 therms), while participating vendors may target customers of any size. Because projects sponsors can aggregate customers and sites, some projects are made up of many smaller customers.

- *Are products stocked and advertised?* Due to the comprehensive nature of ESB projects and installations and the lack of rebates for specific equipment types, this issue is not applicable to the ESB program.

- *Are trade allies and utility staff trained to enhance marketing?* According to the ESB quarterly narrative reports, the program manager develops material for SDG&E's account executives to send directly to customers. Account executives and trade allies are leveraged to promote the program.

3. SDGE 3011: Emerging Technologies

3.1 Program Overview

3.1.1 Program Summary

The Emerging Technologies program (ETP) is a statewide information-only program whose primary goal is to verify the performance of emerging technologies that can be added to the future portfolios of other utility energy efficiency programs. The ETP program assumes the risk associated with immature technologies by funding long-term demonstrations at customer sites, assessing performance and energy savings, and then determining if the product is ready for marketplace adoption. Therefore, the ETP intends to help accelerate a product's market adoption by reducing the performance uncertainties associated with new products and applications.

ETP first identifies promising emerging technologies through internal resources such as account executives and its R&D staff and through external resources such as the Public Interest Energy Research, the California Energy Commission, and industry actors. Emerging technologies may include hardware, software, design tools, strategies and services. The initial list of technologies is vetted through two screenings: the preliminary screening and the secondary screening. The preliminary screening ensures that a technology can meet ETP criteria, such as providing adequate energy savings and that it can fit into other program portfolios. The more formal second screening is called an Emerging Technology Project Assessment (ETPA), which ranks a technology on market potential of the innovation, market barriers, incremental cost, life expectancy of the technology, the cost of the assessment, and the time required for the assessment. Technologies identified as feasible move on to the demonstration phase in order to assess how the technology performs in a real-world setting. Demonstrations typically take place at customer sites and can last up to four years. After the demonstration phase is completed, an assessment report is written, and the candidate technology is either accepted or rejected. Successful technologies are marketed to other energy efficiency programs.

The ETP integrates the other energy efficiency programs throughout the ETP process in order to increase the likelihood of technology adoption. The other programs are involved in technology selection, briefed on project progress, and receive final technology results. One method of information dissemination is through the Emerging Technologies Coordinating Council (ETCC) website. However, a website with a more accessible database of ETP project information is in-progress. Results are also communicated to the general public through Energy Centers, utility personnel, and community organizations. In addition, quarterly ETCC meetings are held to coordinate efforts across all utility ETP, CEC, and PIER programs and exchange information about specific customer projects.

3.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the Emerging Technologies Program in order to develop and refine the program logic and theory. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested through in-depth interviews with program actors. Initial research included an interview with the program manager and a review all available program documents (PIP, program narratives). The logic model developed for the Emerging Technology Program builds primarily off the one developed as part of the evaluation of the 2004-05 Statewide Emerging Technologies Program.

The logic model is shown in Figure 3-1 and the corresponding program theory is in Table 3-1 below.

Figure 3-1
Program Logic Model for SDG&E3011 – Emerging Technologies Program

Logic Model for 2006-2008 Emerging Technologies

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External Influences: Perceived uncertainties regarding new technologies, risk-averse customers, energy costs, perceived need for conservation.

Candidate Technology Identification

Demonstration Technology Selection

Technology Demonstration and Assessment

Information Dissemination

1

2

3

4

Contacts established to identify emerging technologies

Preliminary and secondary screening of candidate technologies available

Sites for technology demonstrations available

ETCC website updated, workshops and training classes developed

6

11

5

7

8

9

12

ET staff gains knowledge of promising emerging energy efficiency technologies

ET staff aware of which technologies have the greatest market and technological potential

Demonstrations installed and data collected, ET staff gains knowledge of technology performance

Technology accepted, rejected, or accepted after modification

Other EE programs and other stakeholders gain knowledge of assessment results

10

13

Successful technologies included in other EE programs, rebates developed

14

Perceived uncertainties regarding technology reduced, consumers begin adopting technology through EE program promotions

KEY

Activities | Outputs | Short Term Outcomes | Long Term Outcomes

Table 3-1
Program Theory Description for SDG&E3011 – Emerging Technologies Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	The Emerging Technologies Program (ETP) must be constantly aware of emerging energy efficiency technologies. In order to stay up-to-date, the ETP utilizes both internal and external contacts to identify technologies that have concluded the R&D phase and may be good candidates for ETP support.	Internal and external resources provide sufficient leads on emerging technologies (Internal resources include the marketing staff, account executives, and the R&D staff. External resources include the Public Interest Energy Research (PIER), IOUs, the California Energy Commission (CEC), municipal utility agencies, city governments, real estate developers, research organizations, manufacturers, vendors, distributors, and trade allies.)	Interviews with program staff

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
2	The ETP wants to support demonstration projects for only the most feasible technologies. However, initially, the program lacks adequate information on which emerging technologies are most cost-effective, energy efficient, and marketable. Therefore, the ETP program has established preliminary and secondary screening processes to narrow the field of candidate technologies. The preliminary screening process assesses the ability of each technology to meet ET program objectives. The secondary screening ranks each technology according to its market potential, technical potential, and risks.	Preliminary screening process established. Secondary screening process established.	Interviews with program staff Interviews with program staff
3	The ETP establishes technology demonstrations for selected technologies in order to determine how the technology performs in a real world setting, that is to assess if the technology is market-ready. Many times emerging technologies fail when applied to pragmatic situations and this performance uncertainty dampens their market acceptance. Therefore, ETP demonstrations serve as a vetting process that greatly reduces the performance uncertainties of newly developed technologies.	Number of demonstration project scopes completed Number of real world demonstration projects installed (contracts negotiated) Number of demonstrations installed at the Engineering Analysis Center (EAC) .	Program tracking database Program tracking database Program tracking database

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4	Many times, stakeholders are not aware of ETP technologies, demonstrations, and assessment results. Impartial knowledge dissemination is a key element of the program that facilitates widespread adoption of successful technologies. The ETP works to share demonstration results through the ETCC website. In addition, workshops, training classes, market potential studies, and person-to-person contact with IOU EE program managers educate energy efficiency programs about the progress of demonstration technologies.	Number of demonstrations with data published on the ETCC website	Program tracking database ETCC website
		Number of case studies prepared	Program tracking database
		Number of workshops and training classes developed	Program tracking database
		Number of person-to-person contacts with IOU EE program managers completed	Program tracking database Survey of ETP staff
5	Before utilizing internal and external contacts, the ETP had a more limited knowledge of emerging technologies to consider for their program. Now, ETP has extensive knowledge of promising emerging energy efficient technologies that are either available now or may become available in the near future.	Self-report of increase in knowledge of emerging technologies by ETP staffers after contacting internal and external resources	Interviews with program staff
		Number of emerging technologies identified through contacts	Program tracking database
6	A range of candidate technologies has been identified for a mix of market sectors (i.e. residential, commercial, industrial, agricultural). However, program staffers do not know which options pose the greatest efficiency gains, are the most cost effective, or most technologically feasible.	Number of candidate technologies identified for assessment	Program tracking database Interviews with program staff
		Number of market sectors addressed by candidate technologies	Program tracking database Interviews with program staff

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
7	ET staffers have completed the preliminary and secondary screening processes, ranked technologies, and therefore have increased awareness of the most feasible technologies to advance to the demonstration phase.	Number of candidate technologies that pass through the preliminary screening, and therefore meet the following ET program criteria: Ready for market testing and immediate or near-future market introduction In line with long term utility goals of demand reduction and energy efficiency Potential to become component of utility EE/DR programs Potential to be cost effective Consistent with California Energy Action Plan Number of candidate technologies that pass through the secondary screening, and are ranked according to the following ET program criteria: What savings are directly generated by Technology solutions? How large is the target market/What is the projected market penetration in the next 5 years? What is the business case: savings/cost, payback period? What are the risks of failure? Can we anticipate all the critical market hurdles?	Program tracking database

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
8	Speculative assessments provide only limited information about a product's feasibility and benefits. Product demonstrations in real world settings are critical for validating a technology's performance, cost effectiveness, and energy savings potential. Utility reps work with their customers to identify technologies and sites that may be willing to host a demonstration project. Some customers are motivated to be "early adopters" of new technologies for various reasons (e.g., their current equipment needs replacement, they desire immediate energy savings) and host the demonstrations.	Number of customers that become early adopters and host demonstrations	Program tracking database ETCC website
9	Before the demonstrations were installed at customer sites, ETP staff did not know how well the technologies performed in real-world applications. Through data collected, intermediate results, and formal assessments, the ETP staff and stakeholders have gained insight on if the technologies are market-ready, and whether products that employ it are delivered to our market in a credible and stable business channel.	Increase in knowledge after monitoring the technology at the demonstration sites Number of demonstration assessments completed	Program tracking database Survey of ETP staff

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
10	Due to several years of data collection from the demonstration sites, the ETP has sufficient knowledge to assess the relative success of each technology and offer recommendations to other energy efficiency programs.	Number of technologies determined ready for EE programs Number of technologies determined ready for EE programs after modification Number of technologies determined to not be cost effective	Program tracking database
11	Positive, negative, and neutral results are valuable to potential investors and technology developers and published on the ETCC website. The results of a successful demonstration project are an added benefit for marketing of a new technology. In other cases the findings of an ET project will be valuable information for the manufacturer of those technologies that would become market-ready if modified. Finally, the demonstration projects would identify those technologies, that although appear promising, do not provide cost-efficient EE.	Self-report of how valuable stakeholders and technology developers found the ETP assessment results.	Survey of stakeholders and technology developers
12	Through the ETP's information dissemination activities, other energy efficiency programs gain knowledge of and confidence in new energy efficiency technologies.	Self-report of increase in knowledge and confidence by other energy efficiency programs in ETP technologies	Survey of project managers of other energy efficiency programs

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
13	Confident in the performance of ETP technologies, other EE program managers incorporate the new technologies into their program offerings.	Number of energy efficiency programs that incorporate ETP demonstrated technologies into program Number of rebates for ETP demonstrated technologies established	Program tracking database
14	The ETP program has greatly reduced the perceived performance uncertainties of its emerging technologies through extensive demonstrations and assessments. Therefore, EE programs confidently market the new technologies to their customers and the technologies gain wider acceptance. In the language of the diffusion of innovation literature, through the assistance provided the ETP, demand for the emerging technologies will eventually bridge the "chasm" between the "Early Adopters" and the "Early Majority."	Number of end-users who adopt ETP technologies through available EE programs.	Program tracking database Customer surveys

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3.2   2006 – 2007 Program Activities

3.2.1   Budget Summary

The SDG&E ETP expenditures through Q4 2007 are listed in Table 3-2 below. All together, the program has utilized 13 percent of its total operating budget.

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Table 3-2
Expenditure Summary (Q1 2006 through Q4 2007) [8]

</div>

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
$520,863	$4,050,854	13%

3.2.2   Summary of Program Status

From the PIP, program progress will be measured through the following three annual metrics:

- SDG&E will target the initiation of 20 new technology assessments over the course of the 3-year period from January 2006 through December 2008.

- SDG&E will collaborate with the other participating utilities to create and maintain a new and more useful database for reporting and transferring information connected with ET program activities. It will succeed that which is currently available on the ETCC website (www.ca-etcc.com) and each IOU as well as the CEC will be responsible for providing the project information to the contractor who will incorporate it into the new database.

- SDG&E will continue to be a working member of the Emerging Technologies Coordinating Council and target participation in 4 quarterly meetings per year to ensure adequate inter-utility communication and cooperation. The ETCC will assess whether energy efficient emerging technology applications have reached a sufficient stage of maturity for the utilities to consider them in the statewide program efforts. In addition, to better monitor PIER progress, utility program staff members will attend PIER project meetings as often as possible. This will allow the utilities to remain current of PIER project changes and developments.

From the monthly reports, it appears that the ETP has been active with the ETCC in attending regular meetings. The new website expected to replace the ETCC website has yet to be instituted. As discussed below, it appears that the ETP will fall short of its goal of initiating 20 new technology assessments during the 2006-08 program cycle.

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[8] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

3.3 Findings, Conclusions and Recommendations

3.3.1 Project File Review

The screening process used to identify potential technologies for the ETP was reviewed as part of this evaluation. For the 2006-08 program cycle, the ETP initiated the review of eleven technologies that were then sent to the SDG&E efficiency programs for review. Each technology involving a standardized report that was used as means to screen each technology based on the following criteria:

- Technical Savings Potential (annual)
- Cumulative Market Potential (2009-11)
- Potential Customers
- Market Risk
- Technical Risk
- Criticality of SDG&E Involvement
- Non-energy Benefits
- Simple Payback Period

A weighted score was calculated based on ratings by the ETP on each of these categories. Based on these ratings, an overall score (1 to 5 scale, with 5.0 maximum score) was calculated. These scores were then used to help determine research priorities. (According to program staff, many of the technologies that were not perceived to have much potential were ruled out prior to going through the formal screening process.)

The eleven technologies screened for SDG&E are described briefly below. Note that these are only the newest ETP projects that utilized the new screening method. SDG&E's ETP is also continuing work on earlier assessments and studies that were initiated using the prior screening process.

LED Linear Lighting Demonstration (Score 3.25 out of 5.0). This project will evaluate the performance of LED lighting in retail display cases. LED lighting may result in as much as a 60 percent reduction in energy consumption over an incandescent system. The program plans to conduct demonstrations at three jeweler sites, testing different LED lighting products to compare stated technical performance. By doing multiple assessments, the ET team would be able to provide insight as to possible standards for incentive programs for LED linear lighting for the retail market. So far, one potential jewelry site has been identified (Charles Knoll) and MK Lighting will supply the LED linear lighting products at wholesale costs.

Commercial Office LED Lighting Demonstration (Score 3.5 out of 5.0). The Office LED Lighting project will analyze LED lighting capable of directly replacing fluorescent and incandescent task lighting currently used in office workspaces. LED lighting may result in a minimum of a 40 percent reduction in energy consumption. The USN Base Coronado has volunteered as an assessment site for this demonstration, and several more sites are anticipated in the future. Multiple tests will allow for a comparison of the stated technical performance and will provide insight as to possible standards for incentive programs for the LED office workspace lighting market.

Advanced Skylight Daylighting Demonstration (Score 3.25 out of 5.0). This project examines the potential load shed of skylights that incorporate a solar powered GPS. This technology adjusts mirrors to obtain better illumination and disbursement of sunlight and may allow for a complete load shed during daylight hours in certain applications. The skylight technology may be particularly desirable in warehouses due to the high demand of traditional lighting, but is also appropriate for institutions, gymnasiums, retail, and industrial structures. The technology is marketed and currently available via numerous suppliers.

The potential demonstration sites for the daylighting technology are fire stations in the city of El Cajon, and the program is also searching for several more sites in order to test different manufacturer products. Through multiple assessments, the ET team is able to provide insight as to possible standards for incentive programs for the advanced skylight daylighting for the specific sector markets.

LED Freezer/Refrigerated Case Lighting Demonstration (Score 3.25 out of 5.0).

This project will investigate linear LED light bars for freezer/refrigerated cases in supermarkets and convenience stores, which may result in a minimum of a 40 percent reduction in energy consumption as compared to linear fluorescents. There are numerous suppliers currently manufacturing LED light bars for use in freezer and refrigerated cases. SDG&E will field demonstrate and evaluate the performance of a freezer/refrigerated case LED lighting system as compared to the existing fluorescent lighting system. Demonstration sites have not yet been identified for this project.

Power Efficiency Motor Controller Demonstration (Score 3.7 out of 5.0). This project will analyze the Power Efficiency Corporation (PEC) Performance Controller, which is a device designed to work with an electric motor and optimize the motor voltage at partial loads to reduce magnetic losses in the motor core. This action reduces the electrical demand and energy consumption of the electric motor. This type of motor controller is most beneficial in reducing losses for motors running for long periods at low loads, usually below 30 percent. Other benefits include soft start capability and the potential for longer motor life. An efficiency improvement of 15 to 20 percent is expected. The technology is currently marketed and the infrastructure for production is in place.

The ET program will conduct a lab test for the one-phase and the three-phase motors in independent testing labs to verify savings. If successful, the program will continue with site demonstrations of the three-phase technology in industrial applications and the one-phase technology in small industrial and commercial applications. In addition, the Standard Performance Contract program is currently considering an agreement to apply the three-phase version to escalator motors. If signed, the ET program will also monitor and evaluate a small sample of escalator installations.

Premium Power ZINC FLOW Battery Demonstration (Score 3.2 out of 5.0). The Premium Power Corporation is commercializing a technology capable of reducing customer demand and energy charges. This UL Listed product line is based on Zinc-flow regenerative energy storage technology. The product line is flexible and allows customers to reduce their demand charges on both a small scale (less than 100 kW) and a larger scale (multi-MW). A battery efficiency improvement of 73 percent is expected. This technology is for all commercial and industrial customers on a time of use rate schedule that have a demand greater than 20 kW.

Wal-Mart in San Diego will host a demonstration of the Zinc-Flow 60 (capacity of 60 kWh) with a nominal output of 50 kW. Premium power proposes a turnkey installation with all controls and monitoring. The battery will offset peak power in the store for 12 months.

Residential LED Downlight Demonstration (Score 3.85 out of 5.0). This project explores LED downlights capable of directly replacing incandescent downlights used in private residences. LED lighting may result in a minimum of a 60 percent reduction in energy consumption. The program plans to install the LED downlights in both new construction and existing homes. By doing multiple assessments the ET team is able to provide more insight as to variation in use patterns to determine possible standards for future incentive programs for LED downlight replacement for the residential market

Electronic HID Ballast Lighting Demonstration (Score 2.875 out of 5.0). This project will analyze an electronic HID ballast, which may result in a minimum of a 12 percent and a maximum of a 40 percent reduction in energy consumption as compared to core and coil HID ballasts. This technology is for the commercial and industrial sector. While only several suppliers currently manufacture electronic HID ballast products, this technology is marketed and currently available.

San Diego State University is interested in hosting this assessment. Similar evaluations will take place at other sites with different products in order to compare stated technical performance. Multiple assessments also provide insight as to possible standards for incentive programs for electronic HID ballast replacements for these applications.

Induction Parking Lot Lighting Demonstration (Score 2.75 out of 5.0). This project will investigate a new induction lighting technology from Sylvania and Phillips that is capable of directly replacing lighting systems for streetlight/parking lots. Induction lighting may result in a minimum of a 30 percent reduction in energy consumption as compared to HID lighting systems. This technology is for municipalities, parking structures, and any facility with parking lots. SDG&E will field demonstrate and evaluate the performance of induction lighting systems as compared to the traditional HID sources. The Sharp Hospital Chula Vista has been identified as a possible demonstration site and other lighting sites will be pursued in the future. Multiple assessments can provide insight as to possible standards for incentive programs for induction replacement lighting for these applications.

LED Streetlight/Parking Lot Lighting Demonstration (Score 3.375 out of 5.0). Furthermore, an additional ET project examines LED Street/Parking Lot lighting systems, which are capable of directly replacing traditional HPS or MH lighting systems. Targeted markets include municipalities, parking structure, and any facility with parking lots. LED lighting may result in a minimum of a 30 percent reduction in energy use. SDG&E will also likely test the technology at Sharp Hospital Chula Vista, as well as several other sites, using different products to compare stated technical performance. By doing multiple assessments, the ET team can better understand possible standards for incentive programs for LED replacement lighting for the application.

LED MR16 Lighting Demonstration (Score 3.75 out of 5.0). Numerous companies have developed LED MR16 lighting capable of directly replacing various halogen MR16 lighting systems currently used in casinos, retail stores, and other commercial applications. LED lighting may result in a minimum of a 60 percent reduction in energy consumption as compared to fluorescent and as much as 90 percent over halogen. SDG&E will field demonstrate and evaluate the performance of a LED direct replacement MR16 as compared to the existing traditional halogen MR16.

The program plans to use Viejas Casino as a demonstration site and Illumination Management System, LEDPower, and LeiYueh Enterprises are offering to sell the LED lighting at wholesale prices. It is anticipated that similar assessment and evaluation will be conducted at other sites utilizing different products to compare stated technical performance. By doing multiple assessments, the ET team is able to provide insight as to possible standards for incentive programs for LED MR16 direct replacement lighting for the specific sector markets.

Table 3-3 summarizes information on these eleven projects. As discussed above, the ETP is also continuing work on assessments that were started in earlier years in addition to the eleven technologies discussed above.

Table 3-3
Summary of SDG&E ETP Projects Using New Screening Process

Technology / Project	Technology Assessment?	Demonstration Site Selected?	Technology Installed?
LED Linear Lighting Demonstation	Yes	Yes (1 of 3)	No
Commercial Office LED Lighting Demontrition	Yes	Yes	No
Advanced Skylight Daylighting Demonstration	Yes	No	No
LED Freezer / Refrigerated Case Lighting Demonstration	Yes	No	No
Power Efficiency Motor Controller	Yes	No	No
Premium Power Zinc Flow Battery	Yes	Yes	No
Residential LED Downlights	Yes	No	No
Electronic HID Ballast Lighting	Yes	Yes	No
Induction Parking Lot Lighting	Yes	Yes	No
LED Streetlight / Parking Lot Lighting Demonstration	Yes	Yes	No
LED MR16 Lighting Demonstration	Yes	Yes	No

3.3.2 In-Depth Interviews

A separate evaluation task involved conducting in-depth interviews with ETP staff and program managers from some of SDG&E's efficiency programs. The results of these interviews are summarized below.

ET Program Managers

We interviewed each of the ET program managers at the beginning of the evaluation, with shorter follow up interviews conducted as needed to gather additional or clarifying information about program activities.

The 2006-2008 program cycle of the ETP is equipped with greater financial resources than the previous cycle, and at the same time, an even stronger increase in the demand for new technologies. However, the program managers report that it is challenge to find technologies that can meet ETP requirements for energy savings or demand response, and also ones that the energy efficiency programs will adopt based on their energy efficiency calculators. This is especially challenging for measures in the retrofit market, as it is less expensive to install a brand new piece of equipment. As a result, technology screening is lengthy, which adds on to an already slow process of installing the technology at a demonstration site. Customer sites often require up to six months to review a contract with their legal departments. The program managers said that adding staff members would expedite the overall process.

The program managers also reported that the program is more transparent in the 2006-2008 cycle, with more forums, workshops, and interim reports for the energy efficiency programs. There is also a new project tracking database in development. In addition, the ETP has responded to a new request to serve as an assessment agency for third party programs testing new technologies, with a positive ETP review providing credibility to the third party programs. There has also been a greater emphasis in providing the efficiency programs with more short-term results in order to help these programs meet their savings goals.

SDG&E Energy Efficiency Program Manager Interviews

Since the energy efficiency programs are the primary audience for the emerging technology program, two SDG&E program efficiency program managers were interviewed that were involved with several of the major residential and commercial programs. Topics discussed during these interviews included:

- Interactions with the Emerging Technologies program

- Satisfaction with the program

- Areas for program improvement

- Services that they would like to see provided by the program

The evaluation team interviewed a program manager from the SDG&E residential programs. This respondent had been working with residential programs since 2006 but was not familiar with the ETP. However, she does see a large opportunity for coordination between ETP and other residential energy efficiency programs. She often fields calls from contractors with ideas about technologies to add to program offerings, but does not know where to direct them. She also said that it seems that SDG&E is limited by the current technology menu and could use some help developing a more advanced technology portfolio to achieve higher energy savings.

The evaluation team interviewed a program manager from the SDG&E non-residential programs. This respondent said that it has been "a pleasure" to work with the ETP in the past six months. Prior to that there was very little communication with the ETP and his programs. Within the last six months, he has worked with the ETP to narrow down a list of 400 gas technologies for the Portfolio of the Future to just 11 and he will be working with ETP in the future to scan for new electric technologies for SDG&E. The respondent also noted that currently the ETP program is engaged but it is too late to be useful for the 2006-2008 cycle, but can affect the 2009-2011 phase. Instead, he depended on the ETP programs from PG&E and SCE for information about emerging technologies in the 2006-2008 cycle.

Moreover, the respondent said that the ETP program could do more to reach out to customers to find out what is most likely to be adopted, as well as working more with program development to successfully deliver the technology to the end-users. In addition, the program manager suggested that the ETP program should provide deliverables that can be directly transferred to work papers, detailed case studies with measurement and verification, and billing regressions to show savings. Overall, the program manager expressed a desire for a clear mission statement from the ETP that reflects the needs of the energy efficiency programs.

3.3.3 Conclusions

Based on the ETP evaluation activities, we draw the following conclusions:

- **The mission for SDG&E's ET program is unclear**. It appears that the ETP is straying somewhat from its mission filed with the CPUC, in part due to requests made by SDG&E to provide assistance in other areas. In particular, the ETP is becoming more involved with providing short-term engineering assistance (at the request of the efficiency programs) and conducting M&V work on third-party programs that are promoting new measures. While these functions are valuable, they are different from what is stated in the original PIP for this program. For example, the M&V work for third-party programs is unlikely to be considered the same as a formal technology assessment as described in the PIP. As a consequence, it does not appear that the ETP will meet its reported goal of initiating 20 new technology assessments in the 2006-08 program cycle.

- **Improvements made in the technology screening process.** Since the 2004-05 program cycle, the ETP has developed a more formal project screening process. This was done in collaboration with some of the efficiency program managers in order to have a screening process that meets the needs of these programs.

- **The ETP has had mixed results achieving its ETCC-related goals.** It appears that the ETP is meeting its goals in terms of participating with the other IOU's in regular ETCC meetings. However, it does not appear that the ETCC website has not been updated by any of the IOU's since 2006. Although the PIP states that a new website will be developed that will facilitate better information sharing across IOU's, this had not been completed at the time of this evaluation report.

- **Communication with other energy efficiency programs is lacking.** While some efficiency program managers indicate that they have regular communication with the ETP, other programs (particularly residential programs) reported that there was little if any communication with the ETP. It appears that communication with the non-residential programs have improved in recent months based on the one non-residential program manager we talk to. Among all programs there was a general consensus that communication with the ETP needs to be substantially improved and provided on a more regular basis.

- **High turnover at the efficiency program manager positions adds to the communication challenge.** Given the long time frames required for a complete technology assessment (up to four years), the seemingly constant turnover among efficiency program manager positions makes communication with the ETP especially difficult as the current system almost guarantees that the managers that were in place at the start of the assessment will not be there when the assessment is completed. This further demonstrates the need for a clear mission for the ETP that is communicated to each efficiency program manager so that the ETP focus can remain constant even when the management landscape is changing in the other programs.

3.3.4 Recommendations

Based on the evaluation findings, we make the following recommendations:

- **Develop clearer mission and goals for the ETP.** As discussed above, the current ETP activities are not entirely consistent with the mission and goals stated in the PIP. Moving forward, a clearer mission of the ETP needs to be developed and the ETP needs to remain focused on this mission. We believe that the overarching mission of the ETP should remain on providing longer-term focus on technology assessments rather than short-term help with engineering and M&V. As a

minimum, the ETP mission and goals need to be clearly defined and included in the PIP for the 2009-11 program cycle.

- **Communication with efficiency programs needs to be improved.** Communication with the efficiency programs needs to be provided on a more regular basis. This should be done through a variety of channels, including regular attendance at scheduled meetings, email updates, one-on-one communications and updates with program managers on specific assessments, and information dissemination on the ETCC (or similar) website. Given the added challenge of high turnover among efficiency program managers, the need for regular and automated communication (such as monthly email progress reports from the ETP) should be considered.

- **Better dissemination of program results is needed**. The current ETCC website is not being used and needs to be replaced so that ETP program results can be easily disseminated to efficiency program managers and other interested parties. Having simple fact sheets and case studies published on the SDG&E website (where customers with potential demonstration sites can see them) should also be considered. The ETP should also work with the efficiency program managers to provide regular updates on assessment results. In addition, the ETP should work with the efficiency program managers to provide assessment results in a format that can be directly incorporated into work papers for these new measures.

3.4 Best Practices Review by Program

3.4.1 Program Theory and Design

- *Is the program design effective?* The program theory appears to be sound (based on the original program theory and logic). The implementation of the program has been less effective, however, given the various program activities and requests made on the program. In some cases, actual technology assessments and demonstrations are being completed, which is consistent with the original program mandate. In other cases, the program appears to be providing engineering support and/or evaluation services to assist the efficiency programs. While these services are needed, they are not consistent with the stated design for the Emerging Technologies program.

- *Is the market well understood?* The market for the various technologies assessed is by definition not well understood as the technologies are still emerging. The actual market for the program is the other efficiency programs. This "market" is not completely understood as it remains somewhat unclear what the Emerging Technologies should be providing in terms of support for the efficiency programs.

3.4.2 Program Management

3.4.2.1 Project Management

- *Are responsibilities defined and understood?* As noted, the program is providing a range of services beyond conducting technology assessments. Efficiency program managers do not have a clear idea of what the Emerging Technology program is doing. This indicates that the program responsibilities and not well defined and understood.

- *Is there adequate staffing?* The program has a small staff which has been an issue early in the program cycle. New staff have been added which is helping mitigate the problem.

3.4.2.2   Reporting and Tracking

- *Are data easy to track and report?* Project tracking is informal and not well tracked. This is in part due to the nature of the activities, which include a wide variety of technologies and assessment types with varying project timelines. The ETCC website is not being utilized by the program and the planned replacement website has yet to be developed.

- *Are routine functions automated?* Not addressed in this evaluation.

3.4.2.3   Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* It appears that the program staff have strong relationships with vendors and manufacturers of technologies that are being assessed.

- *Does the program verify reporting systems?* Not applicable.

- *Are customers satisfied with the product?* Not applicable.

3.4.3 Program Implementation

3.4.3.1   Participation Process

- *Is participation simple?* Not applicable.

- *Are participation strategies multi-pronged and inclusive?* Not applicable.

- *Does program provide quick, timely feedback to applicants?* Not applicable.

- *Is participation part of routine transactions?* Not applicable.

- *Does the program facilitate participation through the use of internet/electronic means?* Not applicable.

- *Does the program offer a single point of contact for their customers?* The ETCC website is designed as a clearinghouse for reports for the Statewide Emerging Technologies program. However, the website has not been updated with any 2007 reports.

- *Are incentive levels well understood and appropriate?* Not applicable.

3.4.3.2   Marketing and Outreach

- *Use target-marketing strategies?* Not applicable.

- *Are products stocked and advertised?* Not applicable.

- *Are trade allies and utility staff trained to enhance marketing?* Not applicable.

4. SDGE 3012: Express Efficiency Rebate Program

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Final Report for Process Evaluation of SDG&E's 2006-2008 Non-Residential Programs *March 15, 2008*

4.1 Program Overview

The Express Efficiency program is a nonresidential prescriptive rebate program to help customers add or retrofit existing equipment with high efficiency equipment. The objectives of the program are to increase the installation of high-efficiency, energy saving equipment that will result in long-term energy savings and peak reductions. The program is designed to assist nonresidential customers who have a monthly demand above 100 kW and/or an average monthly gas usage of 4,166 therms and above. Fuel switching and new construction do not qualify. Rebates are available for energy-efficient lighting, refrigeration, food service, natural gas and other technologies.

Over 140 measures qualify for the Express Efficiency program. Eligible products include steam cookers and combination ovens for food service, pipe and tank insulation, high bay lighting fixtures, compact and linear fluorescent fixtures, and anti-sweat heater controls. Equipment must meet the requirements as stated in the terms and conditions on the rebate forms. All equipment must be new; used or rebuilt equipment is not eligible for rebate.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Shea Dibble	SDG&E	SDibble@semprautilities.com	858-636-5774
Associate Program Manager	Maria Bernabo	SDG&E	MBernabo@semprautilities.com	858-654-8774
Sr. Program Manager (as of August 2007)	Christina Rathbun	SDG&E	crathbun@semprautilities.com	858-636-5776

Figure 4-1
Program Logic Model for SDGE3012 Express Efficiency

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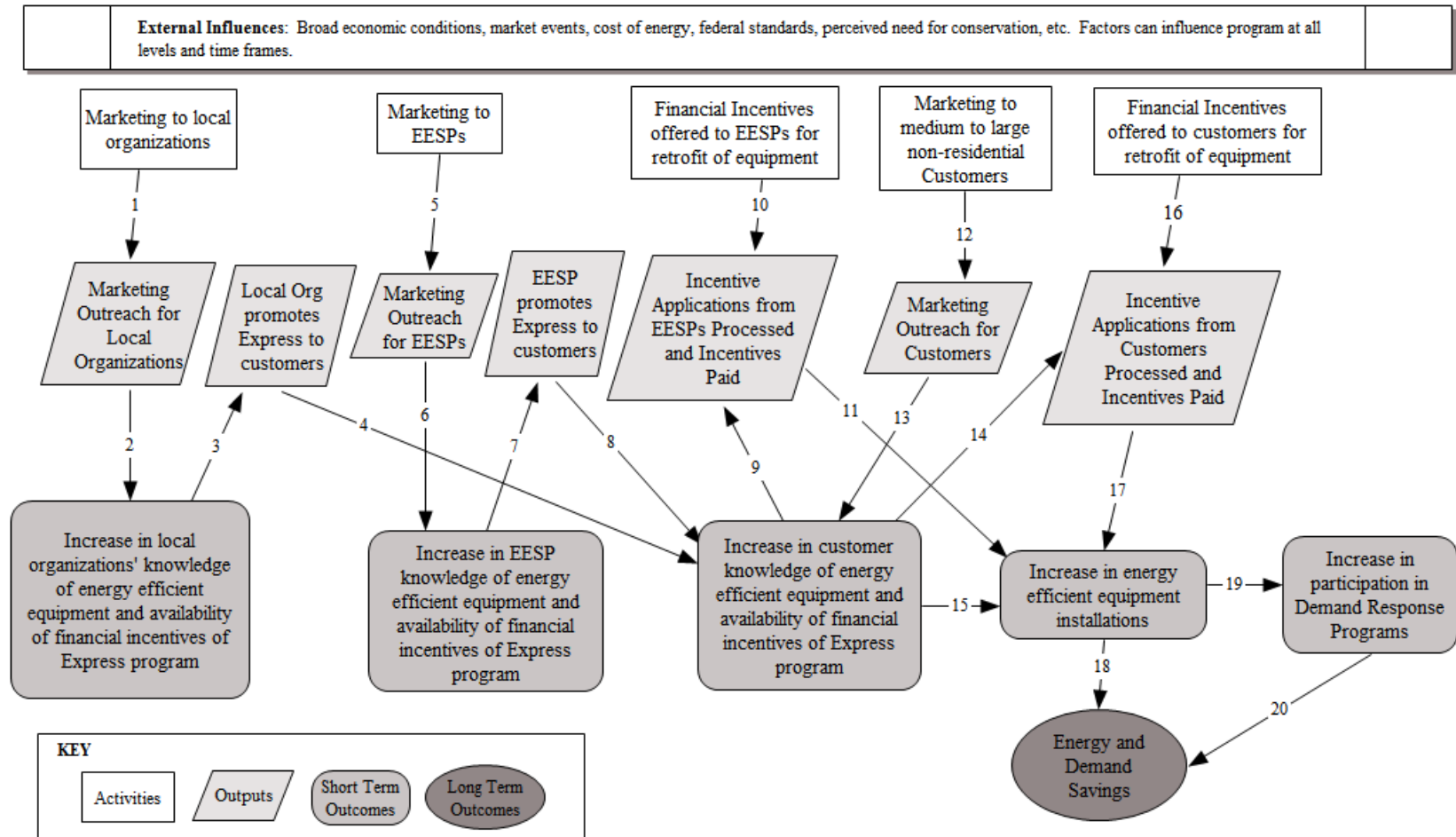
Table 4-1
Program Theory Description for SDGE3012 Express Efficiency

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Community Based Organizations, Faith-based Organizations and Ethnic Organizations are unfamiliar with energy efficient equipment and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of local organizations reviewing the marketing collateral.
2	Program marketed to Community Based Organizations, Faith-Based Organizations and ethnic organizations.	Increase in local organizations' knowledge of energy efficient equipment and availability of financial incentives of Express program	Self-report of local organizations who do not participate in the program. Number of local organizations that are program participants.
3	The community organizations have the opportunity to promote the Express program to customers.	Number of community organizations promoting the program	Self-report of local organizations who do not participate in the program. Surveys with local organizations on how they have used the information.
4	Community organizations market the program to utility customers	Increase in customers' knowledge of energy efficient equipment and availability of financial incentives of Express program	Customer participant survey
5	Energy-efficiency service providers (EESPs) are unfamiliar with energy efficient equipment and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of EESPs reviewing the marketing collateral.
6	Program marketed to Energy Efficiency Service Providers (EESPs) through training seminars, and meetings with contractors and trade associations.	Increase in EESP knowledge of energy efficient equipment and availability of financial incentives of Express program	Self-report of EESPs who do not participate in the program. Number of EESP program participants.
7	The EESPs have the opportunity to promote the Express program in the course of their business.	Number of EESPs promoting the program	Self-report of EESPs who do not participate in the program. Surveys with EESPs on how they have

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
			used the information.
8	EESPs market the program to utility customers	Increase in customers' knowledge of energy efficient equipment and availability of financial incentives of Express program	Customer participant survey
9	Increased awareness, knowledge and attitudes of energy efficiency on the part of both EESP and customer lead customer to enter into agreement with EESP that EESP will apply for incentives for customer's project.	Number of EESPs who apply for incentives Satisfaction with application process	Program tracking database EESP participant survey Customer participant survey
10	Program provides financial incentives, intended to cover a portion of the incremental cost associated for installing energy-efficient equipment. $200,000 limit per year per customer.	Number of EESPs who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database EESP participant survey
11	Incentive motivates EESPs to promote and install energy efficiency measures	Measures installed	Program tracking database
12	Medium to large-sized non-residential customers are unfamiliar with energy-efficient equipment and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of customers reviewing the marketing collateral.
13	Program marketed to customers through presentations at promotional fairs, training seminars, bill inserts, targeted mailers and the website. An energy audit program is available on the web, which guides customers to the Express program. Program markets directly to customers through account executives and C&I service technicians. Onsite energy audits may be conducted and	Increase in customers' knowledge of energy efficient equipment and availability of financial incentives of Express program	Self-report of customers who do not participate in the program. Customer participant survey Number of customer participants.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
	customers referred to the Express program. Remote Small Business Outreach markets to very hard-to-reach rural small business customers.		
14	Increased awareness, knowledge and attitudes of energy efficiency lead customers to apply for incentives.	Number of customers who apply for incentives Amount of incentives Satisfaction with application process	Program tracking database Customer participant survey
15	Increased awareness, knowledge and attitudes of energy efficiency lead customers to adopt energy efficiency measures.	Number of customers who adopt energy efficiency measures Measures installed	Program tracking database
16	Program provides financial incentives, intended to cover a portion of the incremental cost associated for retrofitting existing equipment or installing additional energy-efficient equipment to meet long-term production increases. Either the customer or the building owner can receive the rebate. $200,000 limit per year per customer.	Number of customers who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database Customer participant survey
17	Incentive motivates customers to install energy efficiency measures	Measures installed	Program tracking database
18	The installation of improved high efficiency equipment results in energy and demand savings.	M&V identifies equipment installed and documents energy and demand impacts	Reports of gross energy savings and demand reduction

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4.2 2006-2007 Program Activities

4.2.1 Savings Summary

As of December 2007[9], the SDG&E Express Efficiency program has achieved:

	Demand Reduction (Summer Peak kW)	Energy Savings (Net annual kWh)	Gas Savings (Net annual therms)
Installed savings (Inception to 12/2007)	6,646	36,745,396	507,306
Total commitments (Inception to 12/2007)	n/a	n/a	n/a
Program projected (Compliance Filing)	7,710	51,424,283	928,892
Percent of Program Projected (Installed + Committed)	86%	71%	55%

4.2.2 Budget Summary

As of December 2007, the SDG&E Express Efficiency program has spent:

	Budget
Program expenditures (Inception to 12/2007)	$5,327,511
Total commitments (Inception to 12/2007)	n/a
Adopted program budget (Compliance Filing)	$9,958,395
Percent of Program Projected (Installed + Committed)	53%

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[9] From SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008

4.2.3 Participation Summary

The SDG&E Express Efficiency program had 1,249 applications in its tracking database as of July 2007. Table 4-2 shows that lighting measures comprise 51% of Express Efficiency program applications, followed by door gaskets at 21% of total applications.

Table 4-2
Distribution of Measure Types Associated with Express Efficiency Applications

Measure	Number of Applications	Percent of applications
Lighting	636	50.9%
Door gasket	256	20.5%
Refrigerator	70	5.6%
10% vendor incentive	54	4.3%
Fan Motor	37	3.0%
VFD on HVAC fans	32	2.6%
Strip curtains	25	2.0%
Vending machine controller	21	1.7%
Window film	21	1.7%
Ice Machine	20	1.6%
Display case	18	1.4%
Greenhouse infrared film	9	0.7%
Oven	9	0.7%
Greenhouse heat curtain	8	0.6%
Boiler	7	0.6%
Plug load sensor	7	0.6%
Steamer	7	0.6%
Water heater	4	0.3%
Auto Closers for Coolers	2	0.2%
Griddle	2	0.2%
Pool heater	2	0.2%
Copier	1	0.1%
Steam traps	1	0.1%
TOTAL	**1249**	**100%**

The most common type of customer is classified by their NAIC code as "retail trade" and comprises mostly of grocery stores, as well as department stores. The second most common type of customer is K-12 schools and school districts.

Table 4-3 shows the distribution of participant industry types, according to the number of total applications submitted. The SDG&E Express Efficiency program has had significant success in marketing and outreach to a variety of industry types within its service territory.

Table 4-3
Distribution of Types of Participants by Industry

Industry Type	Number of Applications	Percent of applications
Retail Trade	395	32%
Educational Services	282	23%
Construction	154	12%
Accommodation and Food Services	121	10%
Other Services (except Public Administration)	62	5%
Arts, Entertainment, and Recreation	49	4%
Real Estate and Rental and Leasing	43	3%
Wholesale Trade	39	3%
Information	25	2%
Professional, Scientific, and Technical Services	19	2%
Health Care and Social Assistance	15	1%
Agriculture, Forestry, Fishing and Hunting	14	1%
Public Administration	11	1%
Unknown	12	1%
Administrative and Support and Waste Management and Remediation Services	4	0.3%
Finance and Insurance	2	0.2%
Mining, Quarrying, and Oil and Gas Extraction	1	0.1%
Utilities	1	0.1%
Grand Total	1246	100%

SDG&E Express customers are most likely to describe themselves as a large business (46% of surveyed respondents), with only 13% of participating customers surveyed identifying themselves as a small business. Over half of the SDG&E Express customers surveyed indicate that they had a full-time building engineer or facility manager available, and a similar portion of Express participants also had multiple locations related to their business. This is in contrast to SoCalGas Express customers surveyed who are most likely to be small businesses without personnel dedicated to building operations. Figure 4-2 shows how the distribution of customer size as reported by customers interviewed varies between the two utility programs. The data reflect the significant participation of large retail chain companies and large school districts in the SDG&E territory, with SoCalGas having more participation from small dry-cleaners.

Figure 4-2
Survey respondent customer sizes (SoCalGas n= 101, SDG&E n = 54)
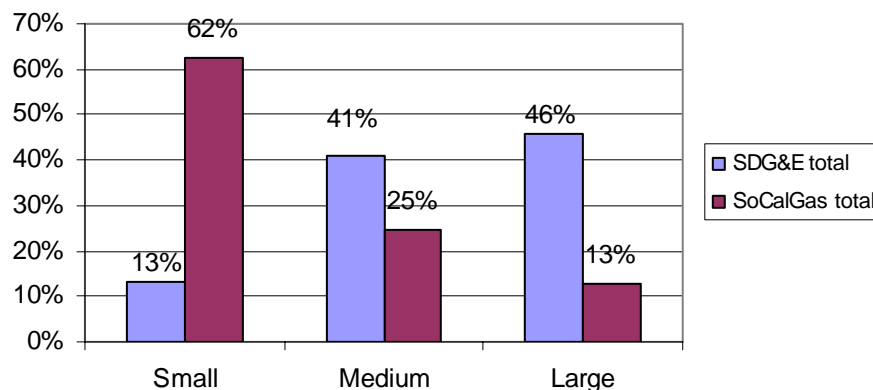
4.2.4 Summary of Program Status

(Implementation/marketing activities occurred thus far)

In 2007, program staff re-calculated expected energy savings relative to rebate amounts and determined that re-distribution of funds was necessary to meet savings goals within budget. Upon evaluation of rebate levels and work papers for potential measure updates, rebate funds for de-lamping measures were increased, along with many of lighting measures. Measures that experienced significant decreases in rebate levels were refrigerated display cases, and clothes washers. Program staff convened a Trade Professionals Forum to announce these changes to the SDG&E Express Efficiency and Small Business Super Saver programs to vendors and contractors.

Otherwise, program staff continue to market Express Efficiency and disseminate information to food service dealers and trade associations. Staff also provide trainings to account executives, and individual contractors and sales people. A rebate supplemental form was also created to assist chain account with participating in the program.

4.3   Findings, Conclusions and Recommendations

Research efforts included attendance at the August 3, 2007, Trade Professional Forum at the California Center for Sustainable Energy, which provided a venue for vendor and contractor feedback to SDG&E staff regarding the Small Business Super Saver and Express Efficiency programs. In addition, in-depth interviews were completed with the following SDG&E Express Efficiency stakeholders:

- Utility administrator and program staff (2 completed interviews)

- 2006-2008 program participants (54 completed interviews, out of approximately 266 unique participants[10])

- Participating vendors (10 most active vendors, out of 570 unique vendors)

Stakeholders were surveyed for their satisfaction with program elements, effectiveness of Express Efficiency program processes, and perceptions of the energy efficiency market opportunities. In addition to interviews with stakeholders, the participant data in the program tracking database was analyzed to better understand the range of participant facility types, use of project sponsors and types of measures installed.

4.3.1 Program Awareness

SDG&E Express Efficiency participating customers surveyed were most likely to hear about the program from a vendor or contractor. Utility representatives (such as account executives, program staff, or business hotline representatives) are the second most common source of information for Express participants interviewed. This is particularly true for large customers, who often have more frequent contact with account executives.

Figure 4-3
How did your organization first hear about the Express Efficiency program? (n = 54)
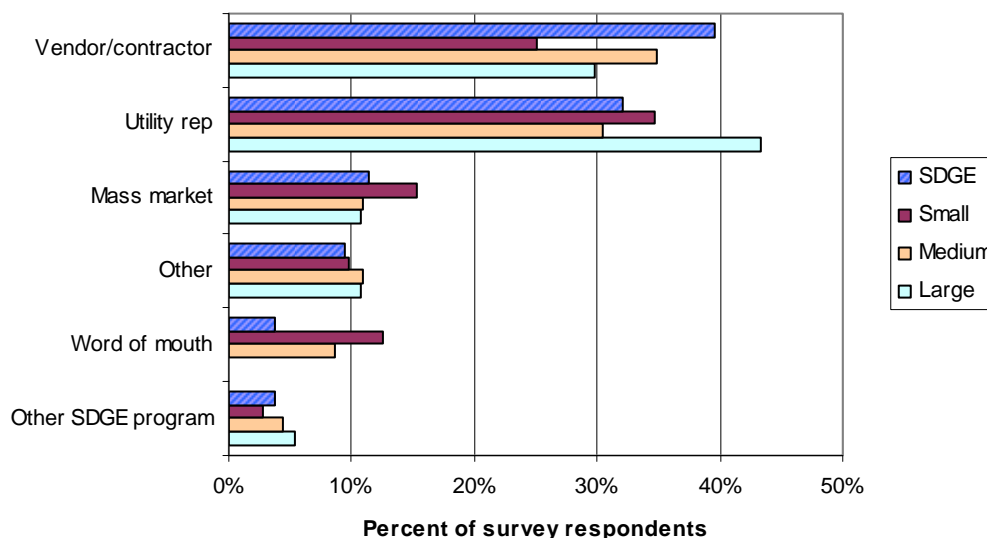
Approximately half of the vendors interviewed heard about Express Efficiency through the SDG&E website. The other half heard about the program word of mouth from other vendors or from customers. Since there appears to be a heavy reliance on the website, SDG&E program staff should ensure that it is updated regularly and that application forms, handbooks and measure lists are prominently displayed. On

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[10] Unique participants are defined as unique contact names, as listed in the program tracking database. In some cases, the same company had multiple applications across separate sites with different contact persons listed.

average, the ten most active contractors have been working with the Express program for about 6 years, with two contractors having started just in the past 2 years.

Vendors and contractors serve a very important role in marketing the program to customers. Most participating customers interviewed heard about the program through these market actors and also receive their applications from them. Figure 4-4 shows that small customers surveyed are most likely to receive an Express Efficiency rebate application forms from their vendor or contractor. For large customers, the SDG&E website and account executives are also mentioned as significant sources of information about the Express Efficiency program.

Figure 4-4
From where did you receive your rebate application from? (n = 54)
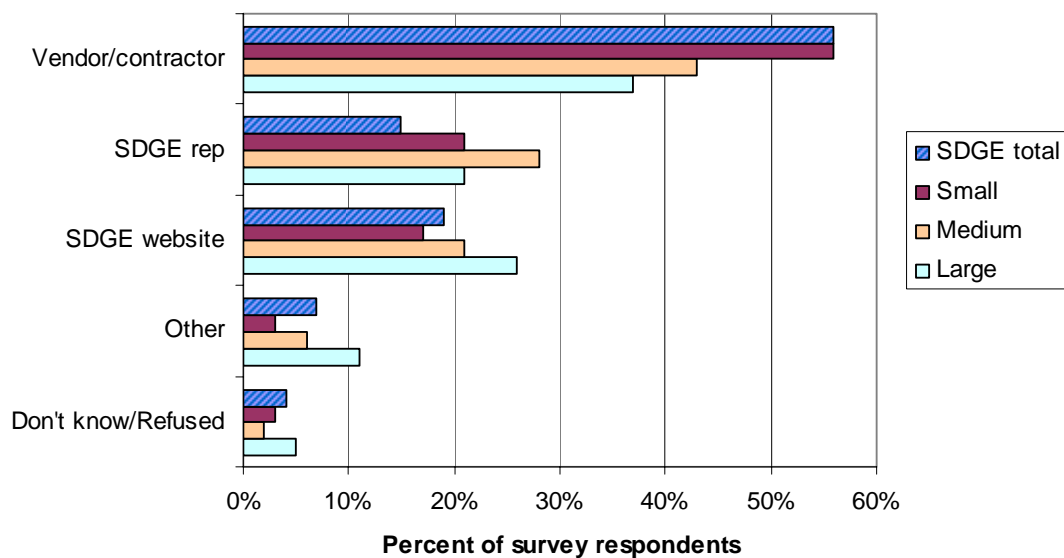
Interviews with vendors indicate a wide range of marketing and promotional approaches. Most said that they don't promote the Express Efficiency program directly, and focus more on the products that they can provide to customers and the benefits of energy efficient products. For example, vendors said they emphasize benefit to the environment, mention avoiding brown outs, benefits to equipment maintenance, and adherence to health codes.[11] One vendor said that sometimes customers don't like the word "program" as it connotes additional effort and work. Another vendor said that most customers come to them through referrals, and they simply include the rebate incentive in their cost proposals.

4.3.2 Role of Contractors

In general, vendor and contractor engagement are critical to non-residential lighting programs. Often, contractors provide all aspects of the lighting installation, while the customer plays the important role of approving such a lighting project. Approximately sixty-five percent of SDG&E Express participants surveyed used a contractor or vendor to assist with the measures that were rebated through the Express

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[11] This is mostly in reference to refrigeration gaskets, and maintaining proper food temperatures.

program, as shown by Figure 4-5. The remainder indicated that they chose to perform most of the work in-house, if they had adequate engineering staff and expertise, such as the very large San Diego Unified School District.

Figure 4-5
Did your organization work with a vendor/contractor for the measures rebated? (n = 54)
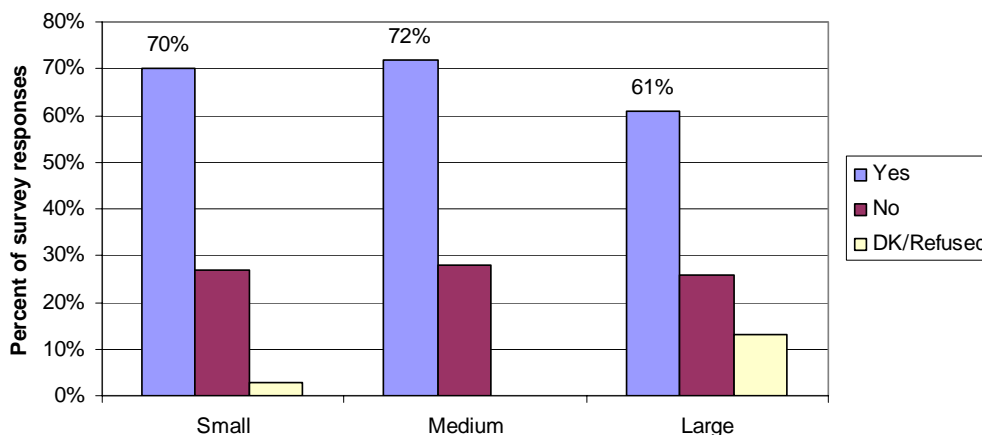
Traditionally, for non-residential lighting program, contractors play such a significant role that they also usually do most of the work, including filling out the rebate application, and mail the paperwork to the program staff. As shown in Figure 4-6, this holds especially true for smaller customers surveyed who usually need more assistance in handling energy efficiency retrofits. Although large customers interviewed were most likely to receive an Express Efficiency rebate application from their contractor, they are more likely than small customers to submit their own applications to the utility and have the rebate check come directly to themselves rather than their contractor.

Figure 4-6
Who submitted the Express Efficiency rebate application? (n = 54)
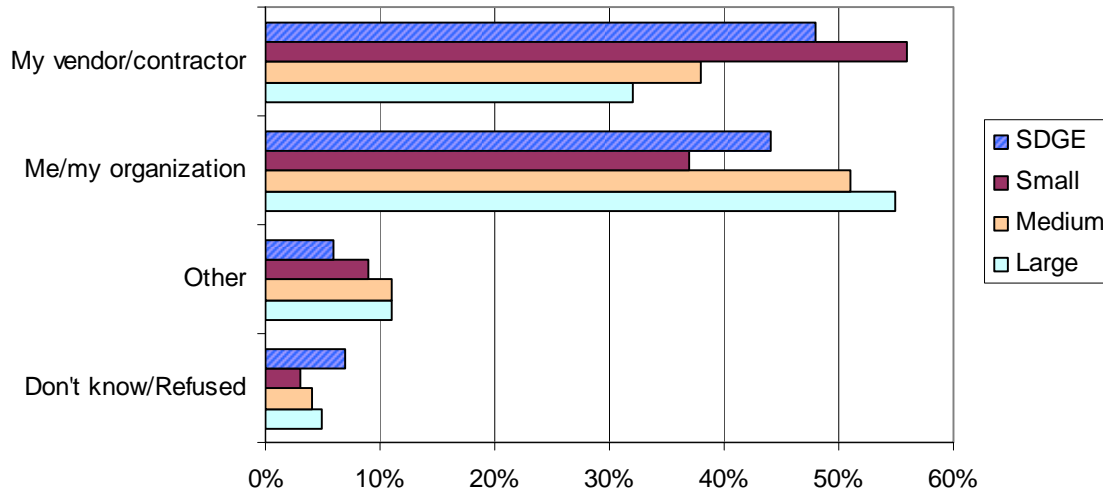
Small customers are believed to need more assistance because they do not possess sophisticated in-house facility engineers, and operate on small margins. Larger customers can absorb the risk of submitting a rebate application for energy efficiency improvements, but most small customers choose for the contractor to receive the rebate payment. In these cases, contractors usually quote a lower price inclusive of the rebate amount, and absorb the risks involved with participating in the program and possibly not receiving rebate monies due to funds running out or application not qualifying.

Reefer Seal was by far the most active contractor in terms of number of applications submitted to the Express Efficiency program. The top 5 most active contractors are responsible for close to 40% of Express applications. As shown in Figure 4-7, the top 10 most active contractors are responsible for almost 50% of all Express applications submitted.

Figure 4-7
Most Active Express Vendors
(based on number of applications in tracking database)
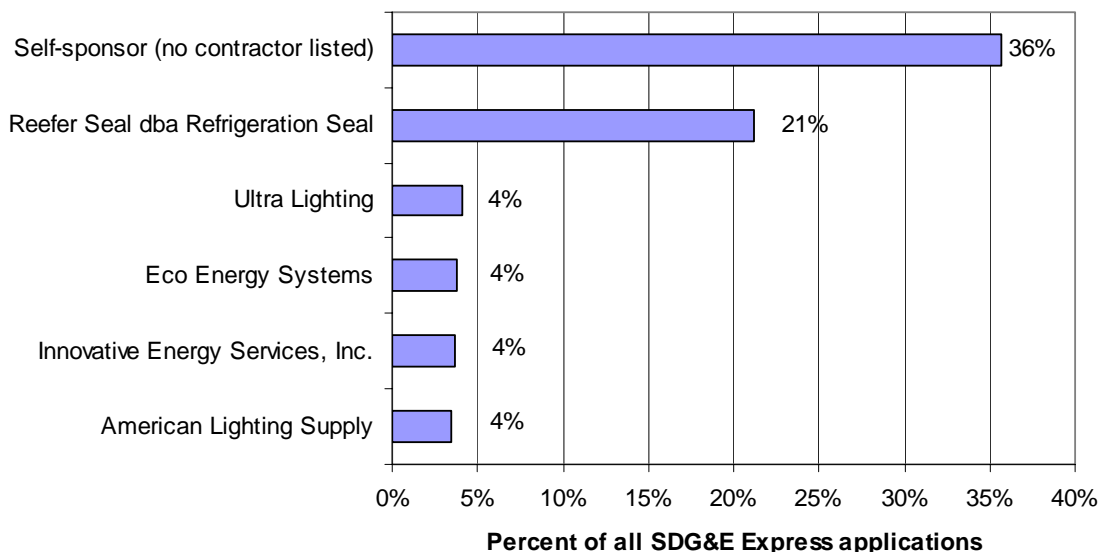
On average, Express participating customers rate their satisfaction with their contractor to be a 4.2 out of 5, with 5 being very satisfied and 1 being very dissatisfied. Two customers interviewed were very unhappy, one because the equipment wasn't functioning correctly and the other because the contractor missed appointments with the customer and there were significant delays in getting the project done.

4.3.3 Participation Experience

Since vendors and contractors play such a large role in marketing the Express Efficiency program to customers, program staff demonstrate significant commitment to addressing vendor concerns and feedback. Based on previous vendor complaints about wet signature requirements for application forms, the Express program now accepts faxed signatures.

One new vendor participant said he would like to see more training classes on the program as a whole, especially for new participants. He indicated that no assistance was provided to him when he started out, and that now he understands the process and paperwork, but a class for new contractors would be helpful. During the Trade Professional Forum in August 2007, program managers said that more trainings and technology workshops will be provided in the future, since this was an issue that had previously come up.

In-depth vendor interviews generally corroborate the issues brought up during the Trade Professional Forum. Complaints about high percentage of submittals being bounced back due to minor missing information (such as missing suite number on the address) that could be otherwise resolved on the spot, or over the phone. If appropriate, program staff should record minor revisions, document the date and reason, and not send entire applications back to vendors for such minor issues. This type of stringent quality control makes the process time consuming and potentially makes the vendor appear less professional to customers.

Sometimes applications are rejected because of incorrect tax ID or account numbers filled out by customers. Vendors at the Trade Professional Forum indicated that it would be helpful if they could contact SDG&E directly to obtain correct account numbers. At this time, customer confidentiality concerns requires a third-party release form. It was suggested at this forum, that a third-party release form be included in the application package, so that vendors can present it to customers to facilitate filling out the paperwork.

As shown in Figure 4-8, customers interviewed generally feel that the application process is very easy. The main complaints from customers surveyed is that the process took too long, and one customer said it took months and months of follow up. He said he believes he never would have received the rebate without persistent follow up with his vendor and SDG&E. In this case, the vendor was initially active in reserving the funds and submitting the application, but the follow-through appeared to be lacking since the rebate money went directly to the customer.

Figure 4-8
Overall Ease of Application, According to Participating Customers (n = 24)
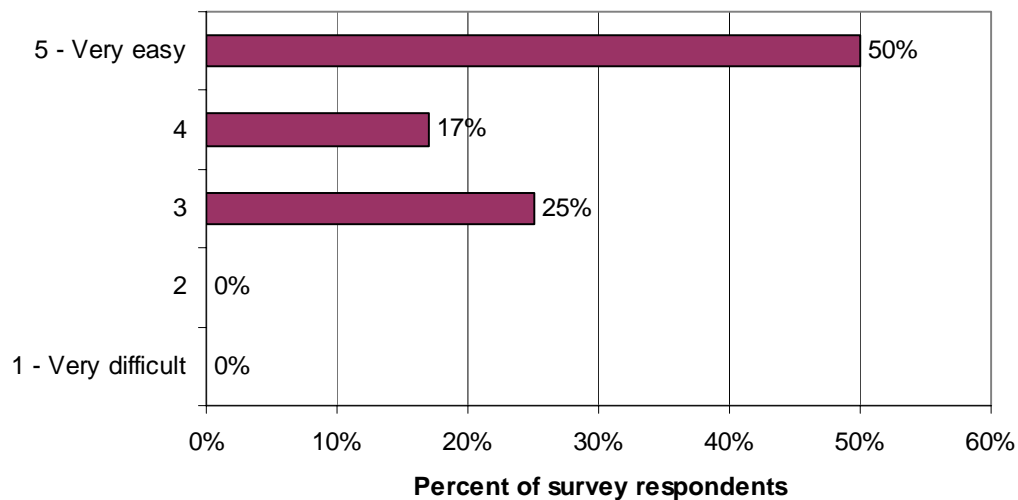
Few participating customers surveyed recall having SDG&E contact them because of missing or incomplete information (only 13% of customers indicate that this happened). These customers generally indicate that it was easy to submit the required additional information (71% saying it was "very easy"). The one customer who said it was "somewhat difficult" mentioned that it was difficult to reach the appropriate people (such as the vendor) within the timeframe provided by SDG&E.

In general, vendors interviewed estimate a minimum of 30 days for rebate processing with ranges as high 160 days for applications that were rejected by SDG&E program staff.

4.3.4 Overall Satisfaction

SDG&E customers participating in the Express Efficiency program generally cite high levels of satisfaction, averaging 4.3 out of 5 (with 5 being very satisfied and 1 being very dissatisfied). Participating customers who were interviewed rate their satisfaction with the rebate amount slightly lower

at 3.4 out of 5. The average rating appears to have been reduced due to a couple customers who answered that they did not qualify for the rebate after all and thus rated their (dis)satisfaction a 1 out of 5.

Most customers surveyed are overwhelmingly satisfied with the equipment for which they received a SDG&E rebate. According to Figure 4-9, however, a small but significant population of customers was not satisfied with the equipment. The complaints were all related to lighting. One participant said that the LED exit signs were "falling apart." Another customer said that his equipment was faulty, but it is unclear whether he was referring to the T8 fixtures or the LED exit sign. Another participant said that the 4 foot T8's were not working properly.

Figure 4-9
How satisfied is your organization with the equipment purchased under this program? (n = 54)
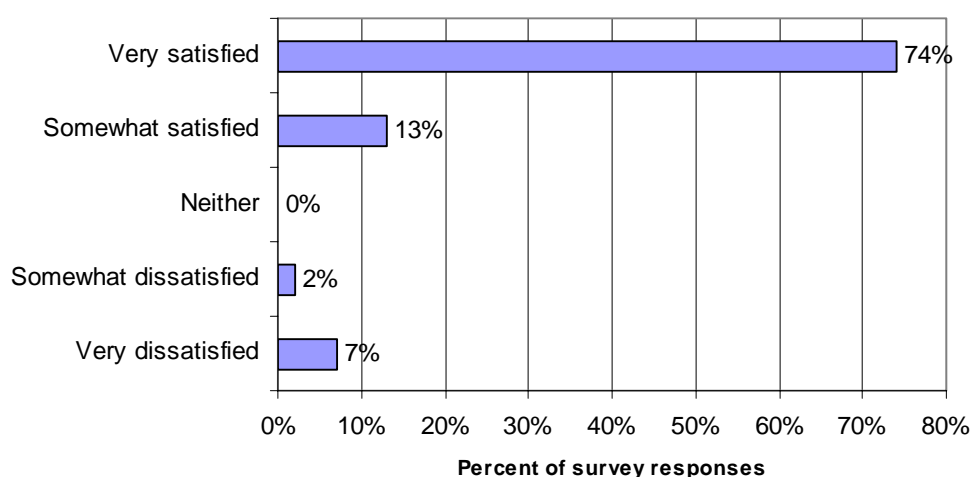
Most vendors interviewed were also satisfied with the program, although this may be a biased sample since only the most active vendors were interviewed. One vendor said he was not satisfied, and feels that a contractor-only program would be more effective so that customers do not need to be involved in the paperwork.

4.3.5 Conclusion and Recommendations

Since vendors and contractors play such a large role in marketing the Express Efficiency program to customers, program staff have demonstrated significant effort and commitment to responding to vendor concerns. The Trade Professional Forum was extremely well organized, with a detailed agenda and the flexibility to respond to vendor interest during the question and answer period. Given the importance of vendors and contractors to the marketing and day-to-day implementation of the program, staff should seek to facilitate vendor and contractor processes to the greatest extent:

- Include a third-party release form with the application package to enable customers to allow vendors to access account numbers and usage amounts for determining customer eligibility.

- Ensure that the program website is updated regularly and that application forms, handbook and measure lists are prominently displayed. Notify vendors and contractors when website is updated, as appropriate.

- Follow up on commitment for more trainings and classes, and providing assistance to first time vendor and customer participants.

4.4 Best Practices Review by Program

4.4.1 Program Theory and Design

- *Is the program design effective?* The Express Efficiency program is a traditional prescriptive rebate program to maximize savings per program dollars. While one vendor indicated that he would prefer a turnkey, direct installation program, the existing Express Efficiency state-wide program design appears effective.

- *Is the market well understood?* Express Efficiency is a mature program and the market appears to be well understood.

4.4.2 Program Management

4.4.2.1 Project Management

- *Are responsibilities defined and understood?* Express Efficiency in-house staff approve projects, track projects, process applications and verify installations. It appears that program staff responsibilities are well defined and understood.

- *Is there adequate staffing?* While this issue was not specifically researched, there does appear to be adequate staffing. Complaints about slow rebate processing seem to be due to issues such as incorrect or incomplete information on applications submissions and previous wet signature requirements, rather than lack of staff.

4.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* This issue was not specifically researched, but it is believed that either the MAS Reservation System[12] or something similar is used by SDG&E Express Efficiency. This database allows staff to look up customers' information and find the status of applications. It is believed that this database is not available to vendors to check on application status.

- *Are routine functions automated?* Best practices recommends that routine tasks such as standardized reports, automated notification procedures be automated with quality control checks. This issue was not researched as part of this project.

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[12] Included in documentation of SoCalGas Express Efficiency program

4.4.2.3 Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* Based on observations at the Trade Professionals Forum, the program manager appears to have a strong relationship with vendors and seeks to respond to issues raised from previous forums. The program manager openly acknowledges the important role of vendors and to respond proactively to problems and concerns..

- *Does the program verify the accuracy of application data, invoices and incentives to ensure the reporting system is recording actual installations by target market?* Program processes are designed to ensure that invoices match applications and includes various quality control steps. The program also performs random pre-inspections to verify base case conditions, with 100% post-installation inspections to ensure the reporting system is recording actual installations. To improve energy savings estimates, contractors were also required to begin submitting annual hours of operation along with rebate applications when applying for lighting rebates.

- *Are customers satisfied with the product?* While most customers are satisfied with the product, a few complained about faulty LED exit signs and four foot T8 bulbs that didn't fit or function well.

4.4.3 Program Implementation

4.4.3.1 Participation Process

- *Is participation simple?* Most customers and vendors say that the application process is "very easy."

- *Are participation strategies multi-pronged and inclusive?* The program has been extremely successful in engaging large chain stores with vendors and contractors. The Express program may wish to evaluate strategies for engaging smaller businesses, and encouraging vendors and contractors to target these harder to reach customers.

- *Does program provide quick, timely feedback to participants?* Some participants mention that the process can be time consuming. On average, contractors estimate that application processing times vary from about 45 days to 80 days, depending on whether there were any issues with the paperwork.

- *Is participation part of routine transactions?* For vendors and contractors who actively market the program, participation is part of routine transactions as they sell energy efficient equipment to customers. Larger, more sophisticated customers with dedicated facility managers are generally aware of these programs and pro-actively seek out rebates.

- *Does the program facilitate participation through the use of internet/electronic means?* Many customers and vendors use the SDG&E website to obtain information about rebate levels and up-to-date applications. Application forms may now be faxed to the program staff.

- *Does the program offer a single point of contact for their customers?* This was specifically researched, but a review of the website and customer handbook shows that only the general 1-800 number is provided and two general email addresses, info@sdge.com and EIC@semprautilities.com.

- *Are incentive levels well understood and appropriate?* Incentive levels did change in August 2007. Participants were not asked whether the incentive levels were well understood or appropriate.

4.4.3.2   Marketing and Outreach

- *Use target marketing strategies to ensure that hard-to-reach populations are informed?* Program staff are focusing on food service industries, and have provided updated information to restaurant equipment dealers and trade associations. Staff have also held workshops on refrigeration and equipment for contractors and customers. Also, staff have sponsored and displayed energy efficient equipment at the Western Food Service Show.

- *Are products stocked and advertised?* This was not a specific area of research, and no participants or contractors mentioned that products were not stocked.

- *Are trade allies and utility staff trained to enhance marketing?* Program staff provide trainings to account executives and to contractors on the Express Efficiency program and the types of energy efficient equipment that qualifies for rebates.

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5.   SDGE 3019: On-Bill Financing

5.1 Program Overview

5.1.1 Program Summary

The On-Bill Financing program (OBF) facilitates the purchase and installation of qualified energy efficiency measures by customers who might otherwise not be able to act, given capital constraints and other burdens. The participating customers receive a reduced rebate from the participating rebate/incentive energy efficiency program that OBF supplements in addition to the financing. Monthly payment on a term loan will be billed as part of the customer's utility bill.

Eligible customers will receive zero percent financing that includes installation. The loan must be in the range of $5,000 and $50,000 and a term length of up to 5 years is available. The reduced rebate level from the supplemented energy efficient program allows these programs to service more customers.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Michelle Costello	SDG&E	MCostello@semprautilities.com	858-637-7957
	Jill McGhee	SDG&E	jmcghee@semprautilities.com	

5.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the OBF program in order to develop and refine the program logic and theory. This model served as part of our guide for data collection activities in the following evaluation tasks as well as enabling subsequent impact evaluators to have a consistent type of theory and logic model to help focus their efforts. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested using survey or other primary data collection methods.

Figure 5-1
Program Logic Model for SDG&E 3019 – On Bill Financing Program

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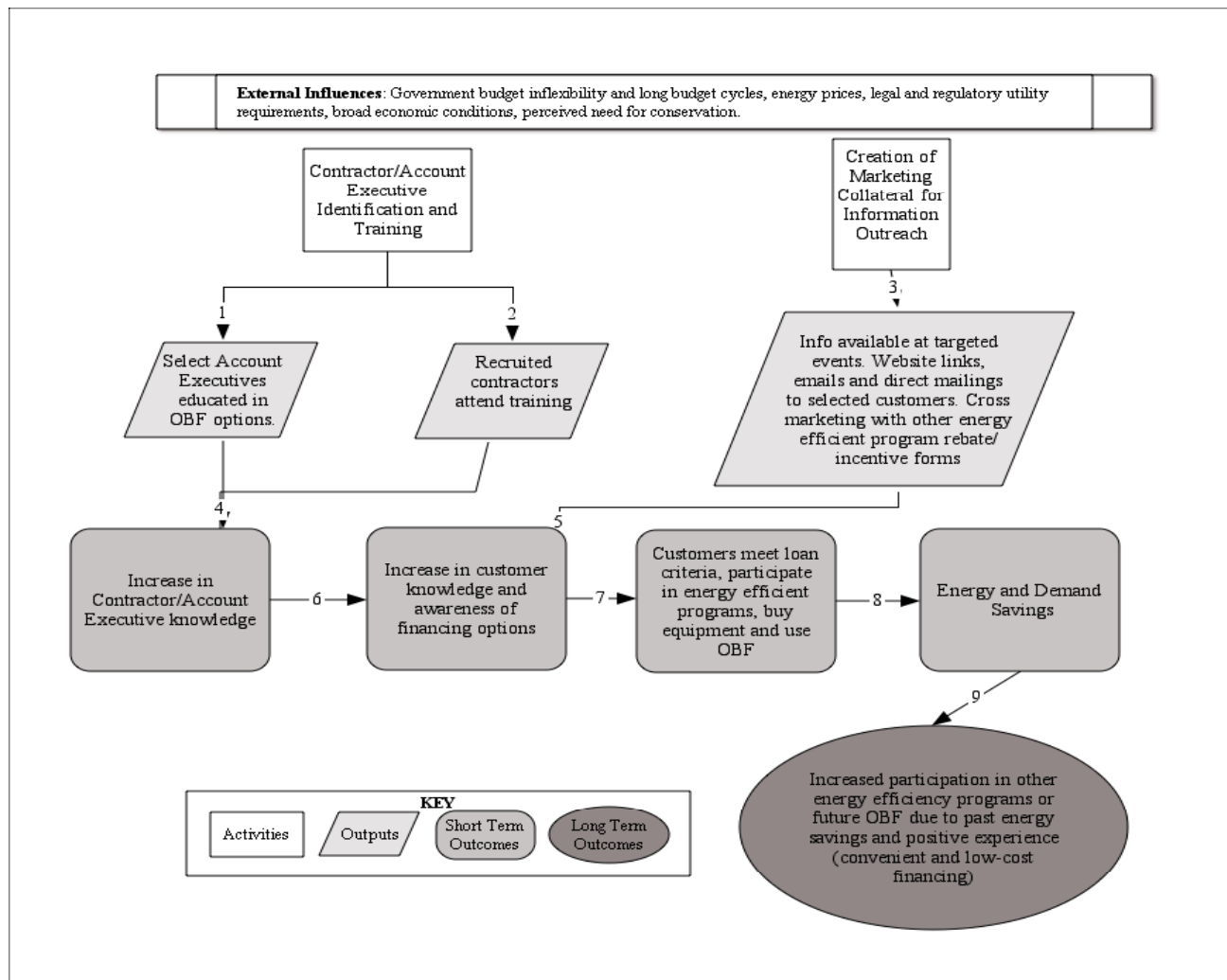
Table 5-1
Program Theory Description for SDG&E 3019 – On Bill Financing Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	The On Bill Financing program selects and informs appropriate Account Executive that will effectively introduce the OBF options to their customers. Processes are developed to target appropriate Account Executives, regions, and their customers however they are not a major source of leads.	OBF training presentation is developed and available, and the training is easy to understand. Methods have been developed and implemented to identify and select participating account executives and they have all the tools needed to enlist customers.	Program tracking data Review by training expert
2	The program develops and plans training events that will effectively educate contractors about how OBF works and how to recruit, educate and enroll customers. Processes are developed to target and invite appropriate contractors.	OBF training is developed and available, and the training is easy to understand. Methods have been developed and implemented to identify and select participating contractors and they have all the tools needed to enlist customers.	Program tracking data Review by training expert
3	Contractors are limited in the services they may provide by their customers' capital constraints and lack of financing options. Utility account executives are expected to promote a wide range of equipment and financial options/incentives to their customers. The On Bill Financing option supplements other energy efficiency programs by giving customers the ability to conveniently finance all or part of their spending for new efficient measures directly through the utility. The marketing and outreach component is focused on creating program literature that will inform and attract contractors and account executives to the benefits of the On Bill Financing option.	Program literature is created that has a clear and compelling message. It is easy to understand with specifics regarding financing terms and agreements as well as how to become an approved contractor.	Focus group of contractors reviewing the program literature. Surveys of participating account executives.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4	The contractors and account executives benefit from the initial training presentations. After the training, they have greater understanding of the On Bill Financing benefits and logistics and are able to offer a wider range of services and enlist customers.	Self-reported increase in knowledge among contractors/account execs of the financing option, complementary rebates and how to enroll customers.	Contractor/account exec participant survey after the training session.
5	Directly targeted customers receive information and literature describing the benefits of OBF (e.g., zero interest loan), the program guidelines and how to participate (e.g., application forms). This information is received by customers through their own interest by attendance of events and/or receiving direct mailers, website links, and emails. Customers may also see OBF option on other energy efficient program rebate/incentive forms.	Self-reported increase in knowledge among customers of the financing option and how to apply for financing.	Surveys of customers that OBF is available to (multifamily housing owners, small commercial and industrial, local government)
6	Account Executives/Contractors pre-screen and refer eligible customers. Contractors/Account Executives meet with their customers and further educate them on the benefits of the financing option and how to participate.	Self-reported increase in knowledge among customers of the financing option and how to apply for financing.	Surveys of customers that OBF is available to
7	Customers value the convenience of OBF and recognized how OBF can mitigate their capital constraints are pre-qualified and use OBF. OBF loans are prepared by program staff.	OBF is desired by customers and they submit applications for efficient equipment financing.	Program tracking data, number of applications.
8	Customers gain energy efficiency through implementation of energy efficient equipment/programs financed through OBF.	M&V identifies equipment/installs using OBF, associated funding, and energy savings.	Program tracking database, reports of gross savings

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
9	Customers recognize and value energy savings, decreased capital barriers and ease of implementation. As a result they look for additional opportunities to fund efficient equipment purchases using OBF (and may also participate in other utility incentive/rebate programs).	Increasing number of OBF applicants for energy efficient implementation, and repeat participants.	Program tracking , number of applications, repeat participants. Surveys of OBF participants

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5.2   2006 – 2007 Program Activities

5.2.1   Savings Summary

The SDG&E OBF program is a resource acquisition program that does not have documented savings.

5.2.2   Budget Summary

As of Q4 2007, the OBF has consumed 35 percent of its three-year operating budget. Table 5-2 below is a summary of the program's expenditures.

Table 5-2
Expenditure Summary (Q1 2006 through Q4 2007)[13]

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
1,286,814	3,715,016	35%

5.2.3   Participation Summary

The OBF program consists of small commercial, multifamily and local government customers. As of Q2 2007 fifty customers are enrolled in OBF with twenty six applications in process. Participation in one of five energy efficiency programs including the Small Business Super Saver Program, the Multifamily Energy Efficiency Program, the Express Efficiency Rebate Program, the Standard Performance Contract Program, and the Energy Savings Bid/Tax Exempt Customer Program is mandatory in order to be enrolled in the OBF program.

5.2.4   Summary of Program Status

The OBF program is on pace to meet its targeted goals as of Q3 2007. Program staff are continuously meeting one-on-one with commercial energy efficiency program subcontractors. These meetings take place during training sessions sponsored by the utility.

Program staff have also revised their rebate tracking system procedures. This revision will improve coordination between the OBF program and the Small Business Super Saver Program and Express Efficiency Program.

The programs third party billing system is finalized and installed. This system allows for payments of projects and loan installments to be viewed on customer bills. Originally, this system was performed manually but is now fully automated.

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[13] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

5.3 Findings, Conclusions and Recommendations

5.3.1 Contractor Interviews

This section presents the results of in-depth interviews conducted with firms participating in the OBF program. The purpose of these interviews is to provide the customer's perspective on program process issues being addressed by the evaluation. The participating customers were recruited from the utility's program-tracking database. In January 2008 a total of six in-depth interviews were completed with firms actively participating in the program.

The six customers interviewed represented various industries throughout Southern California. The firms interviewed included a car rental business, a cancer treatment center, a cable and wire harness manufacturer, an ice skating complex, one college campus, and a private elementary day school and high school. Each of the six businesses installed T5 and T8 lamps under the On-Bill Financing program.

Each of the six respondents interviewed was as a primary decision maker for energy efficiency investments within the company. The general manager at the cable and wire harness manufacturer stated he also needed to consult the owners of the company, as it was a family run business. The facilities manager at the college campus also said he had to consult the board of directors and the college president. Apart from these two individuals, the other four representatives were the sole decision makers.

When asked how the OBF program should be promoted to businesses similar to their own, two of the participants suggested demonstrations at trade shows. Three respondents suggested one on one contact through a contractor and the last participant suggested direct mail.

Participants were then asked why they decided to replace their previous equipment. Two customers answered that they wanted to take advantage of the zero percent financing. The next two respondents said the energy cost savings from reduced consumption initiated the lighting replacement. The last two individuals responded that they replaced their lighting because it was simply old and failing.

Five of the six participants surveyed stated they would not have replaced their lighting had it not been for the OBF program. In contrast, only the facilities manager at the college campus said the program made no difference in his decision. According to the facility manager, he still would have replaced his lighting with energy efficient equipment.

Four of the six respondents said they had significant out of pocket expenses with the replacement of their lighting. Only two customers surveyed stated the OBF program covered 100 percent of their costs. One individual claimed he had to pay forty percent of the cost to replace his lighting, a second said twenty percent, and the last two said the program only covered fifty percent of the equipment cost and installation. Additionally, the respondent from the cancer treatment center said he was charged a one thousand dollars fee for the disposal of his previous lighting.

Participants where then asked if they had any concerns prior to their participation in the OBF program. Only two of the respondents said they did not have concerns. The general manager of the cable and wire harness manufacturer added that his previous experience with a similar program erased any concerns. Two respondents said they are always skeptical about real versus stated energy savings and the last

respondent said he was concerned because he was not familiar with the OBF program. He also added that his governing board of directors were skeptical about any program they had never heard of before.

All of the respondents who stated they had doubts prior to enrolling in OBF stated their concerns were later put to rest. The first participant said he viewed his contractor as reputable and with the support of the utility, it was enough to gain his confidence. The next participant said his concerns were laid to rest when the utility sent representatives to verity the installation. The last two participants said that they immediately saw savings on their utility bill and this erased their doubts. Finally, one participant added that when utility staff later verified his installation, a smaller number of lights were found than his contractor claimed. His contractor refunded him the difference but this still caused a problem with his financing agreement.

When asked about their future intentions with respect to energy efficient equipment five respondents answered they did not plan on making a purchase but were open to recommendations. The last respondent said he was planning on using the OBF program to finance the purchase of an HVAC system and controls equipment.

Overall, contractors were in agreement that the OBF program met all of their expectations. Four out of six participants claimed to be moderately satisfied while the last two were very satisfied. None of the participants queried recorded any problems with program staff, all said there was an adequate offering of equipment, and none of the participants recommend that any changes be made to the program. Additionally, every respondent said the payback period of the loan was perfectly acceptable. Each participant understood that the program provided zero percent financing that they would be hard pressed to find elsewhere.

5.3.2 Conclusions

The following general conclusions are drawn from the in-depth interviews presented in this report:

- **In general, it appears the OBF customers are satisfied with their participation in the program.** Customers interviewed did not issue any complaints with the OBF program. Their expectations were met concerning several topics with respect to the loan payback period, program measure offering and program staff. Customers realized they could not easily find a zero percent financing program from another source.

- **Hidden fees can create out of pocket expenses for customers**. Some contractors are charging various clean up and disposal fees to OBF participants. In one case, this fee was as large as one thousand dollars. In the event of an additional fee, customers do not have a clear mechanism to adjust their loan by the amount of the additional cost.

- **Contractors are an important factor in convincing participants to enroll in the OBF program**. The results of the in-depth interviews show that contractors have considerable influence on customer decisions. One participant stated he viewed his contractor as a reputable firm and with the support of the utility it was enough to gain his confidence and convince him to enroll in the program.

- **Skepticism exists around real vs. stated energy savings.** Many small businesses are concerned about the accuracy of stated energy efficiency savings. Coupled with economic barriers, implementation of energy efficiency measures can be challenging at the very least. Convincing

uncertain customers about the future benefits of energy efficient technologies and practices is still a challenge for the OBF program.

5.3.3 Recommendations

Based on the interview findings, we make the following recommendations:

- **Establish and publish an approved contractor list.** Providing an approved contractor list will increase the accountability of contractors with the OBF program and encourage contractors to perform quality installations. OBF should list only the most qualified contractors with a proven track record of success.

- **Recommend customer-contractor inventories immediately after measure installations.** To protect against simple contractor oversight and to aid the verification of measure installation, customer should conduct a thorough post-installation inspection of their equipment along side the contractor. This ensures that the equipment and the agreed upon equipment totals, especially for lighting, are correctly installed. The post-inspection will also aid in identifying equipment problems as early as possible.

- **Ensure all fees are included in the loan agreement**. This includes hidden cost such as clean and disposal fees that may be charged by the installation contractor. Ensuring that all fees are included in the loan agreement will help prevent changes to the initial customer loan agreements. Also, a mechanism for handling extra or hidden fees should be brought to the attention of every OBF participant.

- **Provide information on helping contractors market non-energy benefits.** Highlighting the additional advantages of energy efficiency beyond cost at the point of sale can weigh heavily on a customer's purchasing decision. This can include environmental benefits, reduced wear and tear, avoidance of health violations, increased quality of air, improved light color and temperature, lower maintenance costs, improved worker productivity, and taking advantage of a zero percent financing before the efficiency upgrade becomes a code and out of pocket expense.

- **Consider extending the five-year loan payback requirement.** The five-year loan payback requirement is crowding out OBF participation. Program participation is substantially lower than previously forecasted. When project payback periods exceed the five-year maximum under OBF, customers have no choice but to go with the Express Efficiency program only.

5.4 Best Practices Review by Program

5.4.1 Program Theory and Design

- *Is the program design effective?* The program design seems to be effective as the program is meeting its goals. The OBF program attempts to overcome economic barriers by facilitating the purchase and installation of qualified energy efficiency measures by customers who might otherwise not be able to act, given capital constraints and other burdens. Zero percent financing is offered to customers to provide an incentive for the implementation of these measures. As of Q4 2007, the OBF program has fifty participants and has used only thirty five percent of its three-year operating budget.

- *Is the market well understood?* According to the program manager, the majority of OBF customers are using the program to install lighting fixtures. Every participant interviewed stated they used OBF for lighting but only one responded they were planning on using the program to help with an HVAC upgrade. With respect to small commercial customers and lighting upgrades, the market is well understood by the program.

5.4.2 Program Management

5.4.2.1 Project Management

- *Are responsibilities defined and understood?* The responsibilities of program staff and straightforward. Much effort has been put into coordinating the OBF program staff with the Small Business Super Saver and Express Efficiency staff members.

- *Is there adequate staffing?* No staffing deficiencies were reported.

5.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* The OBF program uses a computerized database to track specific types of information for each customer and each installation. The customer information tracked includes the following:
  - o Name, address and contact information for each business enrolled in the program.
  - o Site number
  - o Date of installation
  - o DEER Classification
  - o Measure description

  During the course of the program, the tracking system is used to prepare monthly reports that detail the previous month's activities and progress toward meeting the goals of the program. Each monthly report includes information on marketing activities, administrative activities, direct implementation activities, progress toward goals, the number of installations and their characteristics and locations.

- *Are routine functions automated?* The programs third party billing system is finalized and installed. This system allows for payments of projects and loan installments to be viewed on customer bills. Originally, this system was performed manually but is now fully automated.

5.4.2.3 Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* The program manager is familiar with the third party contractors and has engaged them numerous times at contractor training events.

- *Does the program verify reporting systems?* The verification process was not addressed in this evaluation. However, all installations are verified.

- *Are customers satisfied with the product?* The results of the in-depth interviews show that customers are satisfied with the program. Overall satisfaction with the program was moderate to high and few complaints were logged. Also, the interviews showed the program met every

participant expectation. Customers realized they could not easily find a zero percent financing program anywhere else.

5.4.3 Program Implementation

5.4.3.1 Participation Process

- *Is participation simple?* Participation is voluntary and may at times involve out of pocket expenses as much as fifty percent. Respondents did not report that participation was complicated.

- *Are participation strategies multi-pronged and inclusive?* Not applicable.

- *Does program provide quick, timely feedback to applicants?* The program has a system where each installation is verified by utility staff. The timeliness of this procedure was not observed.

- *Is participation part of routine transactions?* Participation in one of five energy efficiency programs including the Small Business Super Saver Program, the Multifamily Energy Efficiency Program, the Express Efficiency Rebate Program, the Standard Performance Contract Program, and the Energy Savings Bid/Tax Exempt Customer Program is mandatory in order to be enrolled in the OBF program.

5.4.3.2 Marketing and Outreach

- *Use target-marketing strategies?* The OBF program has a strong marketing effort. Marketing for this program is performed during presentations and training events with participating contractors who in turn market the program.

- *Are products stocked and advertised?* Not applicable

- *Are trade allies and utility staff trained to enhance marketing?* Participating contractors are continually trained on various program aspects and receive updates on program changes. This is performed via contractor workshops and presentations.

6.   SDGE 3020: Small Business Super Saver

6.1 Program Overview

6.1.1 Program Summary

The Small Business Super Saver (SBSS) program is a local program administered by an investor-owned utility under the auspices of the California Public Utilities Commission (CPUC). The administering utility is: San Diego Gas & Electric Company (SDG&E).

SBSS is designed to increase the adoption of energy-efficient measures to the hard to reach, very small and small customers who typically rent, have limited capital resources, and lack acceptance of the magnitude of the personal financial benefits of energy efficiency improvements. In addition, there has been a program over lap between the Small Business Energy Efficiency Program and the Express Efficiency Program in the past within this market segment. The re-design of the Small Business Energy Efficiency (SBEE) program, renamed Small Business Super Saver overcomes these barriers by offering opportunities to participate with little or no out of pocket expense. Program conflicts are addressed by offering higher rebates and additional measures for customers under 100kW in SBSS, directing customers over 100kW of monthly demand to the Express Efficiency Program.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Shea Dibble	SDG&E	sdibble@semprautilities.com	858-636-5774
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6.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the SBSS program in order to develop and refine the program logic and theory. This model served as part of our guide for data collection activities in the following evaluation tasks as well as enabling subsequent impact evaluators to have a consistent type of theory and logic model to help focus their efforts. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested using survey or other primary data collection methods.

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Figure 6-1
Program Logic Model for SDGE3020 – Small Business Super Saver Program
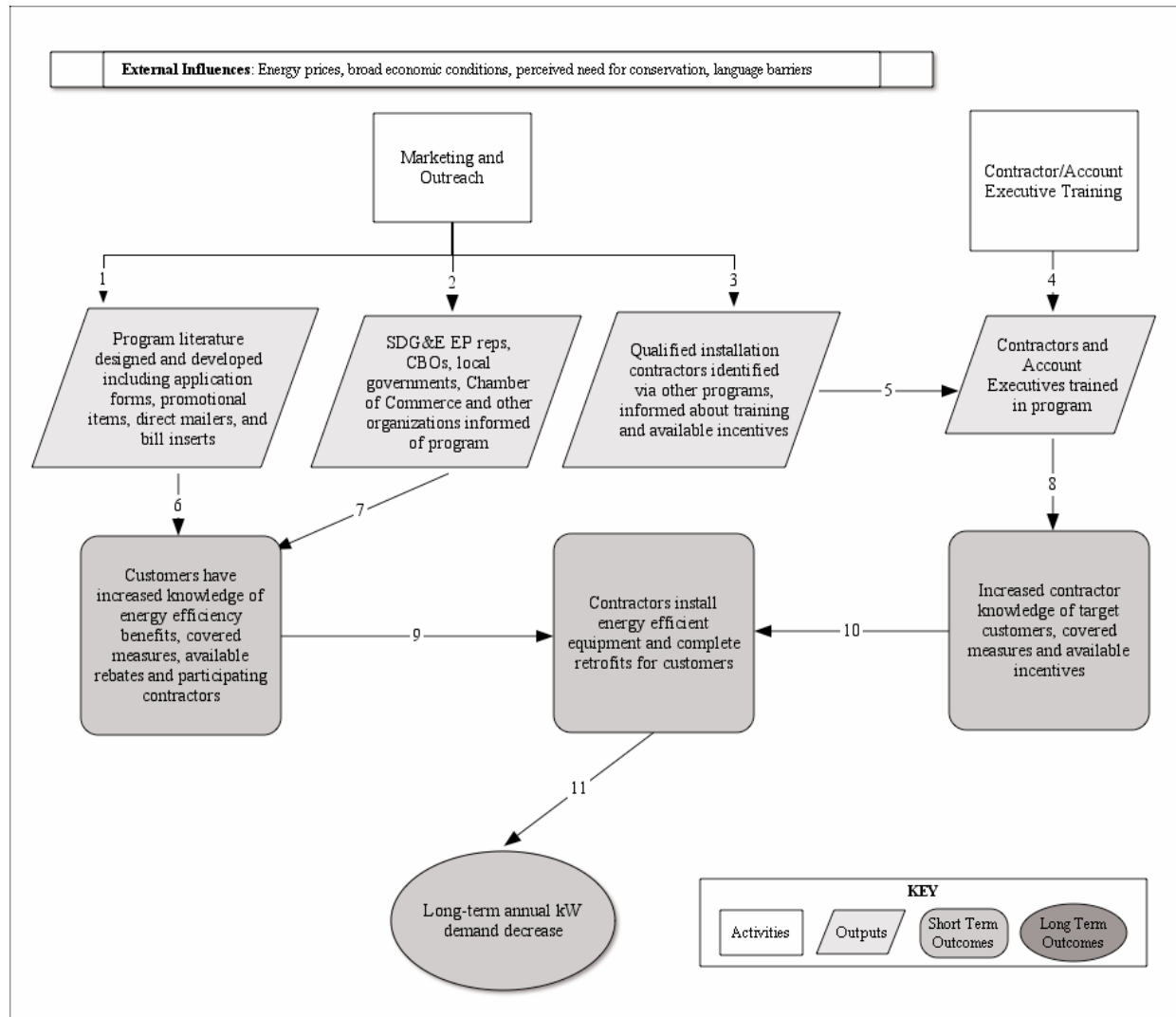
Table 6-1
Program Theory Description for SDGE3020 – Small Business Super Saver Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Small businesses are often unaware of the financial benefits that can result from energy efficiency improvements and lack the capital resources to purchase efficient equipment. Marketing and outreach will focus on developing program literature, promotional items, and mailers to inform small businesses of program-covered installation options, the significant rebates that are available, and how to contact the appropriate contractors.	Program literature is created that has a clear and compelling message. It is easy to understand with specifics regarding energy efficiency benefits, covered measures and applicable rebates, and how to use contractors to install measures.	Focus group of customers reviewing the program literature. Customer surveys or questionnaires.
2	Public and civic groups have an interest in promoting energy efficiency to their constituents, and many constituents trust these groups to act in their interest. By performing marketing/outreach in conjunction with Community Based Organizations (CBO's), local governments, Chambers of Commerce, and other select organizations to reach targeted small business customers, the program will reach more customers and the information will be perceived as more trustworthy.	Community Based Organizations (CBO's), local governments, Chambers of Commerce, and other organizations are aware of program-sponsored installation, retrofit and rebate opportunities and have appropriate program promotional items.	Program tracking data Focus group of various organization leaders and event organizers.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
3	Contractors seek to expand their customer base and the services they offer to customers in order to increase their business profitability. They also want to receive incentives that are available to them. Utility account executives are expected to promote a wide range of equipment and financial incentives to their customers. The program informs qualified contractors that are participating in other utility programs and account executives of the SBSS program, available contractor incentives and training opportunities.	Contractors are aware of SBSS training opportunities.	Program tracking data Survey of contractors participating in other programs
4	Contractors and account executives do not initially understand what SBSS has to offer. The program can develop training that will increase the knowledge of contractors and account executives about SBSS eligible customers, available services, covered measures, and contractor incentives.	SBSS training manual is developed and available. The training curricula is easy to understand and appears to b able to impart knowledge to those undergoing the training.	Program tracking data Review by training expert.
5	Contractors and account executives do not have the knowledge needed to market and implement the program, and they desire this knowledge.	Contractors and account executives sign up for training classes that are held during times that work with their schedules.	Class sign up sheets Self-report of contractors/account execs who do not participate in the training.
6	Program knows where to deliver program marketing information for customers and places it in appropriate areas to be seen by customers.	Customers have increased awareness and knowledge of energy efficiency benefits, program covered measures, available rebates and participating contractors.	Surveys of participating and non-participating business customers

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
7	Targeted customers also become aware and knowledgeable of program services and benefits through community events, CBO's, local governments, Chambers of Commerce and other organizations.	Customers have increased awareness and knowledge of energy efficiency benefits, program covered measures, available rebates and participating contractors.	Surveys of participating and non-participating business customers
8	The contractors and account executives benefit from the SBSS training. After the training, they have greater understanding of the available program services and are able to offer a wider range of services.	Self-reported increase in knowledge among contractors/account execs of the SBSS program, contractor incentives, and customer rebates.	Contractor/account exec participant survey after the training session.
9	Customers believe that energy efficient equipment will save them money and recognize how the significant program rebates can mitigate their capital constraints. They also value the direct install aspect of the program. They utilize the program literature they have received to contact contractors and install equipment.	Energy efficiency is desired by customers and they have contractors install program-covered equipment.	Program tracking data on installations and rebates. Survey of participating and non-participating customer attitudes
10	Contractors that have been trained in the program are motivated to receive incentives and are able to effectively market the program's benefits to potential customers, some of who choose to install efficient equipment.	Energy efficiency is desired by customers, and they have contractors install program-covered equipment.	Survey of participating contractors Program tracking data on installations and rebates.
11	Through the successful installs and retrofits, annual kW, kWh and therms decrease.	M&V identifies equipment/installs using SBSS and energy/demand savings.	Program tracking database, reports of gross demand/energy savings

6.2   2006 – 2007 Program Activities

6.2.1   Savings Summary

As of Q4 2007 the SBSS program has achieved 88 percent of its net annual kWh savings goal. Additionally, the SBSS program has accomplished 111 percent of its kW savings goal and 46 percent of its therm savings goals. Table 6-2 below lists the savings totals in terms for both kWh and kW.

Table 6-3 is a summary of the SBSS program gas savings.

Table 6-2
Electric Savings Summary (Q1 2006 through Q4 2007)[14]

Net Annual kWh Savings	2006-2008 Goal	% of Goal	kW Savings	2006-2008 Goal	% of Goal
139,202,993	157,572,849	88%	27,752	24,907	111%

Table 6-3
Gas Savings Summary (Q1 2006 through Q4 2007)

Therm Savings	2006-2008 Goal	% of Goal
616,823	1,327,769	46%

6.2.2   Budget Summary

The SBSS program has consumed 65 percent of its three-year operating budget through Q4 2007. Table 6-4 below is a summary of the program's expenditures.

Table 6-4
Expenditure Summary (Q1 2006 through Q4 2007)[15]

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
19,875,235	30,659,597	65%

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[14] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

[15] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

6.2.3 Participation Summary

The SBSS program consists mostly of small commercial and industrial firms. Many times, these customers are also participating in the Express Efficiency program. To date, the SBSS program has resulted in the installation of 1,268,275 efficient measures. Figure 6-2 illustrates the distribution by measure type for the SBSS program.

Figure 6-2
Units Installed
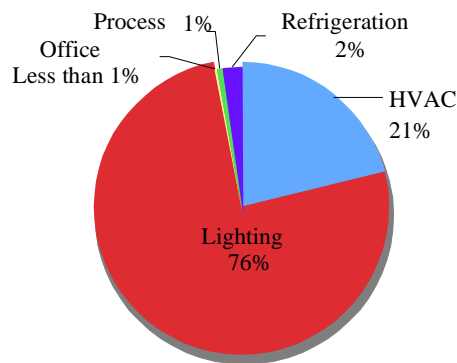
6.2.4 Summary of Program Status

The SBSS program is on pace to meet targeted savings goals as of November 2007. According to the program manager, rebates were originally set too high in order for the program to make its goal. In areas such as lighting, where rebates are directly proportional to hours of operation, many customers were self-reporting the minimum required hours in order to receive the maximum rebate. This gaming of the rebate system limited the effectiveness of time of operation incentives and the potential for program savings as well. Rebates have since been adjusted to meet program goals.

6.3   Findings, Conclusions and Recommendations

6.3.1 Participant Survey Results

This section of the report describes the results of the participant phone surveys that were completed in January 2008. This survey collected information from one hundred individual participating businesses asking questions about their equipment installations, the SBSS application process, rebate processing, and their satisfaction with the program. The survey also addressed questions relating to the motivation behind contractor and participant involvement in the SBSS program. Selected results from the phone survey are discussed below.

Figure 6-3 shows that the most important factor in a customer's decision to purchase energy efficient equipment is the savings from lower energy bills. Although this is not a surprising outcome, participants were limited to one response only. In contrast, only six percent of the customers surveyed cited other reasons such as "the owner thought it was required" and "the equipment needed to be replaced" as motivating factors for energy efficient purchases.

Figure 6-3
Most Important Factor in Decision to Purchase Energy Efficient Equipment
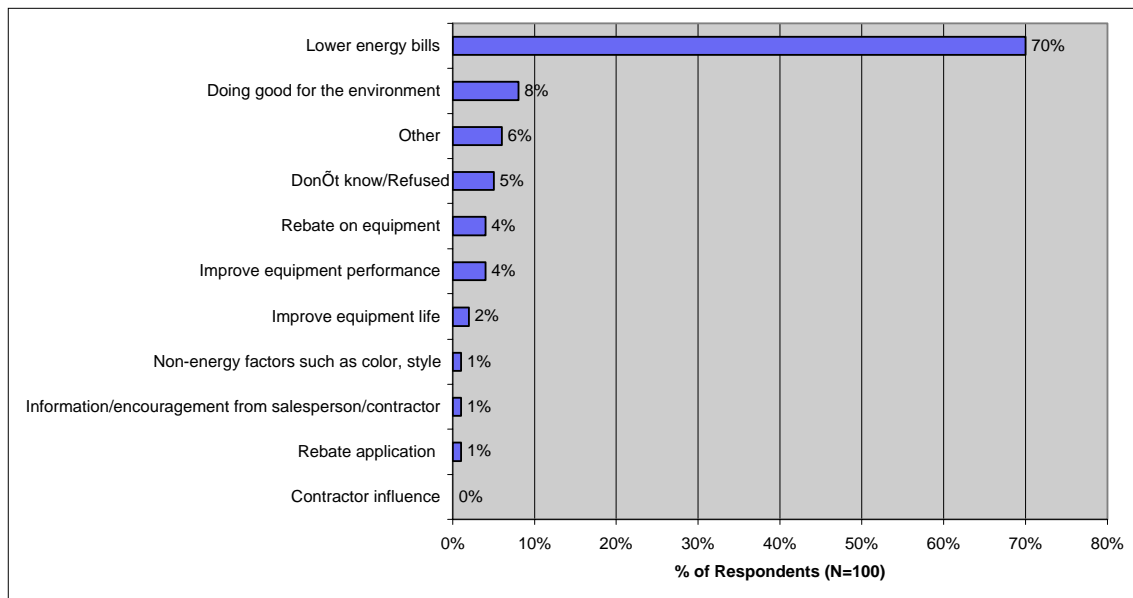
The next question in the survey allows the respondents to rate the importance of several factors behind customer motivation in purchasing energy efficient equipment. Again, as these factors may not have been the main overriding motivation behind decisions to purchase energy efficient equipment but they still hold considerable influence. For example, in Table 6-5 we see that eighty three percent of those asked said the money they would save from lower energy bills was very important. Additionally, seventy six percent said the environmental benefits from energy efficiency were also very important. Finally, Table 6-5 shows that just over half the participants surveyed find the contractor's influence very important.

Table 6-5
Relative Importance of factors in respondent decision to select energy efficient equipment

How important in your decision to select energy efficient equipment was...	Very unimportant	Somewhat unimportant	Neither unimportant or important	Somewhat important	Very important	Does not apply
Information or recommendations from the contractor (N=100)	2%	5%	4%	33%	52%	4%
The money you would save from lower energy bills (N=100)	2%	2%	1%	9%	83%	3%
The feeling that you were doing something good for the environment (N=100)	5%	2%	3%	14%	76%	-

When asked to choose which source of information was most important in their decision to purchase energy efficient equipment, the majority of respondents chose the contractor's advice over the SBSS rebate application. Figure 6-4 below shows that while forty two percent of those surveyed said the contractor's advice was most most than the rebate application only twenty seven percent said the rebate application was more influential.

Figure 6-4
Most Important Source of Information: Contractor advice vs. SBSS rebate application
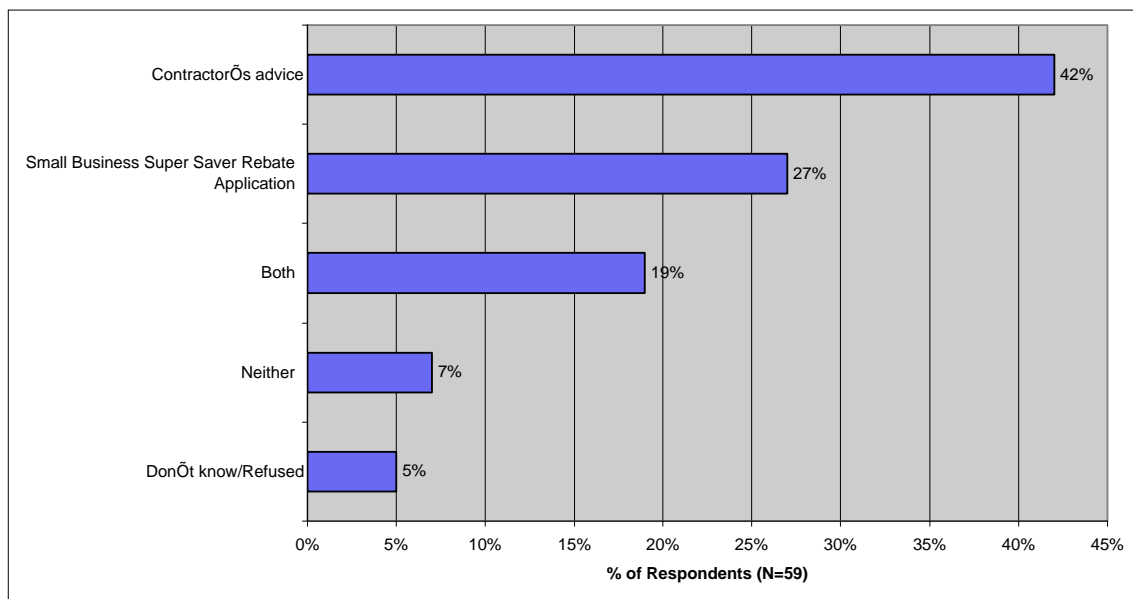
Some of the SBSS participants may have considered replacing old or failing equipment by purchasing a less expensive or less efficient model. The question in Figure 6-5 was fielded to capture what changed a respondent's mind and caused them to switch to a more efficient and sometimes more expensive model.

Energy savings and cost savings accounted together for almost three quarters of the total responses. Here, energy savings is the savings incurred from a reduced monthly utility bill while cost savings occurs because of a drop in measure price as the result of a rebate. Responses in the other category included "We were looking for ways to reduce the cost of the electric overhead", "We were going to change the fixtures one bulb at a time but we found that this would be a better way to do it", "My neighbor told me about the energy savings" and "We wanted to increase the lifetime of the bulb."

Figure 6-5
What changed your mind to go with the energy efficient model?
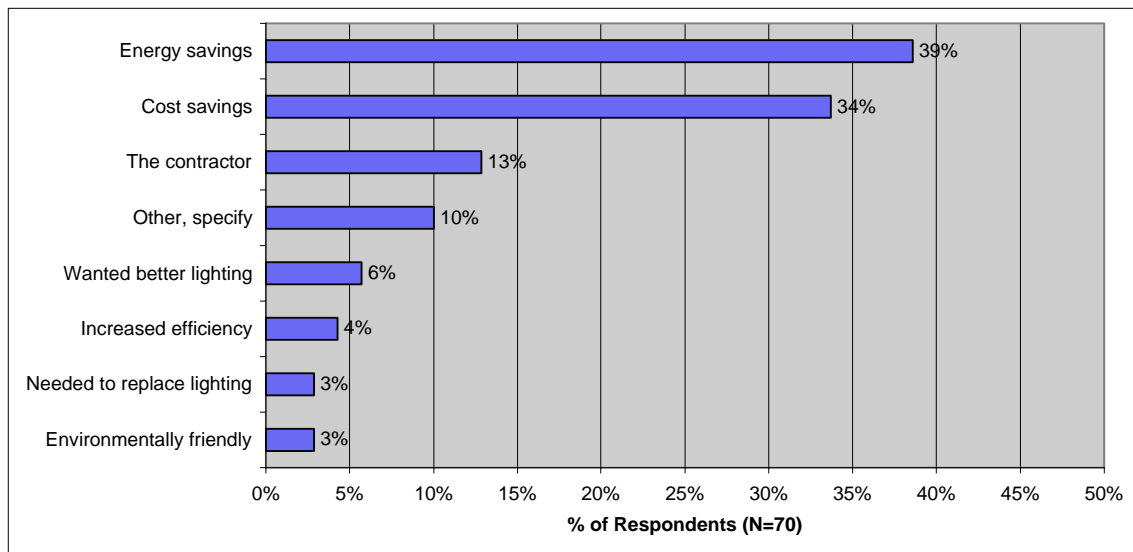
Table 6-6 below addresses how respondents viewed the rebate application's clarity of information. The table shows that very few customers had trouble understanding the information listed in the SBSS rebate application. Customers who found the information unclear stated they felt some prior knowledge about the program was necessary to fully understand the rebate application or said they found the information on rebate levels confusing.

Table 6-6
Clarity of information regarding the SBSS program

How clear was the information you received…	Not at all clear	Not very clear	Pretty clear	Extremely clear	Don't know/Refused
In the Small Business Super Saver Rebate Application that described the Small Business Super Saver Rebate Program (N=59)	-	-	36%	58%	7%

On the makes and models of the products listed in the Small Business Super Saver Rebate Application (N=59)	2%	5%	31%	51%	12%

In Table 6-7 we see how respondents judged the helpfulness of the rebate application. Over half the participants queried found the rebate application extremely helpful. In contrast, only seven percent found the rebate application not helpful at all. Respondents in this category stated that an explanation of possible out of pocket expenses would have made the rebate application more helpful.

Table 6-7
How helpful was the SBSS rebate application?

How helpful was the Small Business Super Saver Rebate application...	Not at all helpful	Not very helpful	Pretty helpful	Extremely helpful	Don't know/Refused
In helping you with selecting equipment (N=59)	7%	-	27%	53%	14%

When asked to rate the usefulness of several information sources, where a score of 5 = very useful and 1 = not at all useful, participating customers generally found the information delivered via email, mail, and the SDG&E website to be very useful. Figure 6-6 shows the average rating for each information source is at least a 4 out of 5 or higher. With respect to the relatively small number of responses, these questions were only fielded to those respondents who received information via email, mail or SDG&E's website.

Figure 6-6
How useful was the…
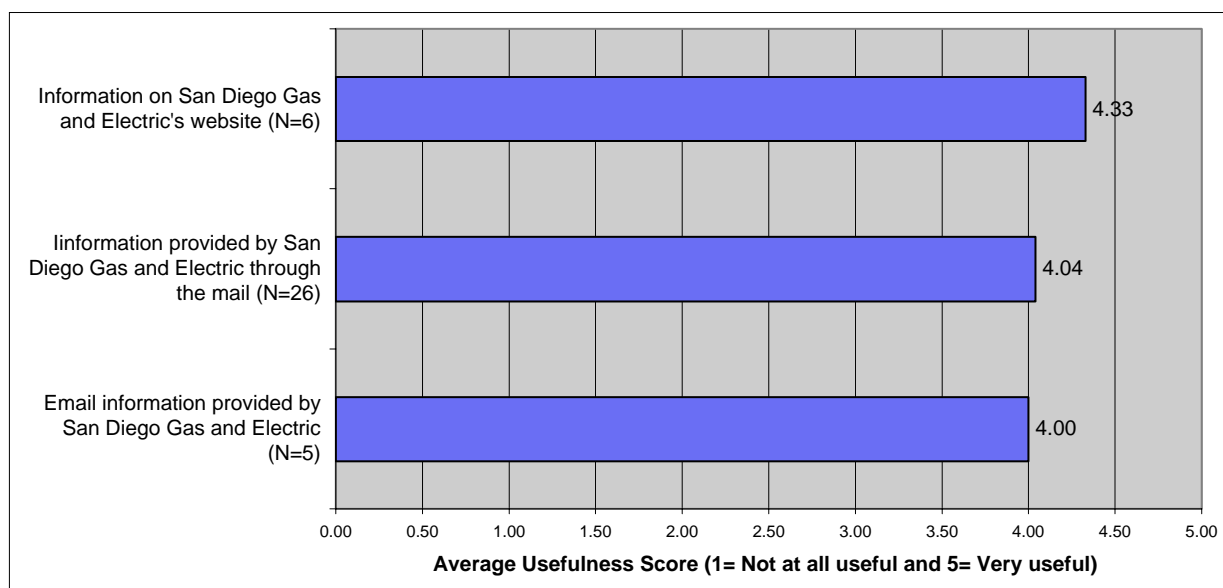
The final figure, Figure 6-7, shows customer responses after being asked if they were ever contacted about energy efficiency and how were they contacted (email, phone, mail, etc.). This portion of the survey provides valuable feedback to SDG&E in order to gauge the effectiveness of different marketing methods used to advertise energy efficiency. Most respondents, seventy one percent, received a bill insert or newsletter from the utility. This is followed by fifty five percent of respondents who claimed they learned about energy efficiency through their contractor. Next, forty four percent of respondents said they learned about energy efficiency through television or radio. In contrast, only six percent said they attended an SDG&E training seminar and sixteen percent said they heard about energy efficiency via a non-profit/government organization.

Figure 6-7
Response to Marketing and Outreach: Have you ever...
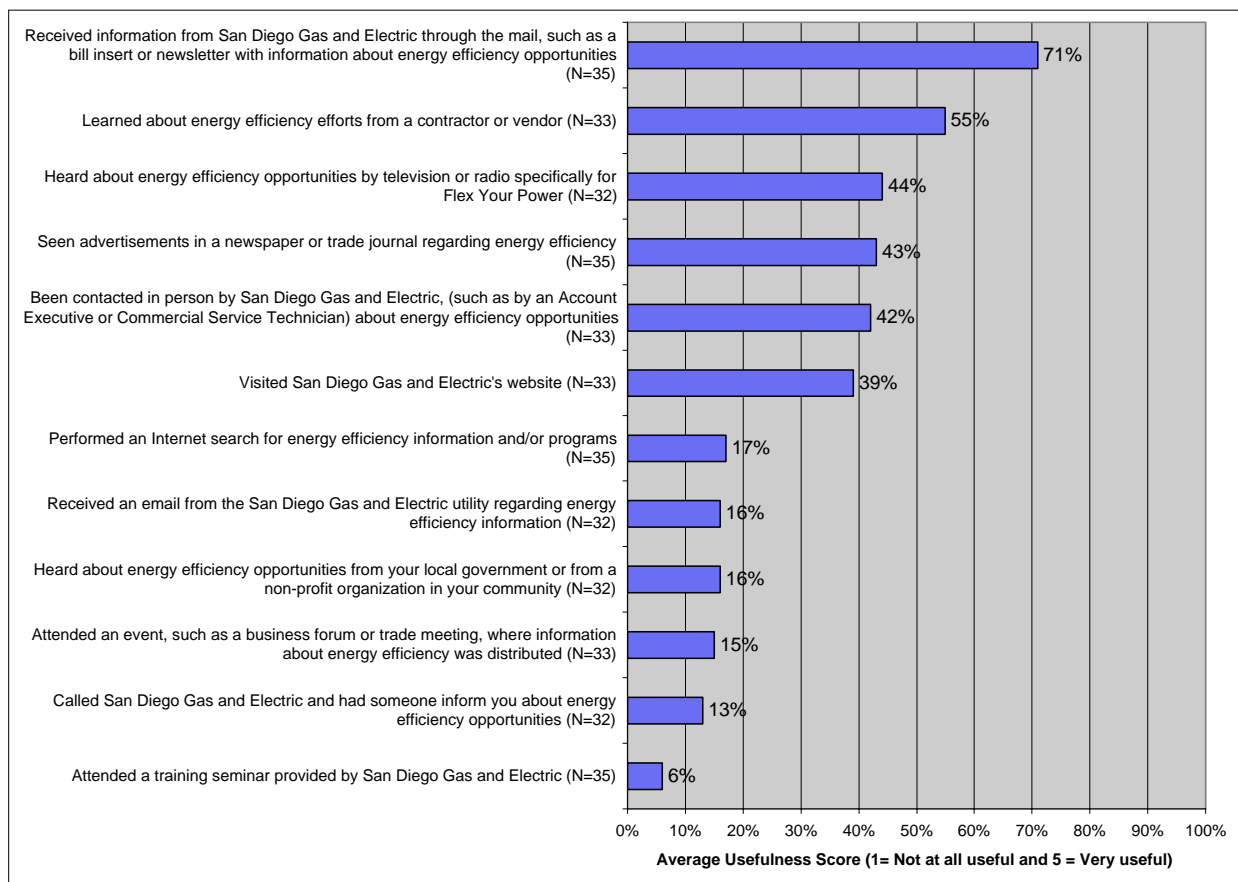
Table 6-8 addresses the doubts and concerns respondents may have had prior to purchasing energy efficient equipment. The biggest concerns came in the area of exaggeration of energy savings. Finding a qualified contractor, repairmen or replacement parts and energy savings not worth the additional price appeared to not raise many doubts or concerns.

Table 6-8
Participation Barriers

PRIOR to purchasing your equipment, can you tell me if you had any doubts or concerns about the following items?	Yes	No	Don't Know
Finding a qualified contractor to do the installation? (N=100)	4%	92%	4%
Being able to find parts or a qualified repairman to maintain equipment? (N=100)	3%	95%	2%
That the amount of energy your equipment will save may be exaggerated? (N=100)	13%	79%	9%
Energy savings not worth extra price? (N=100)	2%	89%	9%

Table 6-9 lists the level of satisfaction participants cited according to certain aspects of the SBSS program. These included contractor courteousness and professionalism, equipment performance, installation, energy savings and overall satisfaction. Table 6-9 shows the customer responses are heavily weighted in the somewhat satisfied to very satisfied range. All areas of dissatisfaction are comfortably at the three percent level or less. The main reasons for dissatisfaction were the lack of returned phone calls after a complaint was made, lighting did not last as long as expected, insufficient ability to determine energy savings, and broken equipment. Overall, eighty five percent of the respondents said they were very satisfied with the SBSS program.

Table 6-9
Levels of satisfaction with aspects of SBSS Rebate Program

How satisfied are you with the...	Very dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Very satisfied	Don't know/Ref used
Small Business Super Saver Rebate Program overall (N=100)	-	-	-	*11%*	*85%*	*4%*
Courteousness and professionalism of your contractor (N=100)	2%	-	1%	13%	83%	1%
Performance of your new energy efficient equipment (N=100)	1%	1%	5%	10%	82%	1%
Amount of time your contractor took to install the new equipment (N=100)	1%	2%	-	16%	80%	1%
Courteousness and professionalism of the SDG&E representative who came to your business and inspected the equipment you installed (N=67)	-	-	1%	2%	63%	1%
Energy savings you are receiving from your equipment (N=100)	-	1%	6%	14%	57%	22%
Installation of your equipment (N=100)	3%	3%	3%	12%	79%	-

6.3.2 Contractor Interviews

This section presents the results of in-depth interviews conducted with participating SBSS contractors. The purpose of these interviews is to provide the contractor perspective on program process issues being addressed by the evaluation. The participating contractors were recruited from the program-tracking database maintained by SDG&E. The recruiting effort emphasized those contractors that had the most experience in the program in terms of the number of installations. A total of ten in-depth interviews were completed with contractors actively participating in the program.

The ten contractors interviewed combined for a total of over six thousand separate installations. The contractor firms ranged in size from one to forty employees serving various sectors of California's economy such as food service, electrical contractors, retail and commercial office space, military installations, warehouse facilities, bars, restaurants, and hotels.

The primary equipment installed by each of the ten contractors was concentrated mainly around lighting fixtures. Seven of the ten contractor reported that their business was the replacement of T12 lighting

fixtures with the more efficient T5 fixture. Two contractors were centralized in the gasket refrigeration market and the last contractor replaced energy efficient motors or electrical computated motors rated at 1.1 amps and below.

Most of the contractors interviewed had been involved in the SBSS program since early 2004 and 2005. The remaining contractors began their installations in early 2007. All but one contractor stated they were involved in both the SBSS program as well as the Express Efficiency program.

When asked how much of their business is devoted to the SBSS program three stated less than 30 percent while one contractor said less than one percent. The remaining six contractors reported that the majority of their business was conducted under the SBSS program.

All ten contractors were mainly in agreement as to the manner in which they promoted the SBSS program. The contractors in the refrigeration sector promoted the installation of a free refrigeration gasket, reduced wear and tear on compressors, and the avoidance of health violation for customers in the food service industry. Lighting contractors emphasized increased quality of light, no magnetic hum and improved color and temperature benefits. In a few cases, contractors pointed out the benefits of lower maintenance costs, environmental benefits and improved worker productivity. In every case, contractors always promoted the savings from the rebate and reduced monthly energy bills.

When asked about the challenges each contractor faces in getting customers to participate in the SBSS program almost every contractor provided unique insight. Surprisingly, only three contractors said that the initial cost of installation was a barrier to customer participation.

Other responses on this topic include the following:

- Some customers are getting third party installations where the contractor is putting the money up-front for the customer. SBSS contractors are hesitant to do this for the customer and as a result cannot compete.

- If the customer hears the word program they hesitate to enroll. The word program can turn off customers as they assume a program requires too much work on their part. They feel they will be mired down in paperwork and red tape if they participate in a program.

- Customers do not want an interruption of their business for a program that may not provide the biggest incentive.

- Customers may have a lease shorter than the payback period and they may move within this period.

- Contractors have a difficult time getting approval for the program for customers with a larger management structure.

- Some customers may have received a free installation and free light bulb from one contractor, but when it comes to a different measure that requires an out of pocket expense and a separate installer, they don't understand why they have an out of pocket expense for the measure.

- Customers will not put money upfront because they do not understand the concept of payback.

- Customers don't realize how much they are wasting unless they are larger and have an energy manager on staff or a facility manager. If is not broken then the customer does not under stand why it has to be replaced.

The contractors were in agreement that there are only a few options to overcoming these challenges. Only one contractors pointed out that they are no longer going to do this program because many times their customers get a better deal from a third party contractor. Another contractor stated that if a customer does not want to pay five percent up-front for a $3000.00 installation there is nothing he can do.

The remaining eight contractors offered valuable insight into overcoming the challenge of getting customers to participate in the SBSS program:

- Two contractors emphasize that the benefits to the environment and the cost savings can change a customers mind.

- One contractor stated that it is easier for him to attract customers if he handles the entire program for them. In addition to applying for the rebate, this includes the handling of any liability issues should the installed equipment fail.

- The persistence of diligent sales people, keeping paperwork in order, and ensuring the accuracy of audits are sometimes the only thing that can be done.

- One contractor emphasized spelling out the savings to the customer and dropping their profit margin if necessary.

- Sample installs, as pointed out by another contractor, are a useful tool.

- Perhaps if they had the money and the time, as one contractor stated, they could do free inspections and make recommendations.

- The last contractor pointed out he was meeting with a fellow contractor to see how they could offer free equipment and free installations under their business model.

Contractors were then asked to provide additional comments on how the SBSS program can change to help address the barriers to customer participation. Surprisingly, only two contractors suggested increasing the rebate amounts while two did not offer any comments at all on the subject.

The remaining six contractors suggested the following:

- Make the program into a contractor only program. Provide a recommended vendor list to the public and use a contractor rating system that calculate a ranking system based on the number of complaints per installation.

- Some contractors remove inefficient lighting without replacement. Giving contractors credit for the number of inefficient lamps permanently removed but not replaced will help contractors be more flexible with their customers. In the end, the result is still increased energy efficiency.

- Let contractors advertise with the SDG&E logo.

- Point out to utility customers that a one year payback is quick while a three year payback is standard.

- Increase the amount of information on the program marketed to the commercial and industrial customers.

- Have more training classes on the whole program, especially when a contractor is new to the program.

Next, contractors were asked if there was equipment they thought could be added to the SBSS program that was currently not eligible. Each contractor provided a suggestion. The responses included a spring-loaded door closer for refrigeration walk-in units, low-pressure sodium and high-pressure sodium lighting, refrigeration hinges, thermometers and solar lighting. Additionally, one contractor pointed out that a replacement for the 250W High bay fixture (HID) was needed for the program.

Every contractor interviewed was familiar with the SBSS program application and rebate forms. When asked to comment on each from, the contractors felt the forms were too long and wordy. Again, one contractor suggested switching to a contractor only application where customers were not allowed to apply for the rebate directly. A second contractor felt the wording of the application lead to confusion and that the rebate text was unclear. Another contractor felt there were too many exclusions and pointed out that most people would not read four to five pages of an application. Finally, two contractors pointed out that the application should not require separate forms for the same installation. The forms should allow multiple meter numbers to be placed on the same application.

Contractors were asked how long it takes to receive their rebate once the paperwork was completed. The most common response was around six to eight weeks although one respondent said it took up to 160 days if the rebate application was "dirty." In this contractor's words, if the application was "clean" he could expect his rebate in no longer than thirty to forty five days.

Overall, contractors were satisfied with the SBSS program. Each contractor understood that the program provided a rebate that assisted the marketing of his or her business. When asked what the SBSS program should do to effectively market the program, one contractor responded "nothing, they have done a great job". One contractor pointed out "some equipment is rebated at 100 percent, some at 10 percent. The program should rebate all equipments at 80 percent because people will uninstall a piece of equipment they received it for free, but if they paid $40.00 for it, it will remain installed." Several contractors suggested faster rebate turn-around times and increased incentives. One contractor stated that his competition is providing free installations and equipment, and without a rebate increase, he will have trouble remaining competitive.

When asked if they had any final comments about the SBSS program, the contractors provided the following:

- The program needs newer innovative equipment with better proportional rebates. Contractors are having trouble installing equipment with a rebate that is five percent of the overall equipment cost. Customer response is that it's not worth the effort.

- Contractors who perform bad installations leave the more reputable firms with aggravated customers. In turn, this has tainted the refrigeration market.

- Bigger businesses are tough because they don't care about small savings. They have a lot of red tape and a complicated management system that slowly approves installations.

- Some contractors would like to promote more SDG&E programs but they need more information.

- Many contractor rebate submittals are bounced back for small issues that should be handled on the spot by SDG&E staff.

- Certain contractors should be able to elevate their status based on their expertise and experience with the program.

6.3.3 Conclusions

The following general conclusions are drawn from the survey data presented in this report:

- **In general, it appears the SBSS customers are very satisfied with their overall participation in the program.** On average, all satisfaction responses were well above the somewhat satisfied response range. The main reasons for dissatisfaction were the lack of returned phone calls after a complaint was made, lighting did not last as long as expected, insufficient ability to determine energy savings, and broken equipment. Fortunately, these events occurred less than four percent of the time if they occurred at all.

- **SBSS customers are very satisfied with the clarity, usefulness and helpfulness of program information.** For the most part, customers found the SBSS rebate application very helpful and had little or no trouble understanding the information listed in the application. There were only a few instances were customers felt that they did not posses enough prior knowledge of the program in order to fully understand the rebate application.

- **Energy savings, cost savings, and contractor recommendations were the most important factors in participant decisions to purchase energy efficient equipment**. Here, energy savings is defined as the savings incurred from a reduced monthly utility bill while cost savings is a drop in measure price as the result of a rebate. While the contractor rebate was never cited as the most important factor in a customer's decision to purchase energy efficient equipment, the survey results showed this recommendation still held considerable sway. Additionally, as the environmental benefits gained from purchasing energy efficiency were still a considerable contributing factor in a customers decision process they were outweighed by savings, cost, and contractor recommendation.

- **Strong evidence exists the rebates served as a catalyst for increased program participation.** The participant survey data show that a significant number of customers who were not previously considering equipment purchases did so after learning about the SBSS program. This is also true for customers who switched to more efficient equipment after choosing the cheaper, less efficient model. It is also possible after studying the data that in cases where the customer may have only considered purchasing energy efficient equipment because of a contractor's recommendation, the rebate provided that extra incentive to convince a customer to buy the equipment.

- **There exists a strong correlation between speaking with a contractor and enrolling into the SBSS program.** The survey results show clearly that a significant percentage of respondents (seventy seven percent) said that they only decided on purchasing efficient equipment once they had spoken to a contractor. This response gives reason to believe that in cases where the customer may have only considered purchasing energy efficient because of a rebate or energy savings, it was the contractor that provided the necessary influence to spark a purchase.

- **Lack of customer confidence.** Many small businesses are skeptical of the financial benefits of energy efficiency improvements. Coupled with economic barriers, implementation of energy efficiency measures can be challenging at the very least. Convincing uncertain customers about the future benefits of energy efficient technologies and practices is still a challenge for the SBSS program.

6.3.4 Recommendations

- **Consider making the SBSS program into a certified contractor only program.** Providing a recommended vendor list to the public and establishing a contractor rating system that calculates a contractor's ranking based on the number of complaints per installation will increase the accountability contractors have with their customers. This type of system will also prevent equipment failure by encouraging contractors to install quality measures.

- **Provide information on helping contractors market non-energy benefits.** Highlighting the additional advantages of energy efficiency beyond cost at the point of sale can weigh heavily on a customer's purchasing decision. This can include environmental benefits, reduced wear and tear, avoidance of health violations, increased quality of air, improved light color and temperature, lower maintenance costs, improved worker productivity, and taking advantage of a subsidy before the efficiency upgrade becomes a code and out of pocket expense.

- **Consider adding more qualified measures to the SBSS program offering**. These measures include the Easy close spring-loaded door closer for refrigeration walk-in units, low-pressure sodium and high-pressure sodium lighting, refrigeration hinges, thermometers, solar lighting and a replacement for the 250W High bay fixture (HID).

- **Handle corrections to rebate forms on the spot.** Forms containing small errors are bounced back to the contractor causing significant lags in rebate processing times. A process should be developed where small errors can be corrected on the spot with a phone call to the contractor, rather than by sending the forms back to the contractor.

- **Consider revising the SBSS rebate application.** Currently, contractors feel the SBSS rebate application is too long and at times vague. Contractors also feel the wording of the application sometimes leads to confusion. Additionally, the rebate application should permit multiple meter numbers to be placed on the same application and the entire application should be limited to no more than three pages.

- **Sample installs, free inspections and free recommendations are useful in marketing contractor services.** These offerings allow contractors to establish themselves with firms that have a larger potential for energy savings but are hesitant to make the first step and enroll in the SBSS program. This is a simple way for contractors to get their foot in a customer's door.

- **Let contractors advertise with the SDG&E logo.** Allowing contractors to use the SDG&E logo helps establish trust and legitimacy with potential customers. Contractors feel this will go a long way in helping to increase their number of installations.

6.4   Best Practices Review by Program

6.4.1   Program Theory and Design

- *Is the program design effective?* The program design seems to be effective as the program is meeting its goals. The SBSS program attempts to overcome economic barriers by offering opportunities to participate with little or no out of pocket expense through a rebate system. Rebates are offered to customers to provide an incentive for the implementation of efficiency measures that may have otherwise never been installed. To date, the SBSS program has resulted

in the installation of 1,268,275 efficient measures and has achieved 73 percent of its net annual kWh savings goal consuming only 57 percent of its three-year operating budget.

- *Is the market well understood?* The SBSS program has established a strong relationship with a select few contractors who bring in the majority of measure installation. Simply stated, "few bring many." There is a strong desire in SDG&E to expand business with those contractors who have smaller market shares.

6.4.2 Program Management

6.4.2.1 Project Management

- *Are responsibilities defined and understood?* The responsibilities of program staff and contractors are simple and straightforward. However, the utility could greatly benefit from training new contractors.

- *Is there adequate staffing?* Contractors highlighted the need for additional program personnel to support application submission and rebate processing. Expansion could help decrease the lag time for rebate payments back to the contractor.

6.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* Yes. The SBSS program uses a computerized database to track specific types of information for each contractor, customer and each installation. The customer information tracked includes the following:
  o Name, address and contact information for each business enrolled in the program.
  o Incentive amount.
  o Date of installation.
  o Basic characteristics of the business (e.g., square footage, business type); and
  o Energy efficiency measures purchased and installed.

  During the course of the program, the tracking system is used to prepare monthly reports that detail the previous month's activities and progress toward meeting the goals of the program. Each monthly report includes information on marketing activities, administrative activities, direct implementation activities, progress toward goals, the number of installations and their characteristics and locations.

- *Are routine functions automated?* This was not observed.

6.4.2.3 Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* The program manager is familiar with the third party contractors and has engaged them numerous times at contractor training events.

- *Does the program verify reporting systems?* The verification process was not addressed in this evaluation. However, all installations are verified.

- *Are customers satisfied with the product?* The results of the participant phone survey show that customers are very satisfied with the program. Overall satisfaction with the program was high and few complaints were logged. As a result of the contractor in-depth interviews it was determined that satisfaction with the SBSS program was also moderate to high. Each contractor understood that the program provided a rebate that assisted the marketing of his or her business.

6.4.3 Program Implementation

6.4.3.1 Participation Process

- *Is participation simple?* Participation is voluntary and involves little or no out of pocket expense through a rebate system. In most cases, the contractor handles the rebate for the customer. Contractors did comment that the rebate system needed to be stream lined and the amount of paperwork reduced.

- *Are participation strategies multi-pronged and inclusive?* Not addressed.

- *Does program provide quick, timely feedback to applicants?* The majority of customers surveyed received a follow-up visit to inspect and verify the installation of the equipment. According to the program manager, all measures require a post-inspection.

- *Is participation part of routine transactions?* Not addressed.

- *Does the program facilitate participation through the use of internet/ electronic means?* Yes. There is a strong marketing effort for this program via email, mail, newsletters, bill inserts, and radio and internet. The program is also directly marketed to customers by participating contractors.

- *Does the program offer a single point of contact for their customers?* Yes. The program manager and account executives serve as the points of contact for contractors. The majority of correspondence takes place between the contractors and program management. Additionally, the SBSS program has an Energy Information Center to handle question about the program.

- *Are incentive levels well understood and appropriate?* In areas such as lighting where rebates are directly proportional to hours of operation, many customers are self-reporting just enough hours of operation in order to receive the maximum rebate. This "gaming" of the rebate system limited the effectiveness of time of operation incentives. Rebate levels were than changed to a measure-by-measure system. This system allows for rebates to reflect the saturation level of certain pieces of equipment, the availability of rebate funds, and allows program staff to emphasize different types of equipment. Additional research is needed to calculate optimum rebate levels per each piece of equipment.

6.4.3.2 Marketing and Outreach

- *Use target-marketing strategies?* The SBSS program has a strong marketing effort. Marketing for this program is performed through presentations to business organizations, chain stores, distributed program material to SDG&E account executives, contractor and manufacturer training events, workshops, seminars, focus groups and local chambers of commerce meetings. The program is also directly marketed to customers by participating contractors.

- *Are products stocked and advertised?* The stocking of products is not necessary. Contractors handle the installation of authorized energy efficient measures. Product advertisement is

accomplished through a variety of methods including email, mail, newsletters, bill inserts, and radio and internet.

- *Are trade allies and utility staff trained to enhance marketing?* Participating contractors are continually trained on various program aspects and receive updates on program changes. This is performed via contractor workshops and presentations during a variety of events in the San Diego area.

7. SDGE 3025: Standard Performance Contract Program

7.1 Program Overview

The Standard Performance Contract Program is a statewide non-residential energy efficiency incentive program. SPC targets mid to large-sized customers but will accommodate small non-residential customers that cannot be served by other programs. The program is open to all commercial, industrial and agricultural customers, regardless of size or project scope. A project may consist of the retrofit of existing equipment/systems or the installation of equipment associated with new or added load.

The SPC Program promotes procurement and installation of high efficiency energy technologies by providing incentive payments, and design/audit assistance in some cases, to partially offset incremental equipment costs. Customers can receive incentives for customized projects by calculating the amount of kWh saved or through a measurement and verification procedure. Providing incentives to shorten payback periods and assistance to quantify equipment performance increases the adoption of new technologies.

Incentives are paid based on the quantity of kWh or therms saved resulting from the installation of the new equipment or system. Incentives are paid on the energy savings above and beyond minimum federal- and state-mandated energy efficiency performance. If there are no government standards for a particular measure, current industry practices are used to establish baseline performance. Energy Savings are calculated by the Project Sponsor either by using the SPC software, or submitting engineering calculations.

Applicants are eligible to receive up to 50 percent of the cost for each measure type for Calculated Measures, not to exceed a Customer Project Site cap of 15% of the average annual SDG&E SPC incentive budget.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Jeff Alexander	SDG&E	JAlexander@semprautilities.com	858-636-5762
Program Assistant	Lee Moran	SDG&E	lmoran@semprautilities.com	858-654-1250

Figure 7-1
Program Logic Model for SDG&E 3025 Standard Performance Contract (SPC)

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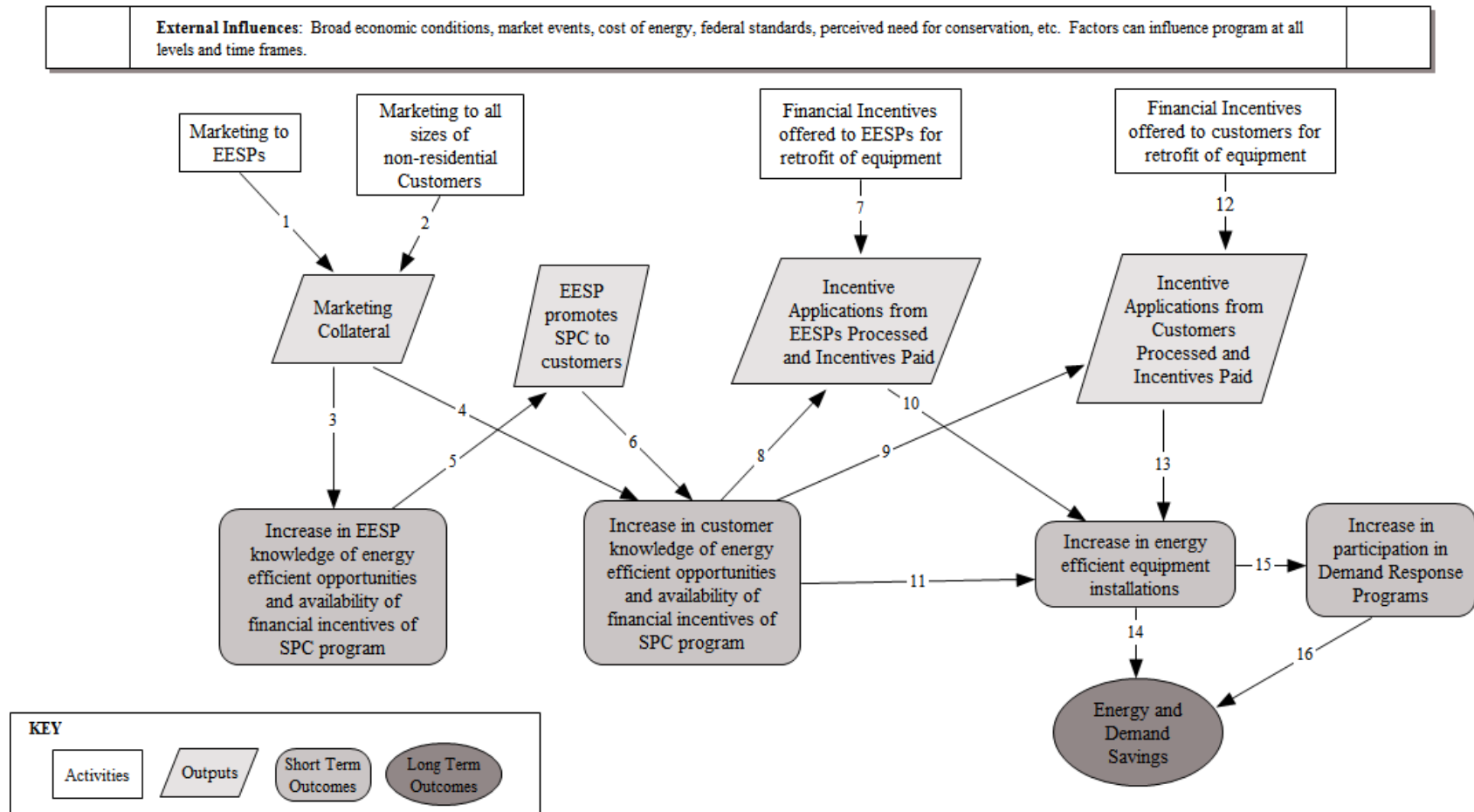
Table 7-1
Program Theory for SDG&E 3025 Standard Performance Contract (SPC)

Link	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Energy-efficiency service providers (EESPs) are unfamiliar with energy efficiency opportunities and technologies and unaware of available incentives offered by the SPC program. The marketing component is focused on getting the word out that incentives are available to lower the payback periods of high efficiency equipment.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of EESPs reviewing the marketing collateral.
2	Non-residential customers are unfamiliar with energy-efficiency opportunities and technologies and unaware of available incentives offered by this program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the program and how to participate.	Focus groups of customers reviewing the marketing collateral.
3	SPC Program marketed to Energy Efficiency Service Providers (EESPs) through meetings with contractors and trade associations.	Increase in EESP knowledge of energy efficient opportunities and availability of financial incentives of SPC program	Self-report of EESPs who do not participate in the program. Number of EESP program participants.
4	Program marketed to customers directly through account executives and Demand Response Program outreach. Program information delivered to customers through direct presentations at promotional fairs, training seminars and the website.	Increase in customers' knowledge of energy efficient opportunities and availability of financial incentives of SPC program	Self-report of customers who do not participate in the program. Customer participant survey Number of customer participants.

Link	Program Theory Description	Potential Performance Indicator	Possible Data Source
5	The EESPs have an opportunity to promote energy efficiency and the SPC programs in their course of business.	Number of EESPs promoting the program	Self-report of EESPs who do not participate in the program. Surveys with EESPs on how they have used the information.
6	EESPs provide information on program incentives for high efficiency installations. EESPs also may assist in project design and audits to quantify equipment performance.	Increase in customers' knowledge of energy efficient opportunities and availability of financial incentives of SPC program	Customer participant survey
7	Financial incentives are provided to EESPs for customized energy efficiency projects. Incentives are determined either by calculating the amount of kWh/kW/therms saved or through a measurement and verification procedure.	Number of EESPs who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database EESP participant survey Customer participant survey
8	Increased awareness, knowledge and attitudes of energy efficiency opportunities and utility programs on the part of both EESP and customer lead customer to enter into agreement with EESP that EESP will apply for incentives for customer's project.	Number of EESPs who apply for incentives Satisfaction with application process	Program tracking database EESP participant survey Customer participant survey
9	Increased awareness, knowledge and attitudes of energy efficiency opportunities and utility programs lead customers to apply for incentives.	Number of customers who apply for incentives Amount of incentives Satisfaction with application process	Program tracking database Customer participant survey
10	Incentive motivates EESPs to promote and install energy efficiency measures	Measures installed	Program tracking database

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Link	Program Theory Description	Potential Performance Indicator	Possible Data Source
11	Increased awareness, knowledge and attitudes of energy efficiency opportunities and utility programs lead customers to adopt energy efficiency measures.	Number of customers who adopt energy efficiency measures Measures installed	Program tracking database
12	Financial incentives are provided for customized energy efficiency projects. Incentives are determined either by calculating the amount of kWh/kW/therms saved or through a measurement and verification procedure.	Number of customers who apply for incentives Amount of incentive Satisfaction with application process	Program tracking database Customer participant survey
13	Incentive motivates customers to install energy efficiency measures	Measures installed	Program tracking database
14	The installation of improved high efficiency equipment results in energy and demand savings.	M&V identifies equipment installed and documents energy and demand impacts	Reports of gross energy savings and demand reduction
15	Additional incentive motivates customers to participate in an Energy Demand Response program. *This "kicker" was offered Feb. 1-June 30, 2007.*	Number of customers who enroll in Demand Response program	Program tracking database Customer participant survey
16	Customer participation in a Demand Response Program results in energy and demand savings.	Documented energy and demand impacts	Reports of gross energy savings and demand reduction

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7.2   2006-2007 Program Activities

7.2.1   Savings Summary

As of December 2007,[16] the SPC program has achieved:

	Demand Reduction (Summer Peak kW)	Energy Savings (Net annual kWh)	Gas Savings (Net annual therms)
Installed savings (Inception to 12/2007)	2,152	13,681,645	177,216
Total commitments (Inception to 12/2007)	846	5,656,543	66,472
Program projected (Compliance Filing)	4,542	36,455,713	501,287
Percent of Program Projected (Installed + Committed)	66%	54%	49%

7.2.2   Budget Summary

As of December 2007, the SPC program has spent:

	Budget
Program expenditures (Inception to 12/2007)	$2,699,158
Total commitments (Inception to 12/2007)	$765,583
Adopted program budget (Compliance Filing)	$10,927,951
Percent of Program Budget (Installed + Committed)	32%

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[16] From SDGE.MR.200712.5.xls, version 5, posted 2/4/2008

7.2.3 Participation Summary

As of July 2007, the program had 520 applications listed in its tracking database, with 248 unique project sites.[17]

Table 7-2
SPC Program Activity by Measure Type

Measure Type	Number of Applications	Percent of Total
Other	256	49%
Lighting	125	24%
HVAC	104	20%
Gas	35	7%
TOTAL	520	100%

Examples of "Other" measures include VFDs on chillers, hydraulic machine replacements, carbon dioxide sensors, chiller replacements, large battery replacements and VFDs on pumps, among others.

Participation in the SPC program spans a wide range of industry sectors, as shown in Table 7-3. Out of the 95 applications from "Accommodation and food services" customers, about half (42 applications) were individual applications from McDonalds restaurants, with another 27 applications from Taco Bell restaurants. Retail trade customers include department stores (e.g. Mervyns, Kohls), grocery stores (e.g. Vons), hardware stores (e.g. Home Depot), and auto sales centers, to name a few.

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[17] This number is based on unique "Project ID" number, as listed in the tracking database.

Table 7-3
SPC Program Activity by Customer Sector

Business Type	Number of applications	Percent of Total
Accommodation and food services	95	18%
Retail trade	74	14%
Manufacturing	63	12%
Professional, Scientific and Technical services	45	9%
Public administration	45	9%
Real estate and rental and leasing	44	8%
Educational services	38	7%
Unknown	36	7%
Health care and social assistance	18	3%
Arts, entertainment and recreation	15	3%
Other services (except Public Administration)	12	2%
Information	10	2%
Postal service	9	2%
Finance and insurance	8	2%
Wholesale trade	5	1%
Utilities	2	0%
Administrative and support and waste management and remediation services	1	0%
Grand Total	520	100%

Based on in-depth survey results with customer participants, approximately half of participants used a project sponsor for their SPC application.

7.2.4 Summary of Program Status

(Implementation/marketing activities occurred thus far)

The SPC program is generally on track to meeting goals. Marketing activities include development of web-based SPC program offerings, working with industry contacts to promote server virtualization and other emerging technologies, as well as outreach to contractors and SDG&E account executives.

7.3 Findings, Conclusions and Recommendations

Specific to the SPC program, in-depth interviews were completed with the following stakeholders:

- Utility administrator and program staff (2 completed interviews)

- 2006-2008 SPC program participants (38 completed interviews, out of approximately 180 unique participants[18])

- SPC project sponsors (7 completed interviews, out of 74 project sponsors listed in program tracking database[19])

Stakeholders were surveyed for their satisfaction with program elements, effectiveness of SPC program processes, and perceptions of the energy efficiency market opportunities. In addition to interviews with stakeholders, the participant data in the program tracking database was analyzed to better understand the range of participant facility types, use of project sponsors and types of measures installed.

7.3.1 Program Awareness

As shown in Figure 7-2, the vast majority of participating customers surveyed indicate that they heard about the SPC program through an account executive or other SDG&E representative (64%), followed by a vendor or contractor (21%). This is largely unchanged from previous years.[20]

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[18] Unique participants are defined as unique contact names, as listed in the program tracking database. In some cases, the same company had multiple applications across separate sites with different contact persons listed. Originally, 40 interviews were completed, but 2 of the contact names listed were actually project sponsors, not the end use customer.

[19] Project sponsors varied in their level of activity with the SPC program. Some project sponsors were currently active in the 2006-2008 SPC program, while others used to be active in previous years. A random sample of project sponsors were interviewed as part of this research effort.

[20] Quantum Consulting. 2002 Statewide Non-residential Cross-Program Evaluation. Study ID # SW066.

Figure 7-2
Where did your company first hear about the SPC program? (n = 39)
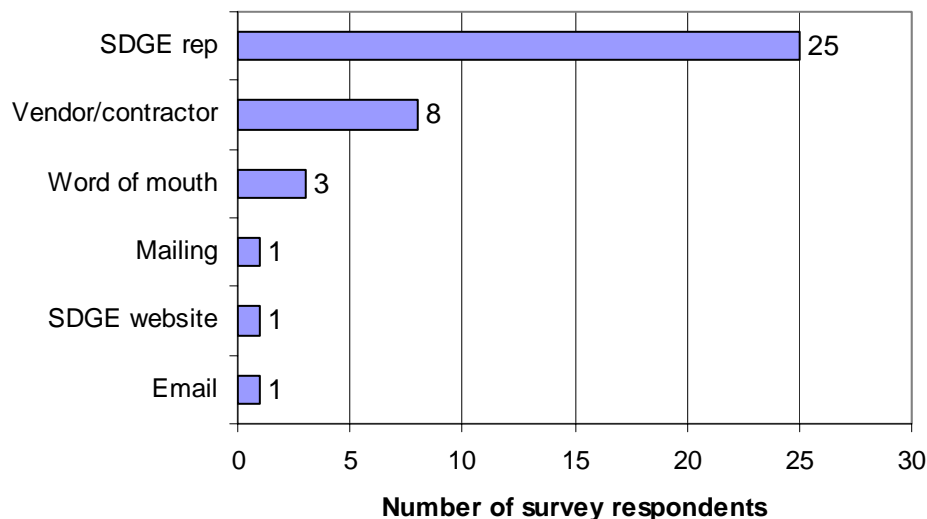
Project sponsors interviewed generally hear about the program by word of mouth, from clients or from attending SDG&E training seminars. When asked about where they heard about the SPC program, several project sponsors indicate that they have known about the program for some time, and have heard about it through different projects they worked on. As a mature program, SPC is perceived to have adequate market awareness levels with limited pro-active marketing. Therefore, marketing efforts should be focused on maintaining customer and project sponsor awareness of the program.

7.3.2 Project Sponsor Involvement

Project sponsors are an important component of any program targeting non-residential large comprehensive energy efficiency projects, due to the complexity of projects and because vendors and contractors already market heavily to this segment. Out of the 40 original completed interviews with participating customers, 20 respondents had self-sponsored their projects and 20 had participated in the SPC program through a project sponsor.

Out of the twenty survey respondents who said they used a project sponsor on their SPC project, fourteen (70%) rated their satisfaction with their project sponsor as a 5 out of 5, with an average rating of 4.6. Figure 7-3 shows that no customers interviewed expressed dissatisfaction with their project sponsor.

Figure 7-3
Customer satisfaction with project sponsor, n = 20
(5 = very satisfied, 1 = very dissatisfied)
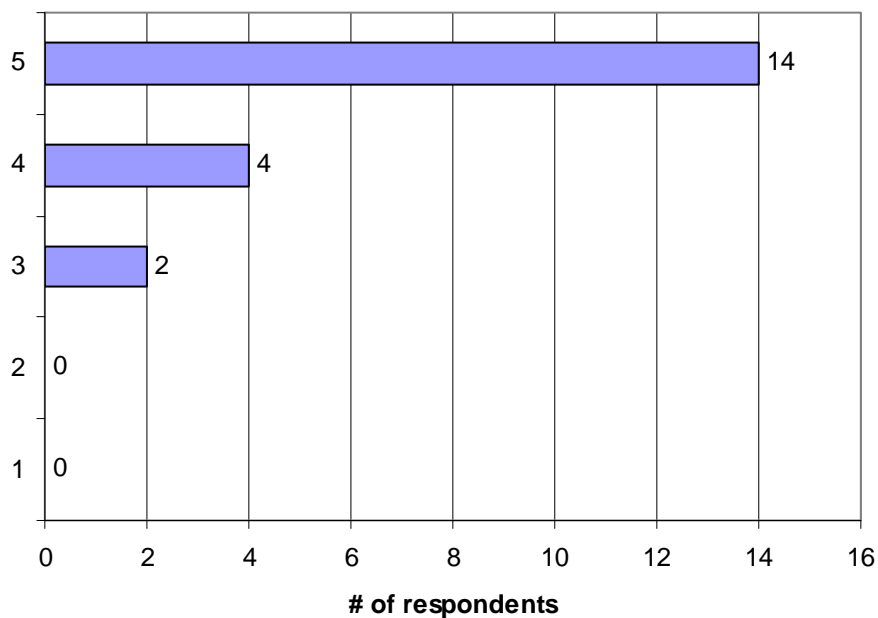
7.3.3 Satisfaction with Program Elements

Customers were asked what parts of the SPC program their company was most pleased with and the answers were grouped into five general categories. By far the most responses were that participants were pleased to have received the financial support for energy efficiency initiatives. There was no difference in satisfaction between participants with project sponsors and participants who chose to self-sponsor.

Figure 7-4
What parts of the SPC program has your company been most pleased with? (n=38)
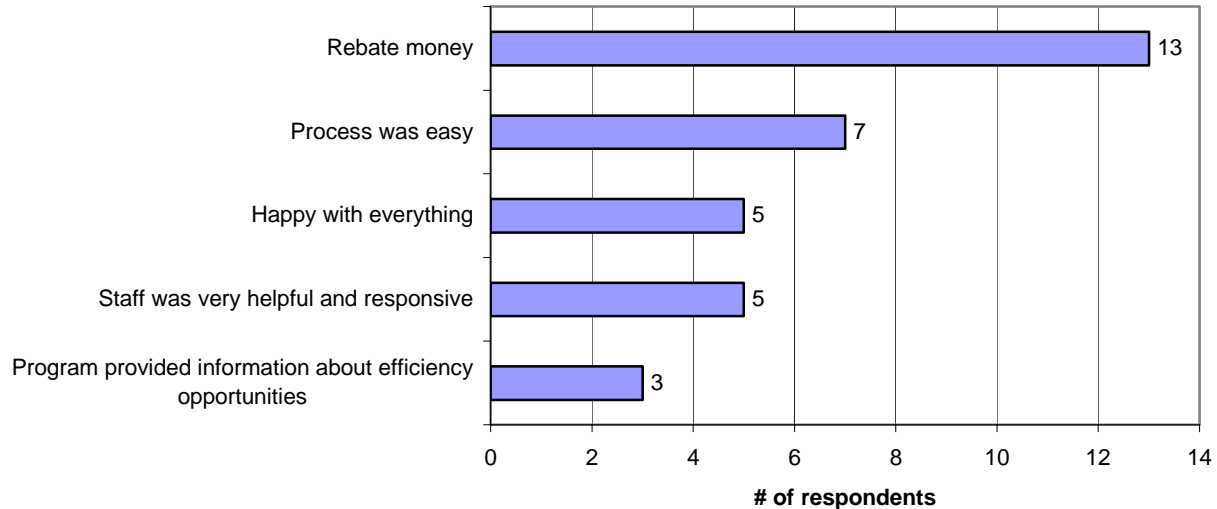
Twenty percent of responses were categorized as "happy with everything," when participants said "whole thing beginning to end," "all of it," "total project was a success" and "very pleased with everything having to do with SDG&E." Table 7-4 below summarizes the responses for the remaining three categories of satisfaction.

Table 7-4
What parts of the SPC program has your company been most pleased with?

General category	Sample of participant responses
Process was easy	▪ Straight forward to apply for the program and the rebates. Went smoothly and there were no hold ups. ▪ SDG&E staff support. Basically, program staff did all engineering calculations and sent us the forms to fill out. Very easy. ▪ The ease of doing it! We provided information like model number and they did the rest. ▪ The ease of the application process ▪ The inspection process was quick and painless.
Staff was very helpful and responsive	▪ Program manager was very helpful. Jeff Alexander gave me a lot of information and participation was no problem. ▪ SDG&E has been very responsive and turned paperwork around quickly. ▪ SDG&E staff were really helpful with the technical details that we needed to fill out the paperwork.
Program provided information about efficiency opportunities	▪ Good information, not only about rebates, but the potential savings based on equipment. ▪ Staff at SPC were excellent about informing us of other energy rebate programs that were applicable.

Participants were also asked what their company found most challenging about participating in the SPC program. Approximately one third of the participants interviewed said that there were no challenges in participating in the SPC program (See Figure 7-5).

Figure 7-5
Types of challenges encountered in participation (n = 38)

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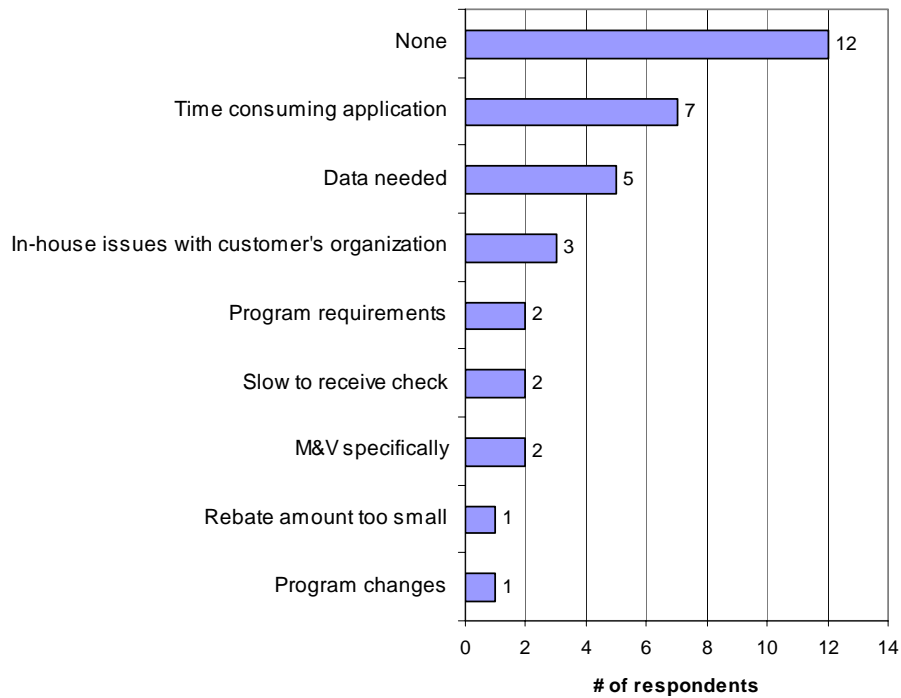
Table 7-5
What did your company find most challenging in participating in the SPC program?

General category	Sample of participant responses
Time consuming application	▪ The drawn out length of the rebate application process. I kept getting calls telling me my paperwork was incomplete or incorrect. Too much for me to do. ▪ The biggest hurdle is getting everyone together: the engineers, SDG&E staff, everyone. Just getting everyone on the same page and moving forward. ▪ The application process, filling out the LE1, the data entry was time consuming. ▪ Passing information onto different people 3 or 4 times. People gone or out of the office. Need more coordination.
Collecting needed data	▪ The only difficult thing was figuring out cost per area-production floor versus offices and how much the offices used their lights. ▪ Data collection about the system, but the project sponsor helped with the data collection which made it much easier. ▪ Just trying to work with the project sponsor and SDG&E on actual energy savings. This was a concern because we had multiple projects going on at the same time that have an impact on our energy bill, so determining the energy savings from individual measures is complicating.
In-house issues with customer's company	▪ The difficulty was all in-house and had to do with the logistics of replacing fixtures around our machinery. That is not really relevant to the SPC program, but has to do with any replacement job we do. ▪ Difficult to sell this to our Board of Directors. No problem with SDG&E. ▪ All problems were internal. I had no problems with the SPC program.
Understanding program requirements	▪ Program requirements had changed. We found out we needed another form filled out. We find out about changes when we submit things and the application comes back. ▪ No big problems other than deciphering exactly what we could do.
M&V issues	▪ Measurement and verification on our 400 Hz power converter. ▪ When the measuring aspect is so tedious a situation arises where the cost of contracting a consultant to do the measurements is the same amount as the rebate. It presents somewhat of a Catch-22.

In addition with specific challenges, several participating customers and project sponsors mentioned frustrations with identifying a primary contact within the SPC program. One participant mentioned that it took several months to work through SDG&E bureaucracy to locate the necessary SPC contacts. Another project sponsor mentioned that he would like to receive a rebate on a specific measure, but was not sure who to speak with regarding this project. One likely reason for participant confusion was due to staff changes in *both* the program manager and program assistant positions in mid-2007.

7.3.4 Recommendations

Overall, it was found that the program has significantly improved over the years. Balancing ease of participation and accountability is important for any energy efficiency program, especially for large, technically complex projects that presents risks of gaming. Although the data requirements required for M&V are still perceived by some to be difficult, project sponsors largely mention that M&V requirements have been greatly simplified and made easier. The reduction of paperwork requirements for the SPC program has resulted in noticeable improvements in participant satisfaction with the program.

Although participants mostly express high levels of satisfaction with SPC, several mentioned frustrations with identifying a primary contact for the SPC program, or with understanding the specific roles of SPC contacts they do work with. The following recommendations are provided to assist participants with locating appropriate SPC staff:

- Clarify to program participants who program staff are, and what their specific roles are.

- On marketing materials, such as fact sheet, more clearly indicate contact information for the program staff. Also, it may facilitate participation to list on the SPC website the names of program staff and their roles.

- Prioritize staff replacements to occur between program funding cycles (rather than midway through program years), when possible.

7.4   Best Practices Review by Program

7.4.1   Program Theory and Design

The large non-residential market poses unique challenges because these end users and their suppliers are very sophisticated and their projects are often very complex. Unique challenges associated with the large non-residential market include: reducing uncertainty in savings estimates, minimizing risks of gaming and fraud, and managing costs of measurement and verification.

- *Is the program design effective?* The SPC program has been in existence for over six years, with multiple previous process and impact evaluations. The program is designed to minimize free ridership and gaming, and uses a cap of $350,000 per individual site or 50% of combined total capital cost to ensure equitable distribution of funds throughout the program funding cycle.

- *Is the market well understood?* Most program managers believe that there is sufficient market demand for efficiency projects in the large non-residential segment. As a result, program strategy is generally oriented toward facilitating implementation of projects.

7.4.2   Program Management

7.4.2.1   Project Management

- *Are responsibilities defined and understood?* SDG&E utilize in-house engineers and inspection teams. Not subcontracting out too many responsibilities to too many different players helps to make the process more integrated and seamless to participants. Based on interviews with SPC

Program staff, the responsibilities are well defined and understood. Furthermore, in-depth interviews with SPC participants indicate that most are satisfied with the level of service they received. Participants have also expressed satisfaction with program staff support and responsiveness.

- *Is there adequate staffing?* Interviews with program staff indicate that the application process tends to funnel at the engineering stage. This is generally to be expected, as engineering calculations and verification of savings estimates are a necessary component of quality control for the program. The program assistant handles most of the processing, receiving of applications and entering information into the database, and this stage also requires handling a large volume of work. Another best practice for non-residential large comprehensive incentive program is to ensure that there are well-qualified engineering staff. Participants generally seem satisfied with the engineering support provided by the program.

7.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* By their nature, large non-residential comprehensive efficiency programs have the most challenging reporting and tracking issues. It is generally understood that the program utilizes some type of electronic workflow management process, however, this issue was not specifically researched.

- *Are routine functions automated?* One best practice for non-residential large comprehensive efficiency programs is to use automated or otherwise regularly scheduled notification to achieve close monitoring and management of project progress. A few project sponsors mentioned that they would like to see an application tracking notification process so that project sponsors and customers can know where the application is at any given time.

7.4.2.3 Quality control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* Most project sponsors have mentioned that program staff are "great," "really good and responsive" and very "open." One project sponsor said that he wasn't sure what the exact roles of his program contacts were, and had no idea who/which person the program manager was.

- *Does the program verify the accuracy of application data, invoices and incentives to ensure the reporting system is recording actual installations by target market?* Due to the large nature of most SPC projects, the program has 100% pre and post-installation inspections to ensure that products are installed properly and replace the same equipment that was included in the application.

- *Are customers satisfied with the product?* The program participants surveyed who used a project sponsor were generally quite satisfied with their experience working with their project sponsor. Program participants were not queried to their satisfaction with specific products installed.

7.4.3 Program Implementation

7.4.3.1 Participation Process

- *Is participation simple?* A quarter of participants mentioned that they were most pleased that the SPC process was easy, with another 18 percent of participants saying they were happy with everything.

- *Are participation strategies multi-pronged and inclusive?* Sixty percent of participant survey respondents were participating in the SPC program for the first time. The program is designed with caps to ensure that funds can be distributed equitably throughout the program funding cycle. It appears that the main SPC marketing strategy is to focus on workshops, seminars and trade shows, as well as following up with past participants.

- *Does program provide quick, timely feedback to participants?* Fifteen percent of program participants surveyed specifically mentioned that staff was helpful and responsive. One survey respondent said that she was happy that applications were not rejected outright, and that program staff were open to negotiating and working with participants on applications.

- *Is participation part of routine transactions?* SDG&E markets its program through its Account Executives (AEs) as part of their routine interactions with customers and when their customers are upgrading or replacing equipment. Furthermore, interviews with project sponsors and customers indicate that whenever new projects are being considered, incentives from utility programs are routinely researched.

- *Does the program facilitate participation through the use of internet/electronic means?* SPC provides program applications, instructions and other program participation information on the SDG&E website. The program encourages participants to use the SPC Program Software to facilitate the application process. The program software, however, is only available by CD-ROM, and must be ordered from the SDG&E website. Using the program software, participants must still print out the completed forms and sign them before mailing a hardcopy to the program manager. Participants have the option of faxing a copy to expedite the process before mailing the application and corresponding energy savings calculations.

- *Does the program offer a single point of contact for their customers?* A review of marketing materials indicates that a general SPC email address and phone number are included on brochures and fact sheets. Some participants and project sponsors, however, express confusion about program staff responsibilities, with one project sponsor specifically asked for a single point of contact at SDG&E.

- *Are incentive levels well understood and appropriate?* Several project sponsors mentioned that the Energy Savings Bid program provides better incentives for savings, and that they are increasingly doing projects under the Bid program when possible. While some participants mentioned that incentives are too low to justify the effort required to participate, others appear satisfied with the rebate amounts. Overall, this was not a principal area of research.

7.4.3.2 Marketing and Outreach

In general, it is believed that ESCOs, contractors and other energy service providers engage in extensive marketing of energy efficiency projects to large non-residential customers. Furthermore, large end users

are often have facility managers and other staff dedicated to energy management initiatives. Therefore, marketing efforts for large non-residential comprehensive programs like SPC, often focus on maintaining customer and trade ally awareness of the program once it has been firmly established.

- *Use target marketing strategies to ensure that hard-to-reach populations are informed?* The SDG&E SPC program does not have specific hard-to-reach goals. SPC targets mid to large customers while accommodating small non-residential customers not served by other programs.

- *Are products stocked and advertised?* Due to the comprehensive nature of SPC projects and installations and the lack of rebates for specific equipment types, this issue is not applicable to the SPC program.

- *Are trade allies and utility staff trained to enhance marketing?* Only one of out 7 project sponsors said that they stay up-to-date with program changes through lectures or workshops. As stated in SPC quarterly narrative reports, program staff participated in numerous workshops, seminars and trade shows to promote the program.

8. SDGE 3027: Retro-Commissioning Program

8.1 Program Overview

8.1.1 Program Summary

The San Diego Retrocommissioning (RCx) Program is designed to help building owners and operators improve the performance of their building's systems, achieve energy savings and improve occupant comfort. The program provides technical assistance and support throughout the RCx process. The process begins with screening a building to determine eligibility for the program. Building eligibility requirements include having at least 100,000 square feet of conditioned space, a direct digital control (DDC) system in place and central plant mechanical equipment in relatively good condition.

Once a facility has met program qualifications, the building owner/operator signs an agreement that they will implement measures with a payback of one year or less, up to a calculated cap, and consider measures with longer payback periods. The program maintains a pool of qualified RCx providers, who they match with potential RCx projects to conduct an in-depth investigation of the facility to identify opportunities for measures to be implemented. Incentives are paid directly to building owners and operators for implementing measures with payback periods of longer than one year. Follow-up services to building owners/operators to insure the persistence of the measures include the documentation of energy savings and the provision of training for the operation and maintenance of implemented measures.

Program Contacts	Person	Organization	Email	Phone
Project Manager	Allison Robbins	PECI	arobbins@peci.org	503-961-6140
IOU Program Manager	Margaret Finley	SDG&E	MFinley@semprautilities.com	858-636-5732

8.1.2 Program Theory/Logic Model

Figure 8-1
Program Logic Model for SDGE3027 – Retro-commissioning

External Influences: Broad economic conditions, market events, cost of energy, federal standards, perceived need for conservation, etc. Factors can influence program at all levels and time frames.

8-3

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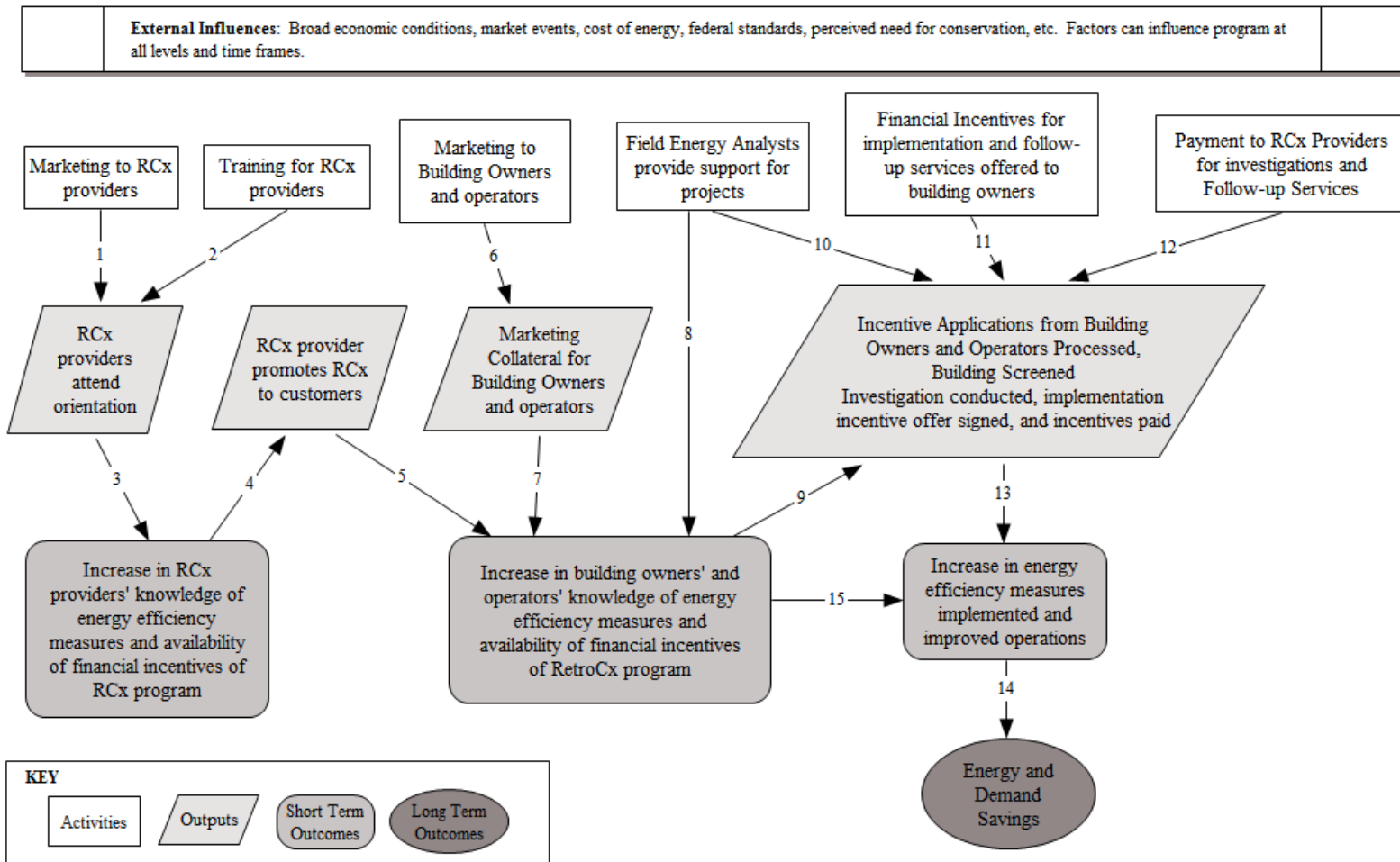
Table 8-1
Program Theory Description for 3027 San Diego Retro-commissioning Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Potential RCx providers may be unfamiliar with energy efficiency measures and unaware of available incentives offered by the RCx program.	Orientation designed to inform the RCx providers about the program and how to participate.	Focus groups of potential RCx providers reviewing the orientation materials.
2	Potential RCx providers may have varying experiences with the level of reporting required to assure a reliable level of outcomes.	Orientation designed to inform the RCx providers about the program and how to participate.	Focus groups of potential RCx providers reviewing the orientation materials.
3	Orientation provided to potential RCx providers	Increase in RCx providers' knowledge of energy efficiency measures and availability of financial incentives of RCx program	Self-report of RCx providers who do not participate in the program. RCx providers participant survey Number of RCx providers participants.
4	The RCx providers have the opportunity to promote the RCx program in the course of their business.	Number of RCx providers promoting the program	Self-report of RCx providers who do not participate in the program. Surveys with RCx providers on how they have used the information from the orientation.
5	RCx providers market the program to building owners and operators.	Increase in building owners' and operators' knowledge of energy efficiency measures and availability of financial incentives and follow-up services offered through the RCx program	Building owners and operators participant survey

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
6	Commercial building owners and operators may be unfamiliar with energy efficiency measures and operations and unaware of available financial incentives and follow-up services offered by the RCx program.	Marketing collateral is created that has a clear and compelling message. It is easy to understand and contains specifics regarding the RCx program and how to participate.	Focus groups of building owners and operators reviewing the marketing collateral.
7	RCx program marketed to building owners and operators through existing business relationships and through the field energy analysts.	Increase in building owners' and operators' knowledge of energy efficiency measures and availability of financial incentives and follow-up services offered through the RCx program	Self-report of building owners and operators who do not participate in the program. Building owners and operators participant survey Number of building owners and operators participants.
8	The field energy analyst will provide information, answer objections, screen buildings and gain an understanding of the decision-making process and budget cycle for the building.	Increase in building owners' and operators' knowledge of energy efficiency measures and availability of financial incentives and follow-up services offered through the RCx program	Self-report of building owners and operators who do not participate in the program. Building owners and operators participant survey Number of building owners and operators participants.
9	Increased awareness, knowledge and attitudes of energy efficiency measures and availability of financial incentives and follow-up services from the program lead building owners and operators to apply for the program and go through with implementing measures.	Number of building owners and operators who apply for program Satisfaction with application process	Program tracking database Building owners and operators participant survey
10	The field energy analyst will team with the RCx provider to ensure progress to a timely completion of the project.	Number of building owners and operators who enter into an agreement to implement measures through the program Amount of incentives Satisfaction with application process	RCx provider survey Program tracking database Building owners and operators participant survey

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
11	An investigation of building operations, financial incentives for implementing measures, and follow-up services to verify measures implemented correctly are provided to building owners and operators. Incentives calculated on a per project basis, depending on building size, system complexity and measures selected for implementation. Incentive expires if implementation deadline not met.	Number of applications received Amount of incentive Satisfaction with application process	Program tracking database Building owners and operators participant survey
12	Payments are made to RCx providers for conducting investigations and for providing follow-up services. RCx providers must be qualified through program and are able to recruit applications.	Number of investigations conducted Number of RCx providers responding to request for qualifications Satisfaction with application process	Program tracking database RCx participant survey
13	Investigative report and incentive motivate building owners and operators to install energy efficiency measures and adopt EE practices	Measures implemented	Program tracking database
14	Increased awareness, knowledge and attitudes of energy efficiency measures and availability of financial incentives and follow-up services from the program lead building owners and operators to implement energy efficiency measures and adopt EE practices.	Number of building owners and operators who adopt energy efficiency measures Measures implement	Program tracking database
16	The implementation of improved energy efficiency measures and adoption of EE practices result in energy and demand savings.	M&V identifies measures installed and documents energy and demand impacts	Reports of gross energy savings and demand reduction

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8.2 2006-2007 Program Activities

8.2.1 Savings Summary

As of the December 2007[1] monthly report, the Retrocommissioning Program did not report any installed savings.

Table 8-2
Electric Savings Summary

	Program Projected (Compliance Filing)	Installed Savings (Inception-To-Date)[21]
Demand Reduction (Summer Peak kW)	2,496.00	-
Energy Savings (Net Annual kWh)	12,191,040	-
Gas Savings (Net Annual Therms)	183,168	-

8.2.2 Budget Summary

From the December 2007[1] monthly report, the Retrocommissioning Program had spent $778,425, which represents 25% of their adopted budget.

Table 8-3
Expenditure Summary

Budget & Expenditures ($)		
Adopted Program Budget (3 - Yr)	Program Expenditures (Inception-To-Date)	Total Commitments (Inception-to-Date)
$ 3,141,064	$ 778,425	$ -

8.2.3 Participation Summary

Seventy-two applications have been received since the inception of the program. Currently, thirty-nine projects remain active in the program tracking database. Twenty-three projects are in the pipeline and 16 projects have signed the Owner Program Agreement and are considered committed to the program.

8.2.3.1 Projects in the Pipeline

As of January 9, 2008, twenty-three projects are in the active pipeline for the program, representing a potential of an approximate additional 7.3 million square feet towards the program's goal. Of these, 13

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[21] SDGE.MR.200712.5.xls, version 5, posted 2/4/2008

have submitted applications and are awaiting screening, and 10 have successfully passed the screening stage.

Thirty-one of 72 projects were discontinued while in the pipeline stage of the program. Table 8-4 presents the reasons why the projects were discontinued. Thirteen percent were discontinued based on the square footage of the building being too small and 29% for the energy use intensity (EUI) being too low, both of which were identified after reviewing their applications. Another 42% failed screening, with the remaining 16% being discontinued for issues relating to the building owner.

Table 8-4
Discontinued Projects in Pipeline

Stage of Project	Reason for Discontinuing Project	# of Apps	Percent
Applicant	Square footage too small	4	13%
	EUI too low	9	29%
Screened	Failed screening - not a good candidate	13	42%
	Owner unable to meet terms of OPA	4	13%
	Owner no longer interested in RCx	1	3%
Total	Total	31	100%

8.2.3.2   Projects Committed to Program

Eighteen projects had a signed Owner Program Agreement in place according to the January 9, 2008 report from the program database. Table 8-5 describes the status of the 16 active projects, which represent almost 4 million square feet towards the program's goal. Two projects have been discontinued, both for equipment-related reasons, and are not listed.

Table 8-5
Committed Projects

Status of Project	# of Apps	Square Footage for Goals	kWh savings for Goals
OPA Signed	3	582,567	742,773
Investigation Started	8	2,474,290	3,154,719
Investigation Completed	4	656,683	696,612
Measures Selected	1	227,520	514,770
Measures Implemented	0	-	-
Total	16	3,941,060	5,108,875
% Goal		39%	42%

8.2.4 Summary of Program Status

(Implementation/marketing activities occurred thus far)

The Retrocommissioning Program is falling short of expectations as of December 2007. The facilities that have signed agreements to participate only contribute 39% towards the square footage goals, and 42% towards the electric savings goals. The program has a number of projects active in the pipeline, which have the potential to provide enough space and electric savings to put them slightly beyond their goals, if all of the projects continue as participants in the program. The program has the opportunity to continue to recruit facilities only until the end of March 2008, in order to allow enough time to complete projects within this program cycle.

8.3 Findings, Conclusions and Recommendations

The three main areas of the RCx program explored for this evaluation were project timeframes, securing signatures on the Owner Program Agreements and the program participation.

8.3.1 Project Timeframes

The RCx program will continue to recruit applicants through the end of March 2008, to allow for the typical 9-12 months needed to complete a RCx project within the 2006-08 program cycle. Accommodating such lengthy timeframes for projects places an impetus on moving projects efficiently through the steps of the program.

The program tracking database was reviewed with respect to the relative amounts of time that a project spent in the various steps of the program, up to the point that the Owner Program Agreement (OPA) is signed. As of January 9, 2008, the tracking database contained records for seventy-one applications received. The applications were tracked with dates for the building being screened, the OPA being sent and the OPA being signed. Figure 8-2 displays the average time that it took for projects to move through the steps. On average, a facility was screened within a month of the application having been received. Once screened, it took an average of 2.5 months for the OPA to be sent out, then an average of 2 months to have it signed. The average total time required between receiving the application and having the OPA signed was 5 months.

Figure 8-2
Timeframe from Application Received to Having the Owner Program Agreement Signed
(in months)

The program manager was concerned that several projects had been delayed due to difficulties with getting the building owners to sign the Owner Program Agreement. Thirteen projects had a signed OPA in place in 5 months or less from the date their application was received. The remaining five projects took an average of 11 months from their application received to signing the OPA, 3 or 4 months of which it took them to sign the OPA after it had been sent. These 5 projects also experienced an elongated time of 6-9 months between the time the building was screened and the OPA was sent. The additional months spent before sending the OPA and the time spent negotiating the contract could jeopardize the project being completed within the program cycle and having the associated savings attributed to the program.

8.3.2 Securing Signed Owner Program Agreements

One meeting where the Owner Program Agreement (OPA) was presented to the applicant was attended in September 2007. The goal of attending the meeting was to observe how the agreement was presented, record questions the applicant had about the agreement, and to identify any recommendations for the process to be improved.

The presentation of the OPA was made by the program Field Analyst to the Director of Facilities Engineering. Also in attendance were the RCx provider that had recruited the facility and a colleague of the director from the engineering firm contracted to manage the facilities. The meeting was structured to walk the applicant through the contract obligations of the parties in the OPA and answer any questions the applicant may have in order to prepare the applicant to discuss the OPA with the building owner.

The meeting began with a discussion of the investment responsibility of facility. The Field Analyst explained that a selection of measures with a payback of 1 year or less are required to be adopted, capped at 8.5% of current energy bill. She then described the responsibilities of the RCx provider and what beyond the financial obligations would be expected from the facility. She further explained that the costs estimated in the findings for implementing measures would be what it would cost to hire the RCx provider to implement the measures; the facility could have the work done by another contractor, or do the work with in-house labor to reduce actual dollars spent to below the cap.

The applicant had questions about these key areas:

- Whether the facilities spending cap included funds spent for energy efficiency measures adopted outside of the measures of the RCx program

- Whether the RCx provider would include recommendations for other energy-savings opportunities as part of their report on the facility

- How to identify other programs from the utility that may provide assistance for measures outside of the scope of the RCx program

- How the facility would experience their savings

The Field Analyst addressed each of these issues, and the applicant appeared to be satisfied with her explanations. The meeting concluded with the denotation of the deadline of 45 days for the OPA to be signed. The applicant was confident that he would be able to get approval from the building owner to participate.

8.3.3 Participant Interview Results

After the Owner Program Agreement is signed, the RCx project commences with the investigation of the facility by the RCx provider. As of mid-January, the RCx program had sixteen facilities who had signed their OPAs and were in the investigation and the implementation stages of the program. In-depth interviews were conducted to assess participants' level of satisfaction with their program experience and to elicit potential improvements for the program. All interviewees had signed OPAs, since it had been decided not to contact facilities in the pipeline that would still have to negotiate with the program implementers.

Eleven different program contacts managed the participation for the sixteen facilities who had signed the OPA. Four program participants were interviewed, each at a different stage in the program. The remaining seven program contacts were not available for the interview, despite multiple attempts having been made to contact them.

Overall, the participants were generally pleased with their program experiences to date. They mentioned several specific areas of satisfaction:

- The background of Retrocommissioning Programs that PECI brings to the table
- The coordination of the provider to do the investigation and reporting
- Having the ENERGY STAR® benchmarking as part of the program
- Savings outcomes experienced from another RCx project were outstanding

However, interviewees identified a number of challenges they faced in participating in the RCx program. The key themes were:

Owner Program Agreement issues: Difficulty with the wording of the contract and needing to have multiple areas clarified before they could understand what it was stating.

Issues with costs of measures, structure of incentives and determination of savings: Described as requiring a "leap of faith" to understand the cost of implementing the measures for estimated savings, but not guaranteed savings. Also, the extent of the investigation was not communicated, and the investigation looked at fewer areas than they thought it would. Descriptions of measures were too vague, and they felt they are not told exactly what it will take to accomplish savings. Another issue is their perception that the providers are receiving higher incentives for their role in the projects than the incentives the building receives for implementing the measures.

Issues with coordinating program cycle with budget cycles for facility: Challenging to get the funds committed for the project, if the proposal for the program falls outside the cycle of preparing and approving budgets at the facility.

Issues with having intermediary implement program: Would like more interaction directly with SDG&E regarding this program. View the utility as more technically-oriented, the 3P provider as more documentation focused.

Issues with providers: Variability of knowledge levels and skill sets exist among qualified providers and participants were not able to tell who the most appropriate ones were for their facility.

The interviews concluded with a question about energy efficiency efforts at their facility other than participating in the RCx program. All of the interviewees have conducted other energy efficiency efforts in their facilities, and have participated in other utility-sponsored incentive programs.

8.3.4 Conclusions and Recommendations

The Retrocommisioning Program faces several challenges to the success of the program. One of the challenges is managing the extensive amount of time it takes to complete a project within the time allocated in the program cycle. Some of the timeframe issues appear to originate in the development of the Owner Program Agreement stage of the project. Ultimately, the lengthy project timelines make it difficult to assess and predict what the program achievements will be at the end of the program cycle. The project timeframes potentially impact funding availability at the portfolio level, since funds may be reserved for this program, eventually remain unused, but are precluded from being reassigned to other programs.

The RCx Program has received applications from 72 facilities, and has exceeded the program goal of screening 10 million square feet of conditioned space. Unfortunately, 43% of the applications resulted in discontinued projects, leaving the program falling short of its goals. Prospects recruited early in the program cycle may not remain in the program through implementation, and continuous efforts of recruiting additional participants are necessary to offset projects that are discontinued.

Another challenge may be the lack of coordination with other available programs. The RCx program does not address energy efficiency issues in entirety for a facility, and the program excludes some items that are addressed by other SDG&E programs. The program staff are not equipped with information on other programs, so opportunities may be missed for acquiring maximum savings from a facility.

The following recommendations are provided to address the findings of the research conducted:

- Communicate the availability of the RCx program at the beginning of the program cycle to as many potential participants as possible. This would make it easier for participants to coordinate the funding necessary with the facility's budget cycle within the timeframe of the program cycle and to adhere to the schedules mandated by the program.

- Provide an extensive "primer" for participation in the program that thoroughly explains the program details and the processes involved. More detailed information can enhance the understanding of the obligations of the facility before the OPA is presented to them.

- Make the calculation processes more transparent by providing greater access to the underlying assumptions and formulas for the investigative stage and for calculating incentives.

- Create a mechanism for participants to provide feedback on qualified providers and make it available for potential program participants. This will make it easier for a facility to choose a qualified provider with the appropriate skill set.

- All participants interviewed would like the program to have closer ties to SDG&E.

- Utilize the potential for the RCx Program to serve as a springboard to other SDG&E energy efficiency programs. The RCx Program has the attention of the decision-maker when the OPA is presented and when an applicant is disqualified. Each of these presents an opportunity to market programs to an engaged audience. Program staff and providers could notify the Account Executives of customers who are applying to the RCx program and possibly distribute basic information on other SDG&E programs to the facilities.

8.4 Best Practices Review by Program

8.4.1 Program Theory and Design

- *Is the program design effective?* The RCx Program is designed to help building owners and operators improve the performance of their building systems. Follow-up services are provided to insure the persistence of the measures adopted through the program. The SDG&E RCx Program has been successfully implemented in previous years.

- *Is the market well understood?* This issue was not directly addressed by the research, but the RCx Program works closely with trade organizations to market the program.

8.4.2 Program Management

8.4.2.1 Project Management

- *Are responsibilities defined and understood?* The responsibilities of the Program Manager, Field Analyst and Qualified Providers are clearly defined.

- *Is there adequate staffing?* This was not directly addressed by the research, but this issue was not raised in our interviews.

8.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* The RCx program has well-defined data requirements and utilizes a tracking system which is capable of generating various reports.

- *Are routine functions automated?* This was not addressed by the research.

8.4.2.3 Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* This was not directly addressed by the research, but the program manager and field analyst maintain communication with the active providers.

- *Does the program verify reporting system?* The RCx program is designed with a high level of quality control for the information submitted by the qualified providers.

- *Are customers satisfied with the product?* Overall, the customers committed to the RCx program are satisfied with their program experience to date.

8.4.3 Program Implementation

8.4.3.1   Participation Process

- *Is participation simple?* The program has a relatively simple application form, and more complex documentation requirements.

- *Are participation strategies multi-pronged and inclusive?* The RCx program recruiting strategy is multi-faceted, to facilitate participation from a wide range of customers.

- *Does program provide quick, timely feedback to participants?* The RCx projects typically last 9-12 months, with feedback given to participants at project milestones. The initial screening is conducted within a month of the receipt of the application.

- *Is participation part of routine transactions?* Participation is not related to routine transactions.

- *Does the program facilitate participation through the use of internet/electronic means?* RCx program information, a case study, the program application and list of qualified providers are maintained on the program's website. Program staff regularly use email for program-related correspondence.

- *Does the program offer a single point of contact for their customers?* RCx participants select a qualified provider to work with on the program. Program staff are available to answer questions.

- *Are incentive levels well understood and appropriate?* Participants reported a lack of understanding and a sense of ambiguity with incentive levels.

8.4.3.2   Marketing and Outreach

- *Use target marketing strategies?* Trade organizations are utilized to market the program to potential participants.

- *Are products stocked and advertised?* Not applicable to this program.

- *Are trade allies and utility staff trained to enhance marketing?* Providers must become qualified to participate in the program.

9. SDGE 3029: Upstream HVAC/Motors Program

9.1 Program Overview

The Premium Efficiency Cooling and Motors program, formerly called the Upstream HVAC and Motors Program, is a third party program designed to develop the supply of and installation of energy efficient HVAC and motor equipment in the SDG&E territory. The program, operated by Conservation Services Group (CSG) has undergone program modifications so that the program now is focused on developing mid-stream (distributors and particularly HVAC and motor contractors. The program covers the C&I and residential sectors for installation of new energy efficient HVAC equipment. The motors program is limited to C&I applications.

The program provides sales tools, marketing support, and financial incentives to the HVAC and motor contractors, who support the program. This support includes training in the use of quality installation services, (this training is coordinated with the third party AC TIMe Program run by KEMA Services). CSG also prepares customized marketing materials for contractors. To assist contractors in the selling of high-efficiency equipment, the program provides sales training and the distribution of computer-software sales tools. CSG is actively working within several C&I sectors to market this program, and recent result indicate success in penetrating the hospitality sector and the public buildings sector. Incentives are given to the contractor or to the distributor in those cases where equipment is direct shipped from the distributor to the end-user. In May, the program received approval to offer larger incentives for the early retirement of inefficient units. This change has increased the activity in the program and has led to a shift in program emphasis.

The program theory and logic model was prepared by CSG and, according to the program manager, represents the most appropriate description of the program at the time. The program is constantly changing such that the motors component is also becoming more of a mid-stream effort. Some of this evolution in the program is not reflected in this version of the logic models.

The following write up is either taken directly from the CSG write up or paraphrased. It represents how the program manager currently conceives the program.

The Program Logic Model has been overhauled to reflect two major shifts in the program orientation since November 2006 when the marketing plan (much of it excerpted and updated in Section II) was initially submitted. These shifts include (1) expanding the program delivery strategy to include greater emphasis on downstream marketing and the commercial sector, and (2) shifting the residential program focus toward early retirement and quality installation (QI) services, including universal QI for SEER 13 or higher units.

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Increased Downstream Marketing and Targeted Commercial Outreach

The first shift came about as a result of early findings that the premium equipment market in the San Diego Gas & Electric® service area is underdeveloped in contrast to neighboring areas, due in part to the mild climate, low relative electricity rates, and to the high incremental cost of premium efficiency equipment. The decision to turn the program toward the commercial sector was catalyzed by sluggish performance by the Verification Service Providers and lukewarm response from motor dealers. The initial program logic model had left residential contractor recruiting activities primarily in the hands of the Verification Service Providers (VSPs), relying on the assumption that the VSPs could readily activate existing networks of contractors, and bring production on line immediately. Nine months into the program, only one VSP has submitted work and the number of residential premium-efficiency equipment sales has averaged about ten units per month. The residential production slump was exacerbated by low numbers of contractor and motor dealer sign-ups. The low interest appears directly related to the low incentive levels on the program. Program incentives were initially at $45 to $300 per residential system, and motors were set at $45 to $400 per motor.

Both sparked underwhelming interest from contractors and dealers. From December 2006 through May 2007, CSG evaluated program performance, contractor and supplier feedback, and researched a broader mix of measures and incentives to realign the program for both cost-effectiveness and performance. This realignment included revising and resubmitting the approved measures and incentives schedules, but keeping intact the overall program budget and kWh and kW goals. The required revisions were submitted in April/May 2007 and approved shortly thereafter. With these revisions in program emphases, measures, and incentives, came an overhaul of the marketing approach and the underlying program logic models.

The program delivery strategy now includes dramatically increased downstream and contractor marketing activities, a significant web presence, program brochures and sales tools designed for direct distribution to commercial facilities managers and for usage by either contractors or consumers. Although the website is still under development, it will include four portals for residential, commercial, contractors, and motor dealers, including limited-access areas for contractors and motor dealers to obtain program information, sales tools and incentive schedules, and public portals to assist consumers (commercial and residential) in participating in the program and/or choosing premium-efficiency air conditioning systems.

The revised program focus includes a much stronger emphasis on hotel retrofits, and a lesser emphasis on motors.

Residential Program Realignment

The second shift, identified above, was the decision to broaden the program to include greater numbers of residential contractors by including SEER 13 (at code) equipment in the program measure mix. By offering early retirement incentives for replacing existing equipment with at-code units, the difference in efficiency, combined with optimized refrigerant charge and matched systems, offers greater energy savings than originally bid with only SEER 14 or higher equipment (but no early retirement savings).

The residential incentives have become much larger in the warmer climate zones (up to $650 per system for a five-ton system), and more accessible to contractors. While this new development (approved in May and currently being implemented by the VSPs) offers the potential to increase residential production dramatically over the coming 18 months, the VSPs will still require considerable recruiting support to meet the current targets.

The broadening of the program to include at-code residential measures and early retirement launched a renewed effort to bring additional residential contractors on board, and provide participating contractors with sales tools and marketing support.

The updated program logic model is separated into seven components, each integral to the overall delivery and performance of the Premium Efficiency Cooling /Motors Program. While some of these components (such as incentives and quality assurance) affect all sectors, the activities, outputs and outcomes associated with each merits the level of detail afforded to each of the targeted market sectors. These components include:

- Commercial HVAC and Early Retirement

- Packaged Terminal Units (Hotels/Motels)

- Residential HVAC and Early Retirement

- Motors (Dealers)

- Motors (OEM Equipment)

- Incentives

- Quality Assurance

The charts on the following pages indicate the program logic model specific to each sector and the more universal logic models for incentives and quality assurance. The relationship of each component to the remaining components is depicted in Figure 1 (next page). The original three program components, Commercial HVAC, Residential HVAC and Motors (Dealers), coupled with Incentives and Quality Assurance, comprise the first two layers of the chart. In the original program logic model, Residential HVAC was activated through the Verification Service Providers, with the VSPs playing a central role in contractor recruiting, training and production. This assumption proved overly optimistic, and the current model, while implementing the incentives through the VSPs, relies on multiple channels for recruiting and supporting contractors. (The VSPs are one of several recruiting and support streams in the Residential HVAC and Early Retirement component.) The newer program elements, identified in gold, are the targeted campaigns added to the program in May, a hotel/motel program, and the expansion of motor incentives to contractors who install manufactured equipment built to specifications with premium motors. These are natural extensions of the original program and are aimed at increasing the influence of the program on repair/replace decisions and premium equipment sales.

Barriers Addressed by Program

Faulty Price Signal that Under Values AC Peak Requirements. The average pricing of electricity means that the true cost of providing peak capacity at summer peaks is not transmitted to the customers. As a result, customers have little incentive to invest in any air conditioning related improvements as the billed cost is so low. This is particularly an issue with customers who live in milder climates and use their AC equipment infrequently, yet may contribute substantially to peak demands. The current DEER savings calculations and the incentives are not based on analysis and calculations that measure the actual contribution of AC use to peak demands. The program's ability to attract interest by contractors and customers is thus limited.

High First Cost. The initial high cost of purchasing energy-efficient equipment often deters all sectors from replacing their old inefficient equipment. This is particularly the case with HVAC where equipment use is limited and paybacks are quite long. The program works directly with contractors to help them sell the lifetime benefits of energy efficient equipment. The Program incentives and Federal tax credits buy down the initial cost so that some concerned consumers will select the energy efficient option.

Shortage of Qualified Technicians. The HVAC faces a continued shortage of qualified technicians capable of specifying, selling, and installing the efficient equipment. This shortage in trained technicians makes it hard for HVAC contractors to allocate the time for training or the adoption of more sophisticated techniques involved in quality installations. Turnover in staff makes it difficult to maintain higher standards.

Asymmetric Information. HVAC systems are among the most complicated systems in homes and offices, and few consumers truly understand how they work. This absence of knowledge makes it difficult for the consumer to differentiate the claims of contractors who do and do not sell energy efficiency. Customers must therefore rely on contractors, a group that customers tend to distrust, for their information. There are few existing mechanisms, training certification, licensing, that can verify the veracity of contractor claims, and customers therefore tend to go with price as the overriding decision maker. The Program is working with Verification Service Providers to institutionalize an independent means of verifying the quality of the installations. Given the barriers noted above, this component of the program has been difficult to develop.

Strategies to Overcome Barriers

Provide Training and Sales Support to Contractors. The Program is working directly with the mid-stream contractors to provide training, tools, and sales support that can help contractors sell the energy efficient equipment. This support should help interested HVAC contractors to increase the number of energy efficient units they install.

Provide Incentives to Contractors for Installation of Energy Efficient Equipment. The program provides incentives to the contractors for installation of energy efficient equipment. Contractors can use these funds to pass on savings to customers or to increase the profit associated with installing energy efficient equipment. This money increases the likelihood that contractors will sell the higher efficiency. The program also offers incentives to contractors who get customers to retire older inefficient equipment.

Figure 9-1
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
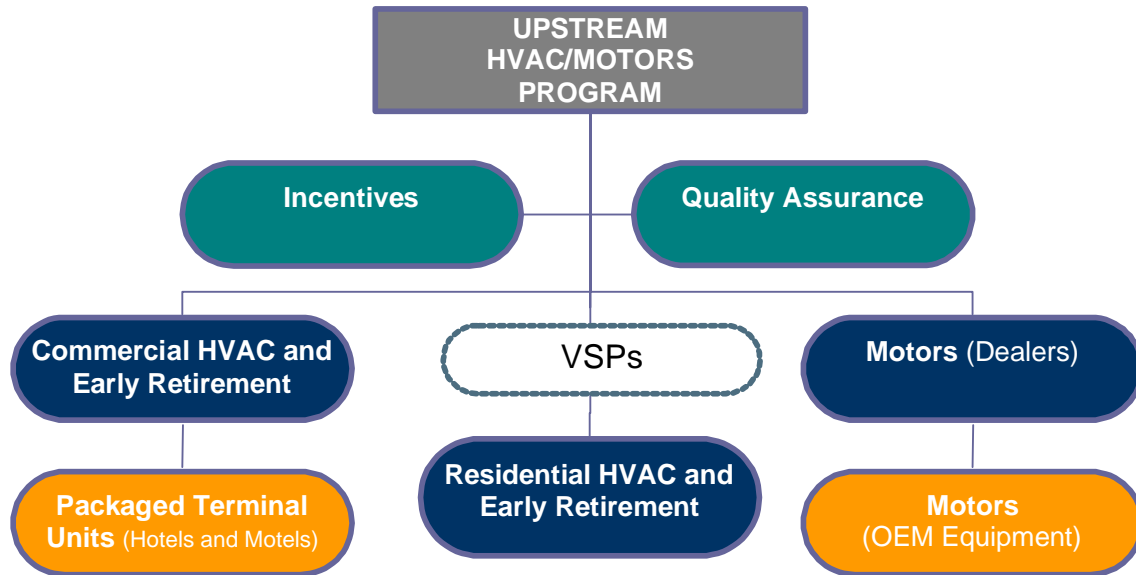
Both Commercial HVAC and Residential HVAC have been expanded to target early retirement and offer larger incentives associated with removing inefficient air conditioning systems from the grid. It should be noted that since the early retirement incentives were only recently approved (mid-May), we are currently in a transitional phase between the original program (where incentives were insufficient to stimulate premium equipment sales) to the broader program where new incentives are expected to increase contractor motivation. Despite increases of 50% to 150% in the incentive levels for replacement installations in the warmer climate zones, the incentives on the program are still well below the levels required to offset the cost premium for high-efficiency equipment. Whether the new incentives are large enough to stimulate market transformation is yet to be seen.

Figure 9-2
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued
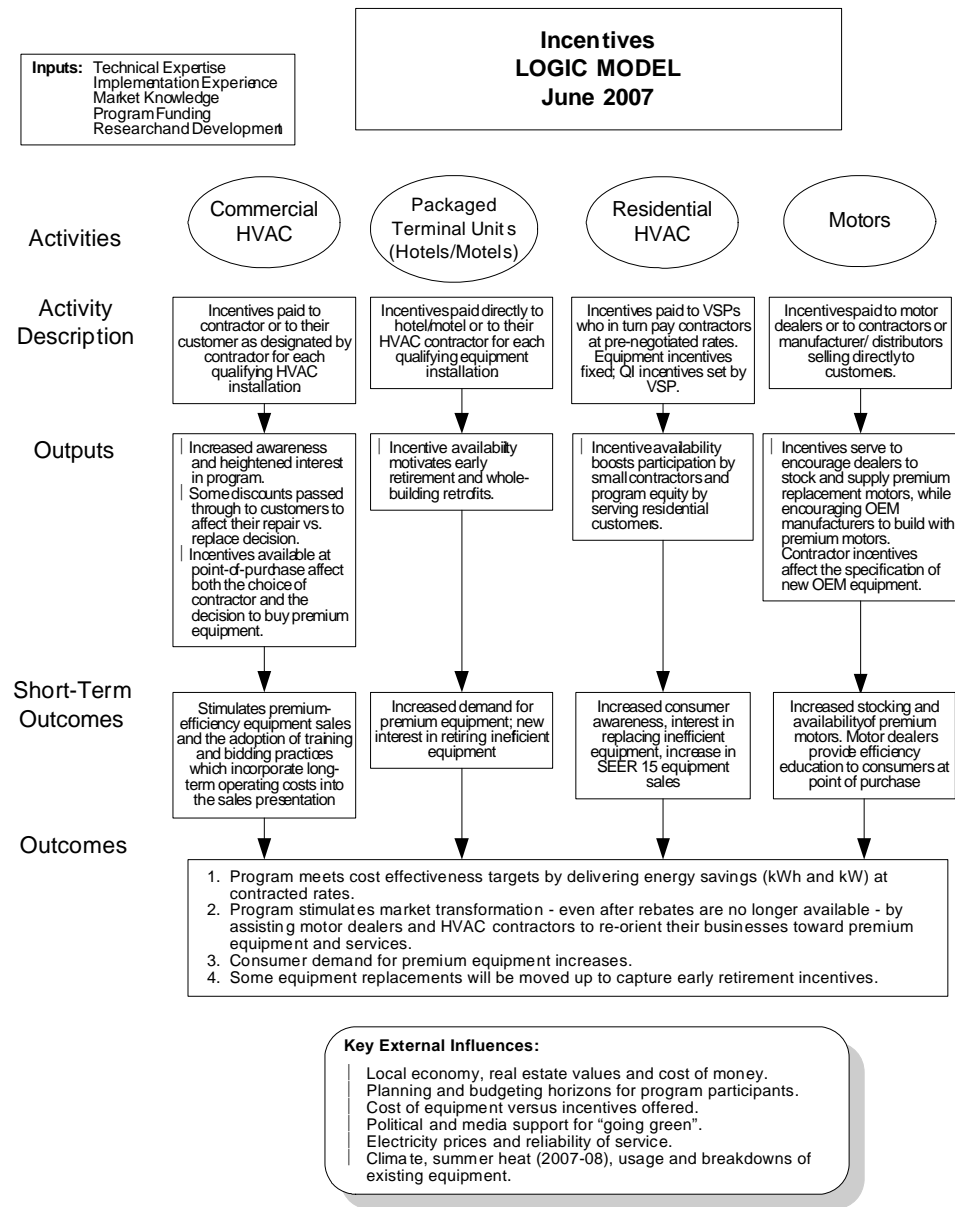
Incentives
The logic model behind program incentives is a matter of economics: premium-efficiency equipment comes at a premium price. Incentives provide contractors with the ability to offer discounts as needed to close the sale, and incentives to educate their customers in considering lifetime operating costs in their purchase decisions. Incentives are essential to stimulating program participation by all involved, and the optimal incentive levels would produce swift market response at sustainable levels of demand. See Figure 2 for detailed activities, outputs, and outcomes.

Figure 9-3
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued

Quality Assurance
LOGIC MODEL
June 2007

Inputs: Technical Expertise
Implementation Experience
Market Knowledge
Program Funding
Research and Development

Activities

Commercial HVAC

Packaged Terminal Units (Hotels/Motels)

Residential HVAC

Motors

Activity Description

Verification that equipment meets program eligibility requirements through cross-reference of model numbers to ARI directory and manufacturer specification sheets. Verification of site climate zone using zip code tables and/or mapping software. Random site visits to ensure installed unit mirrors documentation.

Verification that qualifying equipment is installed. Verification of site climate zone and building year. Random site visits to ensure installed units mirror documentation.

Verification through on-site testing at every installation to ensure proper refrigerant charge. Data analysis and tracking to detect and prevent fraud. Verification of site climate zone, qualifying equipment installation and random site visits to ensure installed unit mirrors documentation.

Verification that equipment meets program eligibility requirements through cross-reference of model numbers to manufacturer specification sheets. Random site visits to stores to check stocking and availability of motors.

Outputs

Assurance that model numbers and energy savings estimates are reported accurately.

Assurance that model numbers and energy savings estimates are reported accurately.

Assurance that model numbers and energy savings estimates are reported accurately.

Assurance that model numbers and energy savings estimates are reported accurately.

Short-Term Outcomes

Program produces increased sales of premium equipment, faster turnover of existing (inefficient) air conditioners and verifiable energy savings. Quality assurance measures ensure program integrity, customer satisfaction, and trade ally support for future progams

Outcomes

1. Program meets cost effectiveness targets by delivering energy savings (kWh and kW) at contracted rates.
2. Program stimulates market transformation - even after rebates are no longer available - by assisting motor dealers and HVAC contractors to re-orient their businesses toward premium equipment and services.
3. Consumer demand for premium equipment increases.
4. Some equipment replacements will be moved up to capture early retirement incentives.

Key External Influences:

Local economy, real estate values and cost of money.
Planning and budgeting horizons for program participants.
Cost of equipment versus incentives offered.
Political and media support for "going green".
Electricity prices and reliability of service.
Climate, summer heat (2007-08), usage and breakdowns of existing equipment.

Quality Assurance
Quality assurance levels and activities are built on the premise that data integrity and reported energy savings are best achieved through a cost-effective mix of data validation checks and field inspections. The activities outlined above are designed to create positive trade ally relations, responsive customer service, and program integrity.

Figure 9-4
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued
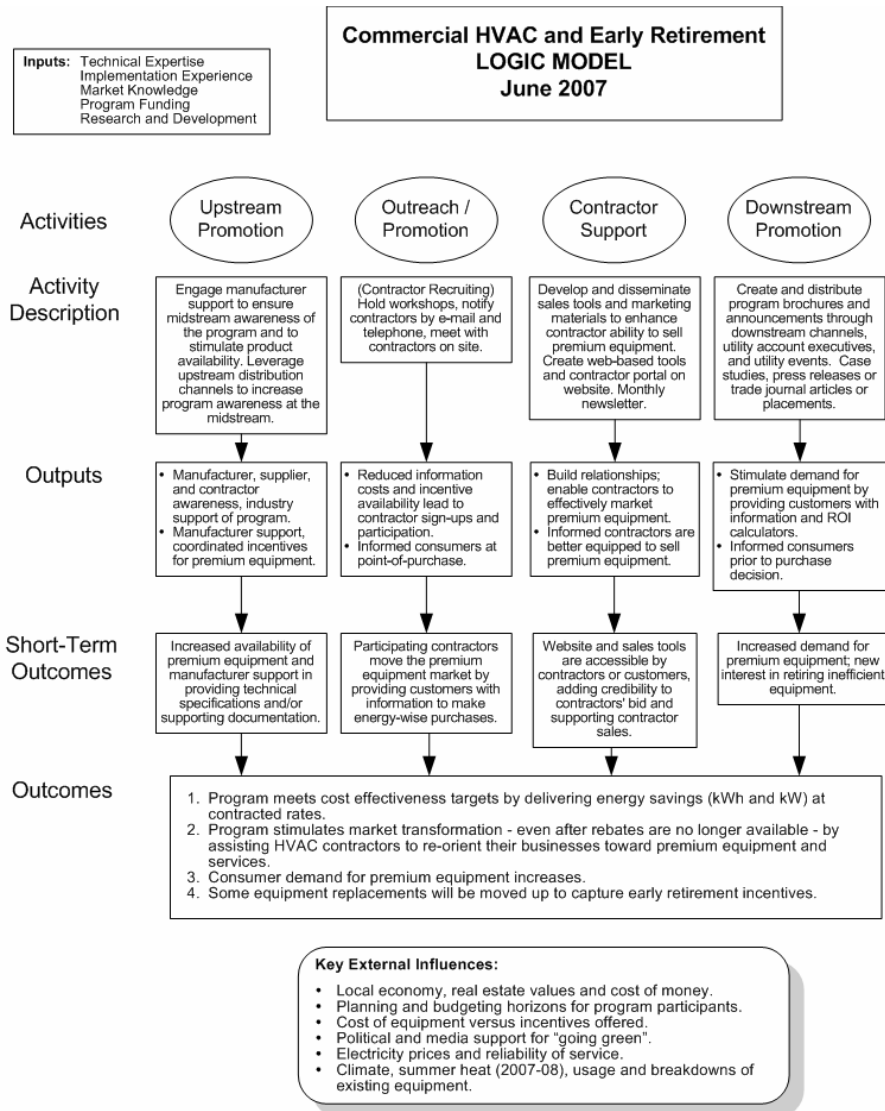
Commercial HVAC and Early Retirement
The logic model for the Commercial HVAC sector begins with promotional activities through upstream distribution channels (manufacturers and suppliers), contractor recruiting activities (midstream), and downstream marketing activities. By launching the program through multiple streams and venues, the program will gain momentum by enlisting the support of crucial market actors, building downstream customer awareness, and providing customers and contractors with reduced information costs. These activities are expected to eventually affect customer decisions at the point of purchase and in the pre-planning and bid-seeking stages of their investment decision.
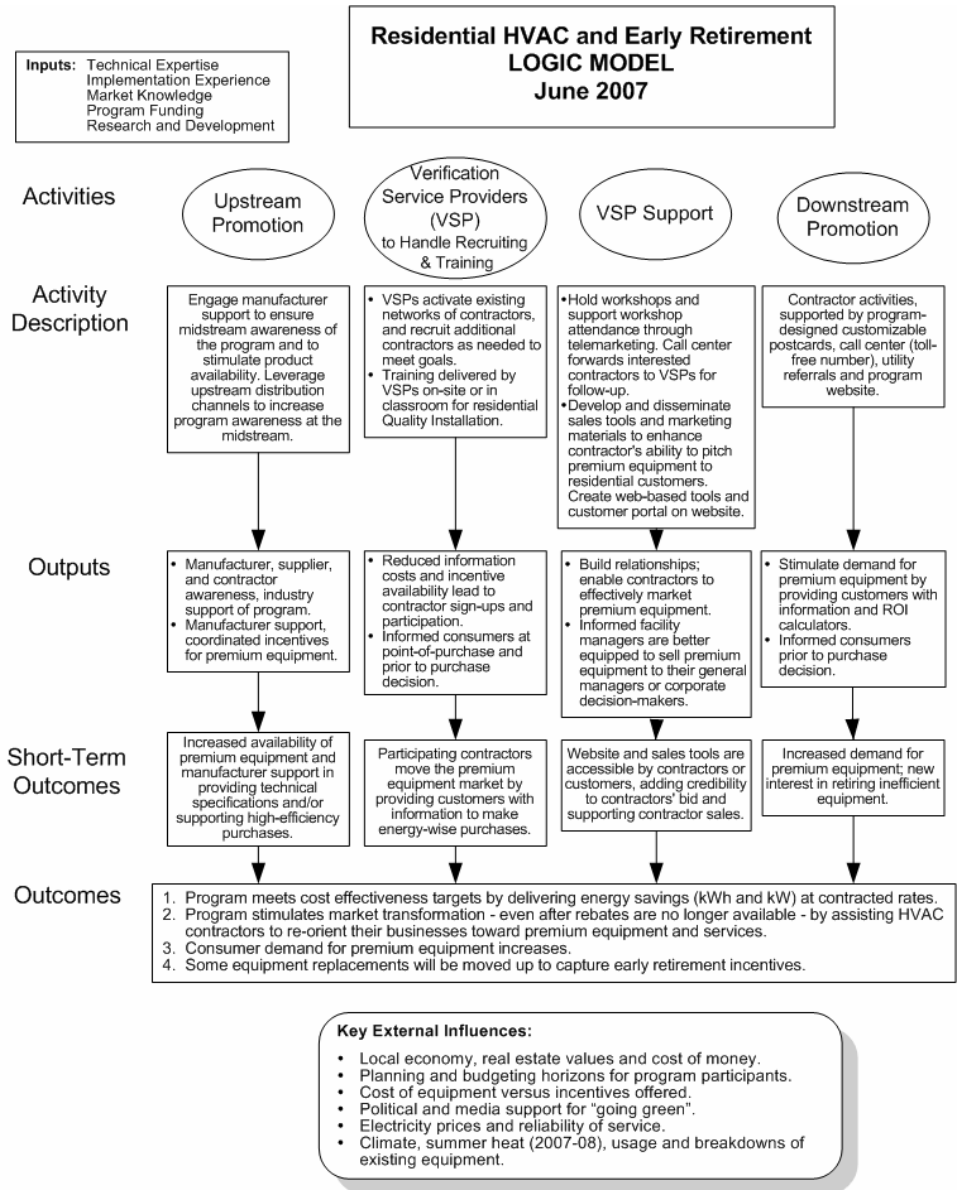
Residential HVAC and Early Retirement
Residential HVAC activities have shifted from a VSP-driven model to a multi-streamed model. Manufacturers and suppliers have provided the impetus for most sign-ups to date, although one VSP has been very successful in activating residential contractors. The competition between VSPs creates additional information costs to potential contractors, and these costs are currently mitigated through extensive contractor outreach and materials development, on-site meetings, and the planned launch of the program website. Residential production has lagged behind commercial primarily due to the barriers to participation (information costs, initial training or equipment costs, and contractor reluctance to make an initial outlay).

Figure 9-6
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued
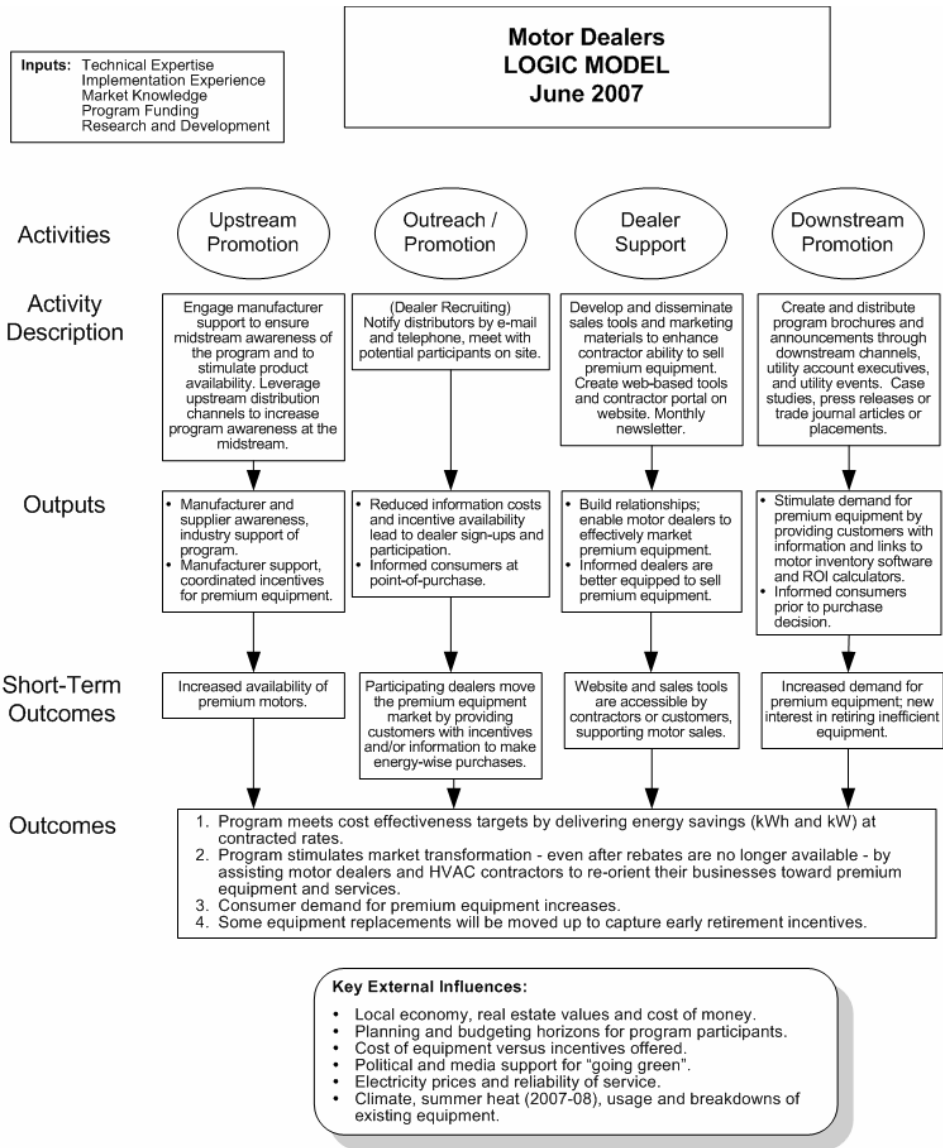
Motors

Motor dealers pose unique difficulties. The barriers to participation are primarily (a) dealer perceptions that the incentive levels are too low to justify the additional processing effort, and (b) prior negative experience with utility rebate programs. Motor dealer participation has been slow and uneven, and stimulating premium motor sales will require greater levels of downstream promotion, ongoing coordination with manufacturers, and more dealer support than initially projected. The logic model presumes that by enlisting dealer participation, the motors will almost sell themselves. This is expected to come with time and training, as well as processing support and marketing support,

Figure 9-7
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued
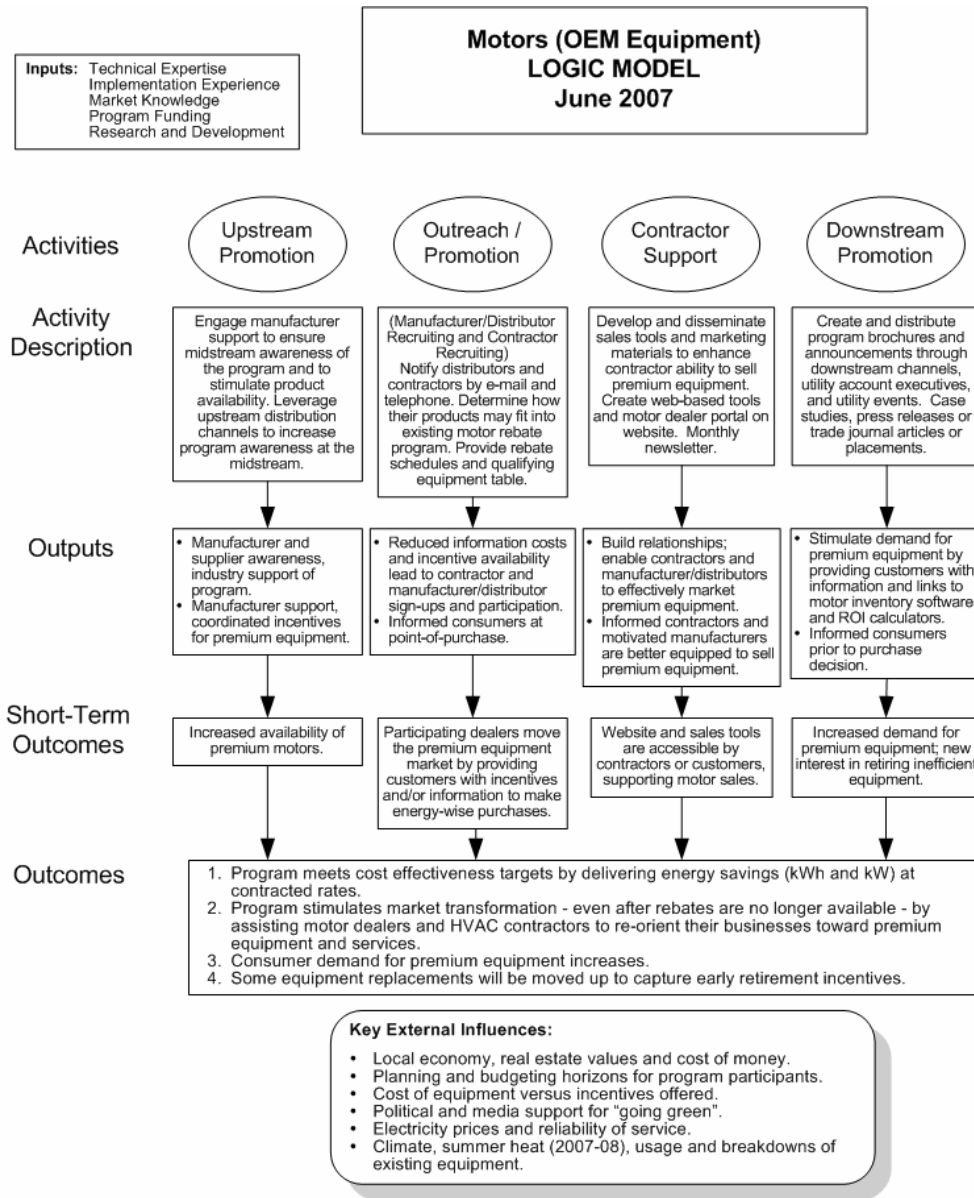
Motors (OEM Equipment)

The major flaw in the motor dealers program is that dealers are selling replacement equipment to contractors. The dealers do not have customer information sufficient to file rebate applications; the contractors are unwilling to provide it. This leads to many motor sales going unreported and uncounted. To address this problem, the program is opening up motor incentives to contractors for equipment ordered from the manufacturer with factory-installed motors. Contractors serving as motor dealers for new equipment (pumps, compressors, refrigeration equipment or air handlers) are expected to affect the new premium motor market, expanding the reach of the motor program beyond replacement motors.

Figure 9-8
Program Logic Model for SDGE3029 – Upstream HVAC/Motors Program
Continued
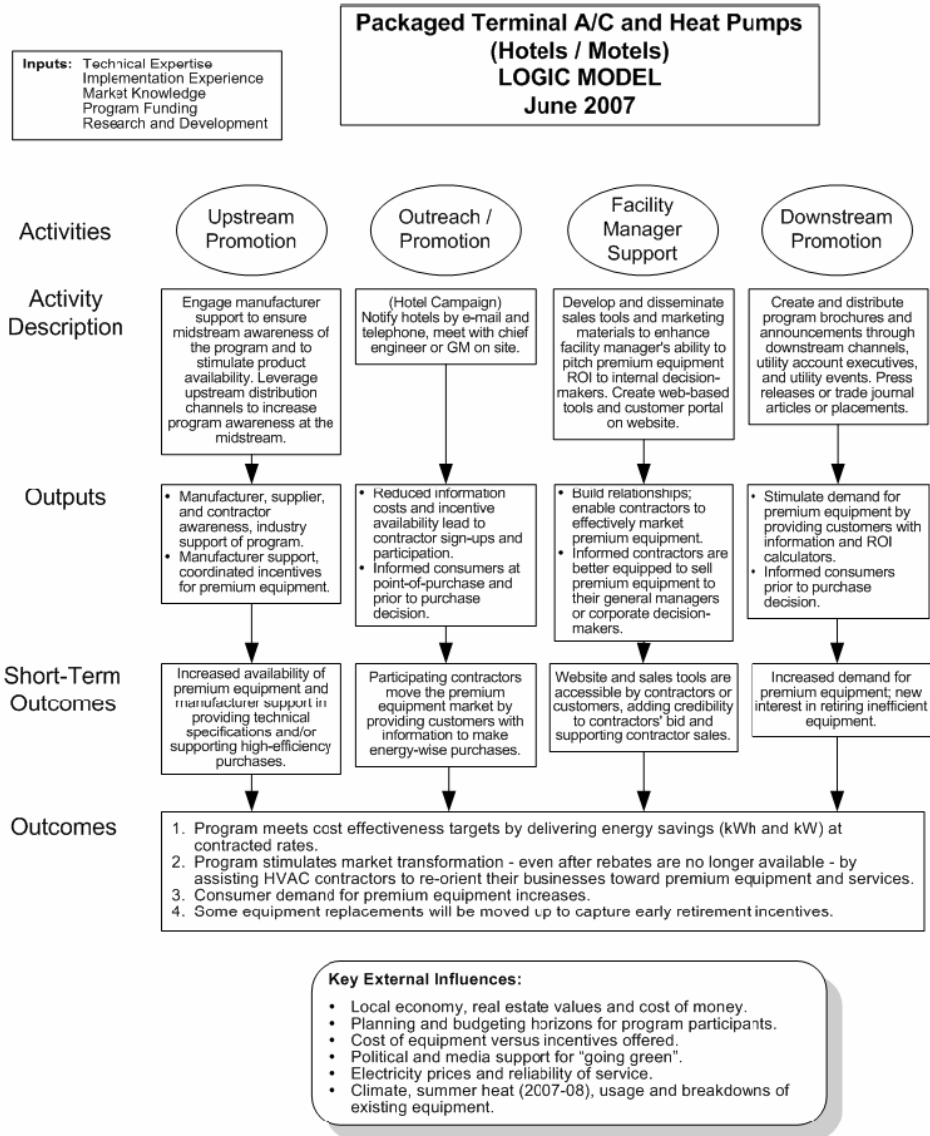
Packaged Terminal Air Conditioning (PTAC) and Heat Pump (PTHP) Equipment

Packaged Terminal equipment was added to the program in response to supplier and downstream demand in November 2006. Although this is primarily a midstream program, hotel room units are regularly replaced by in-house maintenance personnel and would otherwise miss out on program benefits. PTACs and PTHPs are among the most cost-effective measures on the program. The savings per ton are two to three times that of packaged units in non-lodging facilities, the customer investment is low, and the rebates are high relative to incremental costs of high-efficiency units. To position the program to most fully capture the potential in the hospitality industry, we have enlisted the cooperation of utility hotel account executives, equipment suppliers, and hotel corporate offices. We hired a part-time sales person to call on the smaller hotels and to support their engineers in retiring inefficient equipment. This combination of activities will be supplemented by continual information provision, web tools, press releases and a marketing campaign targeted at hotels and motels.

9.2 2006-2007 Program Activities

9.2.1 Savings Summary

As of November 2007, the program had installed 13% of its overall net kWh goals and 9% of the overall net kW goals. All savings in the program to date were shown in the September 2007 monthly report. That is, there were no savings recorded in the monthly reports prior to then and none shown in the October or November 2007 monthly reports. Because 55 percent of the participation occurred in December, 2007 (based on the program implementer program tracking database), the goals values in the implementer tracking database does not match up to the SDG&E monthly reports. However, based on the implementer tracking database, there have been installations that account for 39% of their overall 3 year net kWh goal and 43% of their overall 3 year net kW goal. It is assumed that any lag in data entry will eventually show a similar level of goal attainment.

9.2.2 Budget Summary

As of November 2007, the monthly reports indicated that the program had spent 20% of it's 3 year total adopted budget of $3,996,813. This value will change as well once the data entry for the program is updated.

9.2.3 Participation Summary

Because the SDG&E monthly tracking sheets to not include participation information, the program implementer provided their program tracking database. The information in this database does not match up with the monthly spreadsheets that is assumed to be due to a lag in data entry. Therefore, as of the end of 2007, there were 4,519 SDG&E projects in the third party program tracking database. These represented activities at 2,946 participant sites (averaging 1.5 projects per site) through 73 contractors. The top 10 percent of contractors (i.e., 7 contractors) brought in 68 percent of the projects. Virtually all of the participation (94 percent) represented installation of high efficiency air conditioning (AC) or heat pump (HP) units. There were 146 motors and 129 refrigerant charge type adjustments.

9.2.4 Summary of Program Status

The program is behind in their goals, but has had a large influx of participation showing up in December. It is unknown whether this level of participation will continue into 2008, but if so, could bring the program much closer to meeting their energy goals.

9.3 Findings, Conclusions and Recommendations

There were three data collection efforts for this program: 1) an HVAC Contractor Telephone Survey, 2) two focus groups (one with commercial and one with residential customers), and 3) in-depth interviews with the four Verified Service Providers (VSP) involved with the program. We note that the findings for this program are identical to the findings for SDGE3043 (AC TIMe Program) as the data collection efforts were performed to cover both programs. The writing is reproduced here for clarity.

The HVAC survey was designed to answer multiple hypotheses. Each is provided next along with the findings from the survey responses.

- Contractors do not participate in training because it is too costly or takes up too much time.

  This statement was agreed with for about 20 percent of the contractors. However, these two reasons were secondary to the stated belief that the training does not add anything to their business.

- Contractors do not participate in training because they have high turnover and it does not make sense to train people who leave soon.

  This statement was agreed with by only 5.5 percent of the contractors. This should not be considered an obstacle for training.

- Contractors do not see the advantage in spending the time being trained in QI.

  Slightly over ¼ of the contractors (27 percent) believe that the training does not add anything to their business.

- Contractors think the use of tools takes too much time.

  Close to 2/3 of contractors agreed with this statement when applied to the summer months, which is often their busiest period.

- Contractors do not think that the information gained by using the tools is valuable, or leads to recommendations that the customer will pay for.

  Of those who have VSP trained technicians, fully ¾ of the contractors feel that this information is helpful some or all of the time. (Fifty seven percent stated some of the time and twenty percent stated the information was always helpful.) It seems that, once in use, contractors find value in the information provided through the VSP QI procedures.

- Contractors do not participate because they already do the type of procedures without the VSP tools.

  Close to 2/3 of contractors agreed with this statement. There may need to be more education about what constitutes QI services.

- Contractors are aware of VSP opportunities and actively participate.

  There are 65 percent of the contractors who are aware of the VSP opportunity, but only 12 percent are actively signed with a VSP. This is a low percentage. The in-depth interviews of the VSPs indicated that the programs were complicated, which was leading to low participation by the contractors.

- What is the market niche that the HVAC companies fill?

  Close to ¾ of the contractors state they attempt to sell their product based on high quality of the work, versus lower price. This was backed up by the fact that most contractors stated they receive work from repeat business or referrals. If the contractors work was shoddy, customer most likely would not be using the same contractor again, regardless of the price. This provides a possible marketing avenue for the programs by associating the desire to provide high quality work through QI and efficient installations.

- All contractors think what they do is energy efficient.

Contractors reported that 21 percent of the units they install are 15 SEER or greater, a number that appears to greatly overstates the sale of high efficiency units.

Commercial Customer Focus Group Conclusion – This group was relatively knowledgeable about AC units. They all believed in preventive maintenance and the idea of adding in RCA as one of the tasks already performed made sense. They liked the idea of computerized diagnostics as part of the service, although did not understand the difference between an RCA service and what their current contractor already performed. They would not be comfortable using an outside contractor to have a RCA. However, it may be possible to create a demand for an RCA service among this group of market actors if this point was addressed in the program design.

Residential Focus Group Conclusions – The participants in this residential focus group had a few people that were knowledgeable about AC units and all were conscientious about changing their filters, though they changed them less frequently than the monthly to quarterly recommended practice. However, there was the sense that there was no need to do other maintenance as long as the unit was working. There was uncertainty and confusion around how an AC works and who would provide a service such as RCA and why that service was needed. The amount of education required to attempt to create a demand for the service among residential customers is most likely more that it is worth. Using HVAC contractors as the conduit (as is currently being done) and assuring that there is no cost to the consumer for the test and any change in refrigerant charge may elicit the highest number of residential units having an RCA service.

9.3.1 Recommendations

The recommendations for this and the AC TIMe program are derived from the information gathered in this evaluation and the past knowledge of one of the evaluators. These recommendations have been separated into the two groups for clarity.

9.3.1.1 Recommendations Based on Current Data Collection

* Continue using HVAC contractors as the conduit for customers. However, the program is too complicated to encourage contractor participation. If possible, the program should condense the number of variables required to be tracked and relax some of the current restrictions around climate zones.

* Education on what is involved in a quality installation is needed as contractors have difficulty differentiating what occurs under the program with what they already do.

* Most contractors like to sell their services as "high quality". The program should use this inclination and provide clear statements about the program that allows the contractors to fit "energy efficiency" into their paradigm of "high quality". Essentially, attempt to equate high quality and energy efficiency.

* Attempt to bring into the program those contractors who support commercial customers. These customers appear to understand maintenance and efficiency, yet are not prepared to trust a contractor they do not already know.

* Assure that there is no cost to the residential consumer for any testing or change in refrigerant charge. This may elicit the highest number of residential units having an RCA service.

There appears to be a relatively high degree of awareness of the VSP system in place in SDG&E, but low participation. However, if incentives could be increased (and complications reduced), contractor participation may increase. The next section provides a possible way to include a higher incentives.

9.3.1.2 Other Recommendations

The recommendations below combine some of the findings from the interviews, survey, and focus groups. They also build upon the expertise of the evaluators. Dr. Robert Wirtshafter has conducted process and impact evaluations of VSP and efficient HVAC equipment programs in the Northeast for Northeast Utilities, National Grid, NSTAR, Unitl, and the CapeLight Compact.. He includes some of that experience in drafting the following recommendations.

Emphasize Peak Saving Benefits

Both the ACTime and Premium Cooling Programs have struggled to obtain the energy saving results expected in their Program Implementation Plans. While there have been some start up and other implementation issues that may have stunted program growth, these issues are of secondary importance. The major concern is the structure of the programs themselves. As now structured, the air conditioning initiatives are relegated to a small role in the SDG&E portfolio. Despite the best efforts of the program managers, the ACTime or Premium Cooling have low participation, and produce few if any net benefits for the participating contractors, the customers, or SDG&E. Air conditioning programs can play a larger role in SDG&E's portfolio, but it will require an adjustment in the benefits calculations to give more credit for the measures peak demand reduction potential.

The current structure bases its foundation on the potential energy savings that is achieved when AC measures are installed. The mild climate in much of the SDG&E service territory means that AC measures generate small energy savings. Not only does this make the energy savings per measure small, but it limits the number of eligible applications. This small return makes it difficult to leverage the substantial administration costs and the programs become hard to justify. It also frustrates contractors who cannot tell if the home they are servicing lies within one of the climate zones where the rebate is available.

Selling air conditioning improvements is already a difficult proposition. As the focus groups confirm, customers are only concerned with making sure the homes and offices are comfortable. They expect air conditioners to work when needed with little or no maintenance over the life of the equipment. Most importantly, they know little about how the systems work, and even less about how to tell what is required for a system to be efficient. To be fair to consumers, their lack of concern about the operation and efficiency of a unit is justified. Because of the relatively mild climate, the cost of operating a unit and the benefits of investing in efficiency are both quite small.

Contractors wishing to participate in the two programs must face the fact that even with the incentives, the measures they promote, investment in high efficiency units or in repairs to systems with airflow or duct leakage problems, are only marginally justified in applications that do not use air conditioning for a substantial portion of the year. Because consumers cannot differentiate between systems, the contractors who strive to sell high efficiency are putting themselves at a distinct competitive disadvantage.

If air conditioning were another type of energy consuming measure, it might be prudent for SDG&E to scrap its AC programs or continue to restrict them to areas and applications with larger cooling seasons. However, air conditioning's high coincidence with peak demand requires a second look. Our recommendation is that SDG&E and the CPUC **start assessing and operating AC programs as demand saving programs, not energy saving programs**.

The fact is that while air conditioners do not run many hours a year in San Diego, they almost all run during the peak events, and reducing their loads through efficiency gains lowers SDG&E's peak demand. In this light, AC efficiency is another demand response option. Utilities can invest in expensive systems to signal air conditioning units to shut off during peak events, or they can build that capability into the unit by making it more efficient.

One of the consequences of a peak demand perspective is that it should make all AC units in SDG&E eligible for treatment. Monitoring data in two other mild climates, Wisconsin[22] and Massachusetts/Rhode Island[23], have shown that peak loads in homes on extremely hot days may be similar to that of similar buildings in harsher climates. These studies have also found that peak demand is greatly affected by not only system efficiency, but also sizing and customer occupancy patterns and control of the thermostat. Because the energy programs in California have been largely energy savings based, there is not a large body of monitored data regarding actual peak use that accurately defines peak demand impacts.

Addressing System Sizing

The most significant opportunity for saving peak capacity is to reduce the size of air conditioning units being installed. Most contractors now install systems that are much larger than specified by the industry standard. And fewer still actually perform the Manual J calculations, but instead do quick rule-of-thumb estimates that oversize the units.

Oversizing of units protects the contractor by reducing the chances of callbacks for insufficient cooling. It is the inexpensive way to achieve this protection, because it is easier and cheaper to increase the system size than it is to eliminate the inefficiencies caused by improper airflow and duct leakage. As an added bonus, the contractor makes a little extra profit on selling the larger system.

From an energy-saving perspective, there is little reason to be concerned about sizing as there is only a small energy penalty in running the larger system. Both systems provide the same amount of cooling in normal hours, but the larger system is running a smaller percentage of the hour than the smaller system runs. (The smaller system because it runs more consistently does do a better job of humidity control).

However, at peak times, the smaller system is likely to reach a point where it is running 100% of the hour to meet the peak demand. Under these conditions, a larger unit in the same home would be able to produce even more cooling and thus create a larger peak demand on the utility..

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[22] Scott Pigg, "Cooling the Frostbelt: Central AC in the North;" 2007 *Affordable Comfort Conference*, Cleveland, OH, April 24, 2007.

[23] Wirtshafter, Robert et. al. "Do Quality Installation Verification Programs for Residential Air Conditioners Make Sense in New England*?; International Energy Program Evaluation Conference,* Chicago, IL, 2007.

The system size also has implications as to whether a demand response control event will actually produce a reduction. If the AC unit is shut for 30 minutes in a home with a properly sized unit, that unit will not be able to gain back the lost cooling in the remaining 30 minutes it is on and the temperature in the home will increase. In the home with the oversized system, the larger system may be able to recover all or most of the unmet cooling demand that accumulated while the unit was shut off. In the former case, the utility load is reduced, while in the latter there may be no net demand reduction from the home. Yet, both homes are paid the same incentives, even though the one with the smaller unit is more likely to produce savings

Concentrating on sizing is important because it forces contractors to pay more attention to the other efficiency concerns. Contractors who size units to within 10% of the Manual J requirements (the currently proposed requirements for the ACCA Quality Installation Standard) are likely to pay far greater attention to other RCA and duct leakage to ensure their homes remain comfortable during peak conditions.

Overall Efficiency and ACCA Quality Installation Guidelines

One observable problem with the existing two programs is that they address efficiency measures in a piecemeal fashion. One program directs concerns about the equipment efficiency rating, but essentially ignores installation measures. The other concentrates attention on refrigerant charge, while doing almost nothing about airflow and duct leakage.

It is confusing at times to contractors who are required to talk to one program when dealing with an existing unit and another if a new system is of concern. This means contractors receive two separate marketing messages, neither of which addresses the comprehensive potential for efficiency. This arrangement also suppresses the natural synergy between the VSP services and the installation of new equipment. One of the strongest arguments for VSP diagnostics is that it provides an independent, visual confirmation to consumers with older units that a system should be replaced.

The problem with the piecemeal approach is that it does not guarantee that the system installed is efficient. Having one component meeting an efficiency level is meaningless. The only way to ensure that a system is efficient is to make sure that the system meets all of the aspects of an efficient system. The ACCA Quality Installation Standard is such a standard that could be used right now. Some testing of this case study was performed in California with limited success. The low level of attention at first is not surprising, both because it will take a lot of time to transform this market and because it will require large compensation.

If the sizing component is strictly held to, SDG&E can offer incentives well in excess of $1000 for a verified ACCA Quality Installation. As we noted above, it is necessary to provide large incentives as neither the contractor nor the consumer has any financial incentive for installing a properly sized, quality installation. The other aspect of such a program will need to be an independent diagnostic test, that confirms sizing, RCA, and duct leakage. Without this verification, there is no way to confirm that a unit qualifies. The essential element of the verified ACCA Quality Installation is that it gives HVAC contractors who want to install at that quality the means to distinguish their work from others. Without the clear differentiation, contractors must rely on their own reputation, a prospect that the focus group results confirmed will not work.

9.4 Best Practices Review by Program

9.4.1 Program Theory and Design

- *Is the program design effective?* Not addressed.
- *Is the market well understood?* Not addressed.

9.4.2 Program Management

9.4.2.1 Project Management

- *Are responsibilities defined and understood?* Not addressed.
- *Is there adequate staffing?* Not addressed.

9.4.2.2 Reporting and Tracking

- *Is data easy to track and report?* Not addressed.
- *Are routine functions automated?* Not addressed.

9.4.2.3 Quality Control and Verification

- *Does the program manger have a strong relationship with vendors involved in the project?* Not addressed.
- *Does the program verify reporting system?* Not addressed.
- *Are customers satisfied with the product?* Not addressed.

9.4.3 Program Implementation

9.4.3.1 Participation Process

- *Is participation simple?* No. According to the VSP's this program is too complicated and detracts from HVAC contractor participation.
- *Are participation strategies multi-pronged and inclusive?* Not addressed.
- *Does program provide quick, timely feedback to participants?* Not addressed.
- *Is participation part of routine transactions?* Not addressed.
- *Does the program facilitate participation through the use of internet/electronic means?* Not addressed.
- *Does the program offer a single point of contact for their customers?* Not applicable.
- *Are incentive levels well understood and appropriate?* The incentive levels are complicated as they are based on climate zones and building type. A simpler incentive strategy could increase HVAC contractor participation. If incentives were based on peak energy savings rather than

energy savings, the incentive levels most likely would be higher, which may be more appropriate for increasing HVAC contractor participation (along with an easy incentive strategy).

9.4.3.2 Marketing and Outreach

- *Use target marketing strategies?* Not addressed.

- *Are products stocked and advertised?* Not addressed.

- *Are trade allies and utility staff trained to enhance marketing?* Trade allies (i.e. HVAC contractors) are provided sales training through the program. Utility staff are not trained to help with the marketing of this program.

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10. SDGE 3030: California Preschool Energy Efficiency Program

10.1 Program Overview

This program is implemented by a third party for SDG&E. It is a resource acquisition program aimed at the preschool sector. The implementation team has been working with this segment for many years. Low Income Investment Fund is the main implementer of the program and have been using leads from their partners to access the appropriate group. The program provides a comprehensive energy audit with recommendations (i.e., the audit covers multiple end uses), an incentive covering 80 percent of the cost of implementing the recommendations, and a turn-key installation process. There is an educational component as well. The program plans to provide curriculum for the pre-schools to use in the classrooms and to take home. The program seeks to educate the staff at the school regarding energy efficiency, the pre-school children, and the children's family.

The program aims to reduce the hassle or transaction cost by providing the customer a turn-key audit and installation process. The high first cost is being ameliorated by the large incentive (i.e., 80 percent of the cost of the installation). The curriculum targets both information search costs and asymmetric information through providing useful information regarding energy efficiency (and conservation) to both adults and children.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Candice Robinson	SDG&E	CERobinson@semprautilities.com	858-636-6888
Project Manager	Terry Baumgart	Low Income Investment Fund	tbaumgart@liifund.org	415-489-6145

Figure 10-1
Program Logic Model for SDGE3030 – California Preschool Energy Efficiency Program

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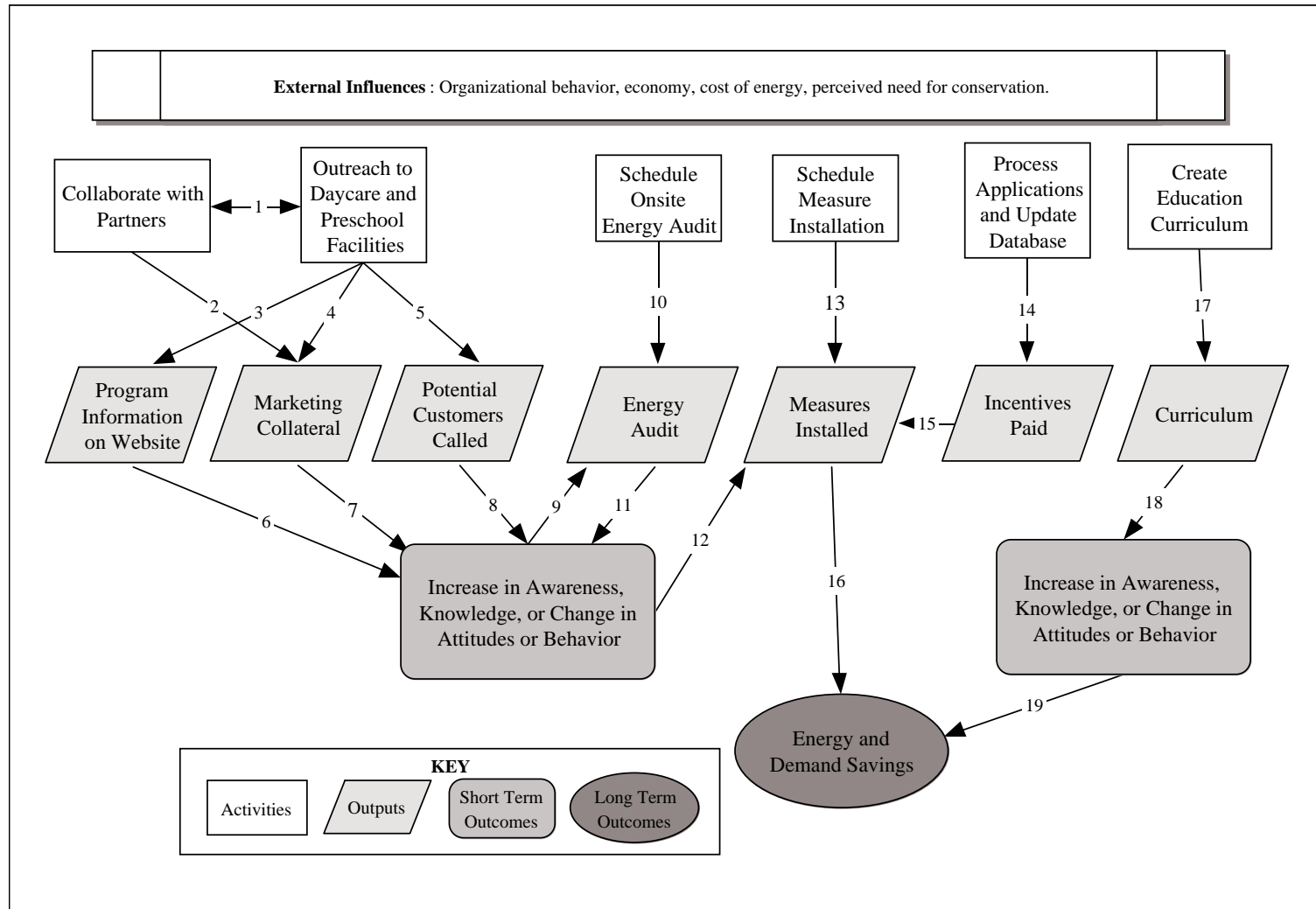
Table 10.9
Program Theory Description for SDGE3030 – California Preschool Energy Efficiency Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Program collaborates with partners. Partners provide potential leads for program and program helps partner's clients by offering program services.	Number of leads provided to program. Number of participants that are clients of partners.	Tracking of data by program manager.
2	Partners have a larger circle of influence than the program. By the partner handing out program marketing collateral to their clients and urging their clients to participate, the program will increase the number of participants.	Number of marketing collateral handed out to partner clients and level of urging by partner to clients.	Interview with program partners.
3	Preschools are unaware of the opportunity to obtain funding for energy efficiency projects. Information on the web that is linked to the already developed early care and education sector will effectively disseminate information regarding the program.	Number of hits on the website	Web statistics.
4	Preschools are unaware of the opportunity to obtain funding for energy efficiency projects. Marketing collateral is clear and informative of what the program is and how to participate.	Information provided in marketing collateral.	Focus group of targeted customers.
5	Preschools are unaware of the opportunity to obtain funding for energy efficiency projects. Interacting directly with potential customers is an effective way to inform them of the program.	Comparison of number of customers with whom the program talks and who decides to participate.	Log of customer interactions.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
6	Information on the website is clear and compels readers to participate in the program.	Self-report by readers on the web site of message clarity and how well it urges them to act on the message.	Web survey of those who visit the Internet site.
7	Information in the marketing collateral is clear and compels readers to participate in the program.	How well the message increases awareness and knowledge and urges them to act on the message.	Focus group of targeted customers.
8	Information provided during customer contacts is clear and compels readers to participate in the program.	How well the interaction increases awareness and knowledge and urges them to participate.	Survey of participants and nonparticipants with whom the program had interactions.
9	The information increases the customer awareness and knowledge such that they choose to act and schedule an energy audit.	Number of energy audits.	Program tracking database.
10	The customer's ability to schedule an audit is easy and hassle-free. Program can schedule audits in times that meet the needs of the customers.	Self-report of those who signed up for an audit.	Survey of audit participants.
11	The energy audit results provide useful information to the customer. It increases the awareness and knowledge of the energy use within their facility and how to reduce that use.	Self-report of participants who received audit results.	Survey of audit participants.
12	Increased awareness and knowledge of how to reduce energy use, along with a financial incentive, causes the customer to choose to install energy efficient measures.	Self-report of participants who installed measures.	Survey of participants.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
13	The customer measure installation is easy and hassle-free. Program can schedule measure installation during periods that meet the needs of the customers.	Self-report of those who had measures installed.	Survey of participants.
14	Financial incentives are crucial in causing the customer to choose to install energy efficient measures.	Number of applications and incentives paid.	Program tracking database.
15	By having the program process the paperwork, there is knowledge of where the program stands as far as goal attainment.	Program tracking database is maintained regularly with easily obtained information on current status of program services completed.	Program tracking database.
16	Installation of measures brings about energy and demand impacts.	Gross energy and demand savings.	Impact evaluation.
17	Preschool children, their families, and preschool staff are not aware of easily taken energy efficiency actions. A curriculum for the preschool children will educate them and the staff regarding energy efficiency actions. While children will naturally take home energy efficiency actions, additional take-home curricula will assure that the actions are discussed in the home. Curriculum is clear and age appropriate.	Review of curriculum by expert.	Curriculum
18	Application of the curriculum as designed will increase awareness and knowledge as well as change attitudes and behavior towards energy efficiency.	Awareness, knowledge and actions by staff, children, and those in the child's home.	Survey of those touched by the curriculum.
19	Energy efficiency actions bring about energy and demand impacts. Actions could be behavioral changes or purchases of energy efficient measures.	Gross energy and demand savings.	Impact evaluation.

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Barriers Addressed by Program

Information Search Costs. The market actors to whom this program is addressed (pre-schools) do not have the time or ability to research the best energy using devices for their facilities. Their clients (i.e., the students and families of the students) are busy and may be unaware of energy efficiency options.

Hassle or Transaction Costs. The market actors to whom this program is addressed (pre-schools) do not have the time or ability to manage the installation of new energy efficient equipment.

High First Cost. The initial high cost of purchasing energy-efficient equipment often deters all sectors from replacing their old inefficient equipment. That combined with the potentially extremely low capital investment budget leads this group to keep working energy using equipment and invest only in the least expensive equipment when they do have to replace.

Strategies to Overcome Barriers

Energy Efficiency Curriculum. The program is creating a curriculum to use in the class room as well as information for the students to take home to their families. The staff at the pre-school will teach the curriculum, thereby learning the information as well.

Turn-key Audit and Installation. The program is providing turn-key audit and installation of recommended equipment to make it easy for the customers. The audits are performed to increase the awareness of the market actors about energy efficiency choices.

Provide Rebates for Installation of Energy Efficient Equipment. The program provides an incentive of 80 percent of the cost of the equipment and installation of energy efficient equipment. This money increases the likelihood that customers will purchase the higher efficiency equipment.2006-2007 Program Activities

10.1.1 Savings Summary

As of November 2007, the program showed no installed energy or demand goals in the SDG&E monthly report. However, program participation records obtained for the survey effort indicated nine sites with completed lighting retrofits. The completions dates ranged from April (seven sites) to September 2007 (two sites). It is unknown why these results were not in the monthly reports. The program tracking database did not have estimated savings associated with these retrofits.

10.1.2 Budget Summary

As of November 2007, the program had spent 20% of it's total adopted budget of $1,222,500. It is noteworthy that the program only had a two year budget (2006-2007). However, it is expected that the program has been continued into 2008.

10.1.3 Participation Summary

Information was requested for the telephone survey of participants and received the end of November 2007. The participation numbers most likely have changed since this date. However, at that time, there were 15 different organizations in the program representing 126 different sites. There have been 29 completed audits, 7 more scheduled, and 3 ready to be scheduled. As stated earlier, there had been nine completed lighting retrofits. According to the program implementer, there is one possible participant with many potential sites for audit/retrofit (around 50). They have been in negotiation with that group for an extended period of time and feel that there is a high likelihood of bringing them into the program. This would greatly effect the participation numbers.

10.1.4 Summary of Program Status

This program is a very small portion of the overall SDG&E goals (0.12 percent of the net kWh portfolio goals). It has taken longer than expected to obtain participation, but audits and retrofits are ongoing. While the SDG&E monthly reports indicate no savings, there is an assumed lag in reporting at the utility level as there are some lighting retrofits that have occurred.

10.2 Findings, Conclusions and Recommendations

10.2.1 Findings

The concept of the program itself appeared to be attractive to this market. As one person said, as a non-profit they are always interested in anything that will help them to savings on their utility bills. There were unsolicited comments about how effective and pleasant the new lighting is. Another person who was not interviewed because the interviewer was directed to the more responsible person, went out of her way to say she had visited some of the sites and was very impressed with the lighting. The interviewer was struck with the note of genuine satisfaction in people's voices. For example, a board member at one site said he heard about the program from a friend. That person was very impressed that all it took to get the ball rolling was one telephone call from him. A Program Director at another site had received material about the program, thought it sounded great, and was pushing the school owner to get involved. Another person interviewed at a corporate location was very warm in saying how helpful program people were, especially with paperwork. The belief by the interviewer of satisfaction amongst participants was supported by the specific questions asked.

The one area where people did voice criticism was in the timing of the installation visits. Obviously, coming to do this kind of work in a room full of excited pre-schoolers is not like coming into an office setting. Advance planning to fit in with a site's schedule should always be a priority. In one case, however, when the site person asked if another time could be arranged to do the work they were very cooperative. So, it is possible that the sites did not realize they had the option of when to schedule the work.

Because of the difficulty we found in fielding our surveys at some sites, there seemed to be a problem of program name recognition. But that may be more a problem of communication between their corporate and their sites rather than something the program implementer can address. It was indicated that a corporate site may make decisions and inform satellite sites about it afterwards.

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10.2.2 Conclusions

The program appears to have had a ramp up period. As such, while there are no savings on the SDG&E monthly reports, there appear to be installations in the field. The pre-schools market appears appreciative of the program and, for the most part, satisfied with how it has been implemented.

10.2.3 Recommendations

On the assumption that the program is continuing into 2008, we recommend that they look closely at how the measure installation scheduling is occurring and assure that it is as flexible as possible.

10.3 Best Practices Review by Program

10.3.1 Program Theory and Design

- *Is the program design effective?* Not specifically addressed during analysis, but appears to be the best way to meet the needs of this targeted market.

- *Is the market well understood?* Not addressed specifically during the analysis, but based on discussions with the program manager and responses from the participants, the market is understood and has put together a program that meets their needs.

10.3.2 Program Management

10.3.2.1   Project Management

- *Are responsibilities defined and understood?* Not addressed.

- *Is there adequate staffing?* Not addressed.

10.3.2.2   Reporting and Tracking

- *Is data easy to track and report?* Not addressed.

- *Are routine functions automated?* Not addressed.

10.3.2.3   Quality Control and Verification

- *Does the program manger have a strong relationship with vendors involved in the project?* Not addressed.

- *Does the program verify reporting system?* Not addressed.

- *Are customers satisfied with the product?* Yes, the customers are very satisfied with the program.

10.3.3 Program Implementation

10.3.3.1 Participation Process

- *Is participation simple?* Yes. The ease of participation was noted in the surveys.

- *Are participation strategies multi-pronged and inclusive?* Not applicable.

- *Does program provide quick, timely feedback to participants?* The program provides an audit report which the customer found to be timely.

- *Is participation part of routine transactions?* Not addressed.

- *Does the program facilitate participation through the use of internet/electronic means?* Yes, the program has a web site that is used to solicit and register participants.

- *Does the program offer a single point of contact for their customers?* Not addressed.

- *Are incentive levels well understood and appropriate?* Not addressed.

10.3.3.2 Marketing and Outreach

- *Use target marketing strategies?* Yes, the program uses a targeted marketing strategy. The implementer has a specific known market in the pre-schools and has used multiple avenues of reaching that audience such as information in pre-existing newsletters, face-to-face meetings, and presenting the program in meetings attended by the target market.

- *Are products stocked and advertised?* Not applicable.

- *Are trade allies and utility staff trained to enhance marketing?* Not applicable.

11. SDGE 3033: Industrial Energy Efficiency Acceleration Program

11.1 Summary of Findings and Recommendations

The Industrial Energy Efficiency Acceleration Program (IEEA) is an education only program with a small adopted budget ($724,986 over three years) and a goal of reaching 40 customers over the three year program cycle. This program's approach is unique in that while many of SDG&E's programs indirectly target facility managers or operations staff, this program targets top-level staff within the company in order to improve energy management decisions and practices.

This program is not on track to meet its program goals. As of December 2007 the program had only four of the expected 40 projects signed. Through the same period the program had spend approximately 15 percent of its budget – compared to an expected amount of 67 percent.[24] Most of this spending has been on marketing and outreach.

The shortfall can largely be attributed to the difficulties with marketing the program. Account Executives do not understand the value of the program, or are unclear on how it fits within the rest of the utility's programs. Therefore they are reluctant to market this program to their customers. Instead the implementer has relied on cold-calling which has met with resistance from potential participants who rely on their Account Executive to inform them of available utility programs.

Additionally, this program targets the same sectors targeted by other program offerings at SDG&E. Notably, these customers are also eligible for resource acquisition programs such as Express and Standard Performance Contracts. However, due to the unique nature of this program, and the fact that there is no upfront cost associated with participation, this program could be a strong complement to the other SDG&E programs.

Findings from our process evaluation support the following recommendations:

- Better define the role of this program within SDG&E's portfolio of programs and closely align the IEEA program with the Account Executives for the targeted sectors

- Establish a clear understanding and clear parameters for program support by Account Executives and streamline communication channels between Account Executives and IEEA

- Explore forms of direct marketing, including peer-to-peer marketing

- Target customers with clear internal upper-management support for making changes

11.2 Program Overview

The IEEA Program, managed by EnVinta, is designed to increase energy efficiency practices within large commercial and industrial customers.[25] The program analyzes business practices as well as technical operations at a facility to identify energy efficiency opportunities and helps management strategize how to remove barriers in order to capturing those savings. The program is free to participants.

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[24] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008

[25] Entities that spend more than $400,000 per year on energy costs.

The IEEA program seeks to accomplish its goals by recruiting commercial and industrial entities to participate in a one or two phase process. The first stage of this program is a full-day working session with the customer's management team, EnVinta staff, technical consultants and the utility Account Executive. EnVinta staff work with the company's management for two hours in the morning to create a management diagnostic report, which looks at 23 different categories. The automated report includes a 180-day savings plan and benchmarking statistics that rank the company against its corporate peers. After the two hour morning workshop, EnVinta staff and technical consulting staff walk executive management and facility mangers through the building to provide a "hands-on" understanding of where energy efficiency measures can be implemented. At the end of the day, a PowerPoint presentation is given to the site management team summarizing the results of the morning workshop and the building walk through. Finally, EnVinta prepares and delivers an Energy Management Improvement Action Plan (EMIAP) to the company.

For companies that request more assistance, and are willing to enter into a Memorandum of Understanding, EnVinta invites them to continue on to Stage 2 of the program, where coaching is offered to companies to help them achieve greater energy savings. While the participants must pay for any capital expenditures they choose to undertake, IEEA attempts to lower the potential costs by channeling customers into relevant SDG&E energy efficiency programs. During Stage 2 EnVinta staff walks the customer through the EMIAP and provides the necessary support, coaching, and training in order to implement management changes and/or to install energy efficiency equipment.

Below we present the program theory (PT) and logic model (LM) for the ETP. A logic model coupled with a description of the program theory is useful in presenting the goals of a program, documenting the activities the program is using to accomplish the goals, and identifying the causal relationships between the activities and the program's effects. The PT/LM shows *why* program activities are occurring, not necessarily *how*.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Candice Robinson	SDG&E	CERobinson@semprautilities.com	858-636-6888
Project Manager	Fabian Biagetti	EnVinta	fbiagetti@EnVinta.com	916-496-1621

Figure 11-1

Program Logic Model for SDGE3033 – Industrial Energy Efficiency Acceleration

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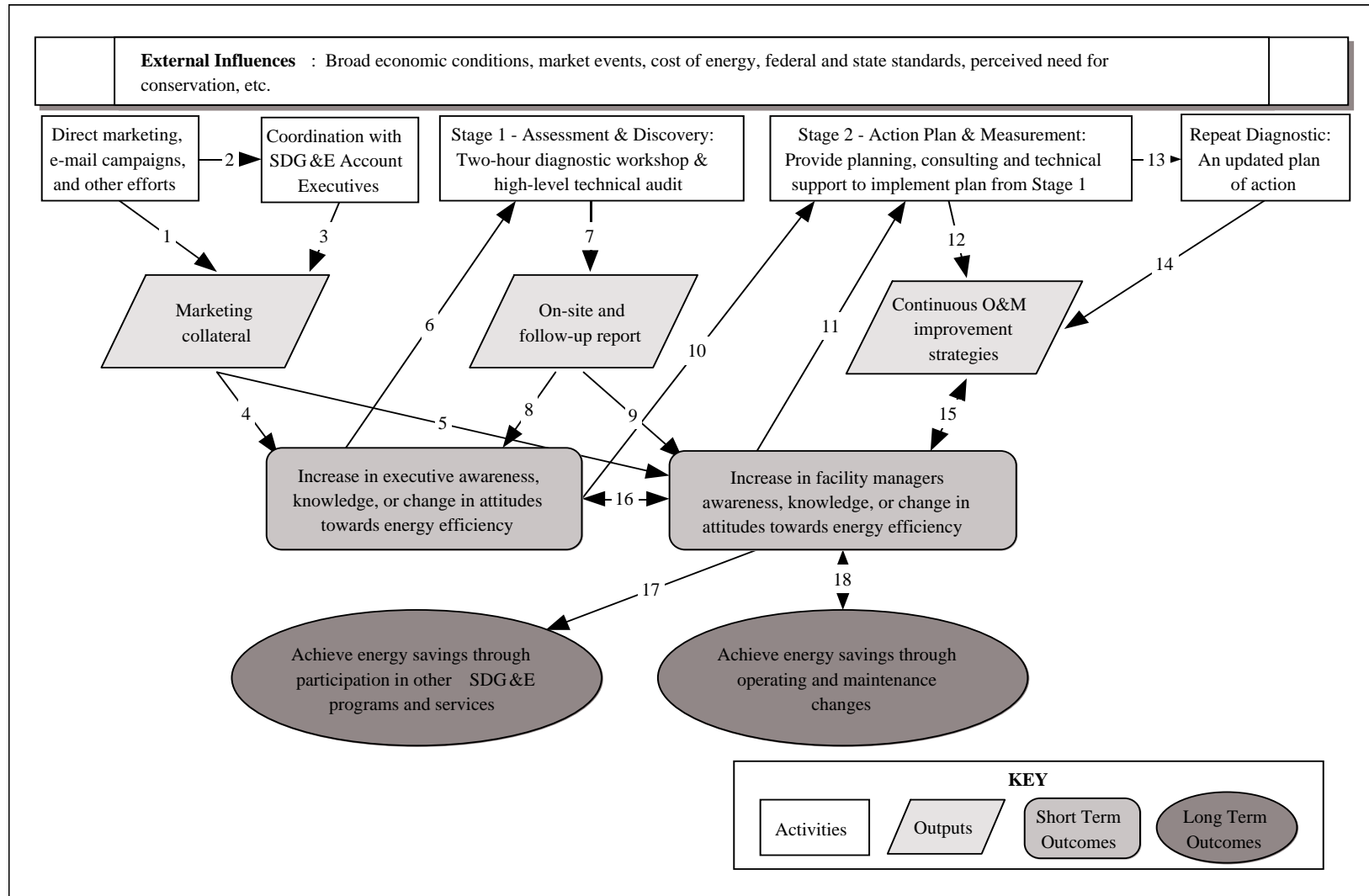
Table 11-1

Program Theory Description for SDGE3033 – Industrial Energy Efficiency Acceleration

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Many large SDG&E industrial customers are not aware of energy savings that can be achieved through O&M changes and the various programs and services SDG&E offers. These customers can be reached through avenues other than the utility account executives.	Marketing collateral is created that has a clear and complete message. It is easy to understand with specifics regarding IEEA opportunities, and how to participate in the program.	Review of materials; focus group; in-depth interviews
2	Direct market campaigns by EnVinta coordinate with Account Executives through phone calls and emails since Account Executives have established relationships with targeted customers	Account Executives are informed of all customers interested in or participating in the program	Interviews with Account Executives
3	Program knows where to place marketing collateral for targeted industrial customers and places the collateral in appropriate areas to be seen by customers so that they participate in the program. Account Executives are willing to market the program to their customers.	Targeted industrial customers are aware of the program, have seen marketing materials, and know what they need to do to participate.	Review of lists of participants; interviews with targeted customers

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4	Marketing collateral, along with discussion with the Account Executives, increases the awareness and knowledge of company executives.	Number of contacts with company executives. Level of awareness and knowledge of company executives.	Program Tracking Database. Survey of those contacted by the program and AEs.
5	The marketing collateral is not only aimed at company executives but also facility managers. Marketing collateral, along with discussion with the Account Executives, increases the awareness and knowledge of facility managers.	Number of contacts with facility managers. Level of awareness and knowledge of facility managers.	Program Tracking Database. Survey of those contacted by the program and AEs.
6	Once company executives understand the program, they will want to participate in Stage 1.	Number of companies signed up for Stage 1.	Program Tracking Database.
7	The company provides access to their plant and sends the appropriate people to the workshop so that the high-level technical audit accurately represents the company's energy using equipment and organization.	Timing between signing up for Stage 1 and workshop. Who attends workshop.	Program Tracking Database. Sign up sheets.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
8	The information being reported to the customer is beneficial. After reading the report and watching the presentation, executives will be more aware of the role they need to play to create changes in the company.	Self-reported increase in awareness, knowledge and attitude as a result of Stage 1	Interviews with participants
9	The information being reported to the customer is beneficial. After reading the report and watching the presentation, facility managers are more aware of how to engender energy savings actions they can take on their own (i.e., both equipment and O&M-related actions) and of the portfolio of relevant programs offered by SDG&E.	Self-reported increase in awareness, knowledge and attitude as a result of Stage 1	Interviews with participants
10	By making executives, along with facility managers, aware of opportunities within their company that they could pursue, plus providing them with a path to creating changes, they will want to participate in Stage 2 of the program. Buy in from the top executives will lessen organizational barriers to implementing changes. The executives show buy in by signing a Memoradum of Understanding (MoU).	Number of customers who participate in Stage 2.	Participant Tracking Database

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
11	Showing facility managers, along with executives, the benefits of changes to their operations and maintenance (O&M) will cause them to want to participate in Stage 2 of the program. Buy in from facility managers will lessen organization barriers to implementing changes.	Number of customers who participate in Stage 2. [MAX 10] Number of customers who would like to participate	Participant Tracking Database
12	Because companies do not have the manpower to oversee energy efficiency changes, the coaching and support of the program causes O&M strategies to be created regularly.	Number of O&M strategies created.	Company action plan.
13	Customers become very busy with other areas besides energy efficiency. A follow-up diagnostic and plan of action that occurs six months after the original Stage 2 plan will cause more actions to be implemented.	Number and timing of O&M strategies implemented.	Impact evaluation.
14	After implementing energy efficiency O&M strategies for 6 months, the company will not be able to determine where else energy efficiency could be included.	Updated strategies provided to company.	Updated company action plan.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
15	Seeing the benefits of the changes in the O&M practices will create a beneficial loop that continually increases the knowledge of facility managers and changes their attitudes towards energy efficiency actions.	Self-report of facility managers.	Participant survey.
16	As facility managers increase their awareness and knowledge and change their attitude towards energy efficiency actions they will encourage a similar change among executives and vice versa.	Self-report of facility managers and company executives.	Participant survey
17	Increased awareness and knowledge of other SDG&E programs causes companies to actively pursue participation in other SDG&E energy efficiency programs.	Self-report of facility managers. Level of participation in other SDG&E programs.	Participant survey. Program participant databases of other SDG&E programs
18	Obtaining energy savings through changed O&M practices will create a beneficial loop that reinforces energy efficiency behaviors in facility managers.	Self-report of facility managers.	Participant survey.

11.3 2006-2007 Program Activities

11.3.1 Savings Summary

As an outreach and education program, IEEA is not required to deliver deemed energy savings. However, EnVinta does report to SDG&E on potential savings opportunities at facilities that complete Stage 1 of the program. According to May 2007 results from completed Energy Management Improvement Action Plans, potential savings for the first four participants could be as much as 3.1 million kWh and 193,821 therms annually if the participants implemented the suggestions laid out in EMIAPs.

11.3.2 Budget Summary

Through December 2007, the program has spent $109,369, approximately 15 percent of its $724,986 adopted budget – compared to an expected percentage of 67 percent.[26] The majority of this spending has been on administrative costs and marketing.

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[26] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008

Table 11-2

Budget and Spending Summary[27]

Adopted Budget				
	2006	**2007**	**2008**	**3 Yr Adopted Total**
	$315,395	**$256,645**	**$152,946**	**$724,986**
Expenditures				
	For the month	**Inception through:**	**% of Total Adopted Budget**	
Dec. 2006	$0	$23,957	3%	
Jan. 2007	$14,901	$38,858	5%	
Feb. 2007	$28	$38,886	5%	
Mar. 2007	$13	$38,898	5%	
Apr. 2007	$25,030	$63,929	9%	
May 2007	$8,325	$72,254	10%	
Jun. 2007	$20,906	$93,160	13%	
Jul. 2007	$81	$93,241	13%	
Aug. 2007	$7,277	$100,517	14%	
Sept. 2007	$1,149	$101,666	14%	
Oct. 2007	$7,445	$109,111	15%	
Nov. 2007	$149	$109,259	15%	
Dec. 2007	$110	$109,369	15%	

11.3.3 Participation Summary

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[27] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008; SDGE.MR.200711.1.xls, version 1, uploaded 1/3/2008; SDGE.MR.200710.2.xls, version 2, uploaded 12/5/2007; SDGE.MR.200709.2.xls, version 2, uploaded 11/9/2007; SDGE.MR.200708.1.xls, version 1, uploaded 9/28/2007; SDGE.MR.200707.4.xls, version 4, uploaded 9/11/2007; SDGE.MR.200706.3.xls, version 3, uploaded 10/25/2007; SDGE.MR.200705.2.xls, version 2, uploaded 7/30/2007; SDGE.MR.200704.4.xls, version 4, uploaded 7/30/2007; SDGE.MR.200703.3.xls, version 3, uploaded 7/30/2007; SDGE.MR.200702.2.xls, version 2, uploaded 7/30/2007; SDGE.MR.200701.2.xls, version 2, uploaded 7/30/2007

The IEEA program has a goal of moving 40 participants through Stage 1 of the program and 10 of these participants through Stage 2. The program is not on target for meeting these goals. As of December 2007, four commercial and industrial customers have completed Stage 1 and only one customer has opted to continue with Stage 2 of the program.

11.3.4 Summary of Program Status

Through December 2007 the IEEA program has completed Stage 1 with four customers and plans to begin Phase 2 with one of the customers in early 2008. In addition, a large majority of their activities have been focused on marketing the program. IEEA has marketed the program both directly to customers and to the Account Executives. These activities have included:

- 3 Seminar(s) presenting the program to Account Executives

- Email and telephone contact with Account Executives assigned to target customers

- Direct mail to 145 target customers

- 4 Presentations of the program to industry associations, trade groups and local business leaders

- Developing marketing materials including Power Point Presentation for Account Executives, Power Point Presentation for Customers, Fact Sheet, Program Overview Sheet, Website: http://www.envinta.com/products/ieea/ieea.htm

- Account Executive Support Package including two Case Studies, Power Point Presentation for Customers, Program Article and Success Story, Program Brochure, Program Overview Sheet and two Internal SDG&E Documents "Who Should Attend the One-2-Five Energy Diagnostic Session and Why" and "Overcoming Typical Barriers to Customer Participation"

11.4 Findings, Conclusions and Recommendations

Better define the role of this program within SDG&E's portfolio of programs and closely align the IEEA program with the Account Executives for the targeted sectors

This program targets the same sectors targeted by other program offerings at SDG&E: large industrial or large commercial customers who have designated Account Executives and are eligible for resource acquisition programs such as Express and Standard Performance Contracts. However, this program's approach is unique in that while many of SDG&E's programs indirectly target facility managers or operations staff, this program targets top-level staff within the company in order to change energy management decisions and practices. The program also does not require any financial investment on the part of the company, but identifies savings at no other than the investment of one day's time by company staff for an onsite workshop. Because of the unique nature of this program, and the fact that there is no upfront cost associated with participation, this program could be a strong complement to the other SDG&E programs. As a first step to ensuring the success of this program, SDG&E should more clearly define the targeted segments and the role of this program within SDG&E's portfolio of programs.

"Industrial customers" appears to be a segment identified by SDG&E in their new segmentation scheme, and as such, this program should be viable. However, the IEEA program targets more than just industrial customers. Notably, SDG&E is currently creating a new segmentation scheme for their commercial

customers. SDG&E and IEEA need to work together to identify exactly which segments this program is targeting under SDG&E's new segmentation scheme.28 Once the targeted segment is clearly understood, the SDG&E manager and IEEA should talk to the Account Executives targeting this segment to better understand if the program can provide value to this segment, and what, specifically, the value is to this segment, and how it should be presented to potential participants.

Establish a clear understanding and clear parameters for program support by Account Executives and Streamline communication channels between Account Executives and IEEA

The low number of participants in this program thus far is largely due to the difficulties EnVinta is facing with marketing the program. The marketing of this program has been largely based on "cold calling" of customers by the program implementer. While EnVinta has had some success with this tactic, they have found that many customers are concerned about the legitimacy of the program as they did not hear of it from their Account Executive.

EnVinta originally hoped to market the IEEA program to participants mainly through SDG&E Account Executives who already had relationships developed with many of the large commercial and industrial customers in the territory. EnVinta had hoped that the Account Executives would refer them to specific companies, and help EnVinta start dialogue with these companies.

The target market is difficult to penetrate as the program specifically targets top-level executives. EnVinta staff has developed case study materials, fact sheets, PowerPoint presentations, and other collateral that they distribute to utility Account Executives and to potential participants to help educate them about energy saving opportunities. EnVinta staff have also outreached to trade associations, and presented at various trade conferences and workshops, but to date no companies have signed up to participate in the program as a result of these educational/marketing activities.

According to EnVinta, there is a marked difference in response between companies that were cold called or emailed, verses those that received a brief introductory e-mail from their Account Executive notifying them of the program's availability. In fact, our general non-participant survey asked industrial customers what were the best ways to provide them with information about energy efficiency opportunities, and the top three answers were: information from the utility received through the mail, such as a bill insert or newsletter, an email from their utility Account Executive, and then information provided on the utility's website. This suggests that even minimal Account Executive involvement would go a long way towards helping IEEA become a successful program.

We also spoke with two participants who learned about the program through their Account Executive. One company representative said: "I cannot imagine how else I would ever have heard of this program." The other participant underscored the need for Account Executive involvement by noting: "unless [information about a program] comes from the utility, unless my local [Account Executive] has told me that it is cool then I won't even give it the time of day."

However, Account Executives do not feel that they understand the value of this program versus other program in SDG&E's portfolio, and therefore may not be promoting the program as thoroughly as they

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[28] The name of the program indicates that it targets only industrial customers. If this is not the case, SDG&E should consider changing the name to more accurately reflect the program offering.

could because they are unclear on how it fits in with the rest of SDG&E's programs and do not want to overwhelm their customers with too many participation opportunities.

Moreover, EnVinta staff seemed puzzled that even after companies had participated in the IEEA program, and clear energy savings opportunities had been identified in that facility, utility Account Executives did not actively engage the companies in relevant resource acquisition programs. As the IEEA program manager explained, "I don't know how to incentivize [the Account Executives] or motivate them."

Therefore SDG&E should also establish a clear understanding and clear parameters for program support by Account Executives. Additionally, SDG&E should more clearly define the role of the Account Executives in implementing this program, and provide Account Executives with the information needed to promote this program.

In addition, our depth interviews revealed the need to find ways to open up the communication channels between the Account Executives and the programs that they need to support. EnVinta has not been as successful as they had hoped in obtaining time with Account Executives to inform them of the program. For example, when EnVinta requested a meeting with the Account Executives to discuss the details of the program they were surprised by how much more of a bureaucratic exercise [it was] to actually schedule a presentation to the Account Executives. It appears that the third party programs are removed from Account Executives: EnVinta staff communicates with the SDG&E program manager, who then communicates with a liaison for the Account Executives, who then communicates with the Account Executives themselves. Moreover, despite raising awareness of the issues between the third parties and Account Executives over the course of this evaluation, communication between this program and the Account Executives seems to have deteriorated as the program cycle has progressed. This issue must be addressed, particularly given feedback we received from the program participants.

Explore forms of direct marketing, including peer-to-peer marketing

The two participants interviewed indicate that the program is well regarded, with both participants expressing strong satisfaction with the quality of service IEEA consultants provided. One participant thoroughly praised the IEEA consultant for the level of professionalism and knowledge he brought to the diagnostics session, as well as his willingness to continue to provide timely follow-up information. This company decided to continue onto Stage 2 of the program in-large part due to the positive relationship they developed with the IEEA consultant; they trusted him and believed him to be a credible source of expert advice. The other participant we interviewed also credited the IEEA consultant with being well prepared and friendly. Both noted that the management diagnostics session was comprehensive and that they could not think of any ways to improve the program. One of the company representatives noted, "sure I could have made these changes on my own, but I'm not an expert on some of these technologies so working with [the IEEA consultant] saved us a lot of time!"

While EnVinta staff has attempted cold calling, emailing, and direct mailing to target customers, they have faced a deficit of trust. This could potentially be mitigated by building on the positive experience that participants have had with the program and exploring possible peer-to-peer marketing efforts. For example, a "peer-to-peer" email campaign, where participants are asked to send out an EnVinta-prepared email to similar companies.

Additionally, SDG&E should look for ways to integrate this program into general marketing materials and promotional efforts for the targeted segments. This will be easier once the role of this program within

SDG&E's portfolio is better defined. As the program implementer said, "we would be the first ones in line if there is someone that could come up with an initiative that would collectively market all of these [non-residential energy efficiency] opportunities that come through [SDG&E]…it seems to me again, not being an expert in marketing, there has got to be a better way to make customers aware of what SDG&E is trying to do for them."

Target customers with clear internal upper-management support for making changes

Though one of the two participating companies interviewed indicated a strong resolve to follow-through on the IEEA recommendations, neither of the facilities have implemented any of the IEEA recommendations, even though six months have past since the initial consultations. One participant noted that his facility had either already implemented (prior to the IEEA process), or was planning to implement, most of the recommendations suggested by IEEA. However, this representative noted that IEEA was not privy to information from upper management about energy saving mandates coming down the pipeline to that particular facility before the session. The program should follow up with companies that participate in order to facilitate implementation of energy savings recommendations.

The interviews uncovered an important link that must be established in order for an IEEA session to actually change behaviors at the targeted firms. At one company the IEEA session did not include the top level energy management decision-makers at the firm, who are located out-of-state. The IEEA session results were passed along to upper-management at this firm, but without initial buy-in and support from upper management the recommendations have not been implemented. The energy manager for this firm originally commented that the IEEA recommendations were seen by upper-management as "valuable," but then added a somewhat contradictory caveat: "management gets really really bent out of shape if I quote unquote waste my time on things that they think are not strategic…[my boss] was really upset about all time I spent with [the IEEA consultant.]" While both companies have ambitious energy savings goals, only one of the energy managers had enough autonomy to prioritize spending time with IEEA staff to turn the recommendations into a workable energy savings plan. IEEA may need to do more background research to determine if they have secured engagement from the decision-makers at the firm before initiating the session.

11.5 Best Practices Review by Program

Best Practice Analysis	Y/N	Notes
Program Theory and Design		
Is the program design effective?	Y	While it is hard to determine the effectiveness of the program given the small sample size of companies that have participated to date in the program, the program theory does conform to best practices within non-residential large customer energy efficiency programs. The program has a clearly articulated program strategy and theory that has been tested in other geographical areas in the U.S., and it links program features to utility DSM goals. The program draws on the theory of change management, which promotes a holistic and innovative approach to capturing energy savings in commercial and industrial energy systems.

Best Practice Analysis	Y/N	Notes
Is the market well understood?	Y	IEEA targets a well-defined market segment: large commercial and industrial facilities that spend over $400,000 a year on energy costs. EnVinta has ample experience targeting this market sector and consulting on management issues - 25 years of experience. They have run this program in other parts of the country (Pacific Northwest and the Midwest) since 1998. Moreover, the Account Executives understand the needs of this sector and this knowledge could be used to improve the program efforts.
Project Management: Project Management		
Are responsibilities defined and understood?	N	Project management responsibilities within EnVinta are well defined and carried out; however the role of the Account Executives in this program was not well defined in advance of program implementation.
Is there adequate staffing?	Y	Staff levels are adequate at this time.
Program Management: Report and Tracking		
Is data easy to track and report?	Y	EnVinta provides a detailed Energy Management Improvement Action Plan to each company that participates in the program. The report includes all potential energy savings estimates, and a detailed plan on how to achieve those savings. Since there have only been a few recent participants thus far it is too early to tell if EnVinta will be able to easily track whether the companies actually implement the energy savings plan. Generally, the IEEA program adheres to best practices in reporting and tracking for non-residential non-resource large customer energy efficiency programs.
Are routine functions automated?	Y	During Stage 1, EnVinta uses a computer program that provides a management diagnostics energy saving report within the first two hours of the day-long meeting. This fully automated, rapid response tool is an extremely helpful value-add of the program.
Program Management: Quality Control and Verification		
Does the program manager have a strong relationship with vendors involved in the project?	--	Not Applicable. Besides the technical consulting firm that EnVinta uses during Stage 1 energy audits, there are no other vendors involved.
Does the program verify the accuracy of application data, invoices and incentives to ensure the reporting system is recording actual installations by target market?	--	The initial energy savings analysis prepared in Stage 1 is performed and verified by an independent technical consulting firm. IEEA does not require a post-inspection energy savings verification for sites that have completed Stage 1 unless the company decides to continue onto Stage 2.
Are customers satisfied with the product?	Y	The two customers that with spoke with seemed satisfied, although the value of the information varied.
Program Implementation: Participation Process		
Is participation simple?	--	Participation is an easy process, requiring companies to devote one full-day of top management's time to the initial stage of the program. However, securing time from management staff is not exactly "simple" given the competing time pressures and priorities such executives face.

Best Practice Analysis	Y/N	Notes
Are participation strategies multi-pronged and inclusive?	--	Not Addressed.
Does program provide quick, timely feedback to applicants?	Y	IEEA provides immediate feedback, in the form of a management diagnostic report, to the participants after the first two hours of the day-long Stage 1 meeting. Soon after the meeting, participants receive a EMIAP that details the full results of the management diagnostic report as well as the technical energy audit of the facility. If a company goes on to Stage 2, EnVinta will provide more detailed memos and other forms of communication laying out how the company can capture the savings in the EMIAP.
Is participation part of routine transactions?	N	Participation is not part of a routine transaction.
Does the program facilitate participation through the use of internet/ electronic means?	N	The program does not facilitate participation thought the use of the internet/electronic means, but it is unclear whether this would be of value.
Does the program offer a single point of contact for their customers?	--	IEEA offers customers a single point of contact; however, the role of the Account Executive versus IEEA staff should be better defined so that customers go through the Account Executives.
Are incentive levels well understood and appropriate?	--	Not applicable

Program Implementation: Marketing and Outreach

Use target marketing strategies to ensure that hard-to-reach populations are informed?	--	As of December 2007, EnVinta had developed a number of marketing materials including PowerPoint presentations, program descriptions and case studies that are aimed at both the utility Account Executives and the target customers. 145 target customers received a direct mailer with this information. The implementer has also marketed the program to the Account Executives through informational seminars, emails, and telephone contact. Finally, the implementer has given presentations about the program at four industry meetings, trade association workshops and local business leader gatherings. The primary method of participant engagement has been, and continues to be cold calling and emailing companies that fit the profile of businesses that could benefit from the IEEA process. IEEA is marketed both through utility Account Executives, who contact their list of large commercial and industrial customers on behalf of EnVinta, and by EnVinta staff. EnVinta staff cold calling and emailing to reach potential participants, and staff give presentations at relevant industry events, but more forms of could be explored, as detailed previously in this report.
Are products stocked and advertised?	--	Not applicable
Are trade allies and utility staff trained to enhance marketing?	N	EnVinta has not been as successful as they had hoped in obtaining time with Account Executives to train them on the program. EnVinta staff have outreached to trade associations, and presented at various trade conferences and workshops, but to date no companies have signed up to participate in the program as a result of these educational/marketing activities.

12. SDGE 3034: EDC Domestic Hot Water Control

12.1 Executive Summary

The EDC Domestic Hot Water Program (EDC) is a SDG&E 3rd party program managed by EDC Technologies, Inc. (EDC). EDC provides hotels with hot water controls that enable managers to monitor their equipment online. The program is generating savings and program managers are confident that goals will be met despite current reports showing that less than half of the savings have been realized as of December 2007.

The evaluation team spoke to utility and the 3rd party program managers to determine the major issues affecting program development. The interviews also allowed the evaluation team to improve upon the program theory and logic model. Following the development of the program logic model, in-depth interviews were also conducted with participants in the program.

The majority of participants have been very pleased with the program. The measure provided participants with a valued managing tool to control hot water consumption and energy savings to participants. Like other 3rd party programs, EDC program managers have faced challenges aligning their program with other utility effort, specifically Account Executive marketing efforts and SDG&E sponsored efficiency training events for customers. The potential for free riders is high for the EDC program.

The evaluation for this program begins with a program overview, which describes the program and identifies the key persons managing the program. The next section illustrates the program theory and logic model. It is followed by a status summary of the energy savings, the budget, and amount of participation. The next section describes results from the evaluation efforts and synthesizes the data to provide overall findings. The evaluation concludes by summarizing the key findings and offers program recommendations.

12.2 Program Overview

In 2005, SDG&E developed a competitive bid process for a 2006-2008 3rd party program portfolio, a new group of efficiency programs that build on the utilities' core programs. EDC submitted a proposal to provide automated hot water controls for boilers, which SDG&E chose as one of the eighteen 3rd party programs.

The EDC Domestic Hot Water Control Program (EDC) installs monitored hot water controls in hotels. The device provides energy efficiency by controlling hot water demand and monitoring boiler environments. While there are other manufacturers of hot water control devices, this program is unique because it incorporates a technology that records monitoring information on the internet. Participants can readily access the information and determine if their boiler systems are operating efficiently. Utility representatives can also utilize the device to review long-term energy savings data.

EDC, the 3rd party implementer, manages and markets the program. Once a customer agrees to participate in the program, EDC installs the technology and the customer begins to receive energy savings data. When the control device discovers a problem with the hot water system, an automatic email alert is sent to the building manager so the problem can be corrected. Since the technology provides long-term data, building managers can better understand how their building operations impact energy efficiency.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Margaret Finley	SDG&E	mfinley@semprautilities.com	858-636-5732
Project Manager	Jim Seidel	PM, EDC Technologies, Inc.	jim.seidel@savegas.com	949-388-2753

12.3 Program Theory/ Logic Model

The first outcome of the evaluation was the development of a refined program theory and logic model. The model, developed through interviews with utility and 3rd party program managers, links activities and outcomes and is utilized to develop research questions that test program assumptions. The logic model and program theory are included in this section.

12.3.1 Logic Model

EDC's logic model is displayed in Figure 12-1.

Figure 12-1
Logic Model for SDG&E's EDC Domestic Hot Water Control Program
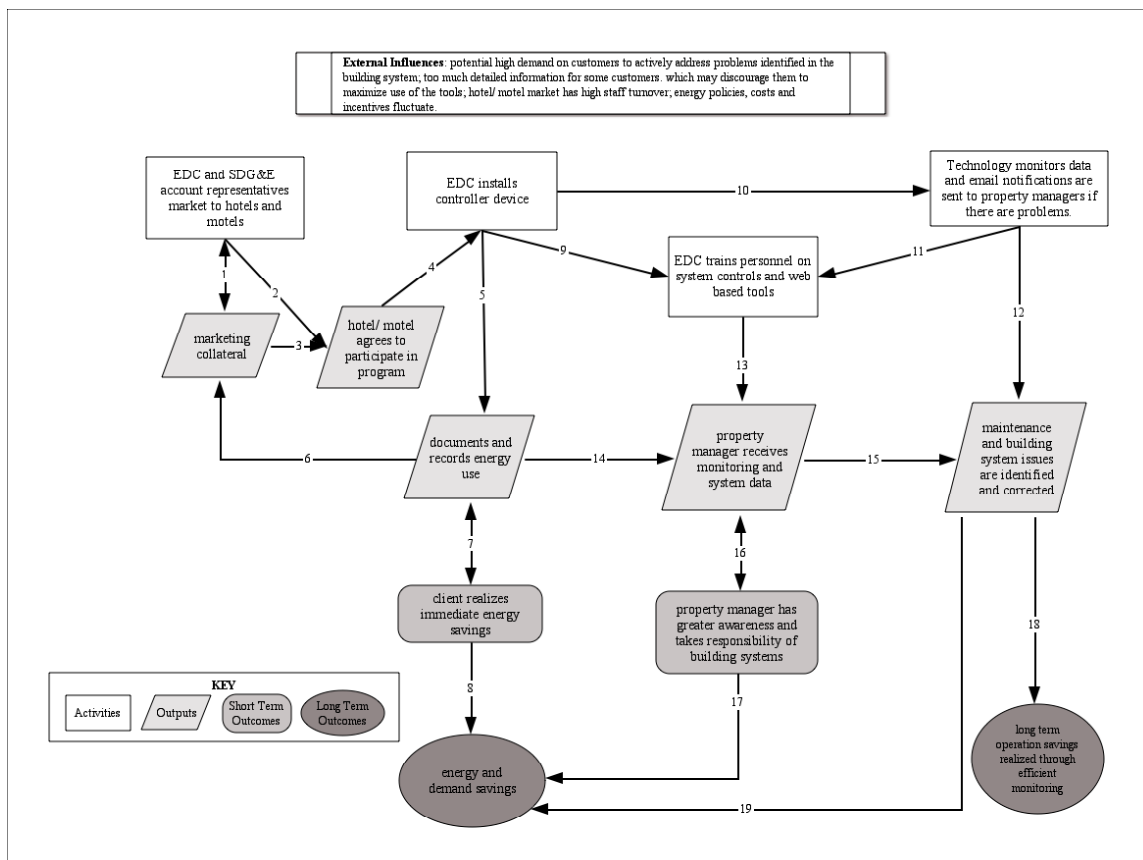
12.3.2 Program Theory

The EDC's program theory associated with the logic model is described in Table 12-1.

Table 12-1
Program Theory Description for SDG&E EDC Domestic Hot Water Control Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Hotels and motels are not going to seek this technology out on their own. EDC and SDG&E marketing effort goals are to promote the program so that the hotels and motels become aware of the technology and consider installing the technology in their facilities.	Marketing material provides a clear message and is easy to understand when decision makers are reviewing the program internally.	Marketing material. Participant/ nonparticipant interviews
2	Program marketing is effective, hotel and motel property managers to decide to enroll in the program.	Hotels/ motels participate in the program.	Progress status reports.
3	Marketing collateral is clear and easy to understand, encouraging participants to join the program.	Hotels/ motels participate in the program.	Progress status reports. Participant/ nonparticipant interviews.
4	Once a contract is signed with a customer, EDC staff installs hot water control devices as needed throughout the facility.	EDC installs devices in hotels and motels enrolled in the program.	Progress status reports.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
5	As soon as a controller device is operable, the device starts recording energy use data and the local environment.	Website service is operable and is collecting data.	Website documentation.
6	Once data is collected, the information can be used as case studies for marketing collateral.	Marketing material is up to date with current energy savings information relating to hotels and motels.	Marketing material.
7	After two weeks (or more if requested by the customer) of collecting baseline date, the technology is turned on and energy waste and energy savings are realized and recorded. Baseline data is established for both summer and winter months.	Reported energy savings documented by EDC for a new site should match the energy savings experienced by the utility for that particular site.	EDC's energy records compared to the utility's energy data (per site).
8	Over time, short-term energy savings turn into significant long-term savings.	Long-term program goals are met.	Progress status reports and program goals.
9	Hotel and motel staffs are not aware of the system controls and the online data provided by EDC. EDC trains staff on the technology and web-based services so that they are proficient in understanding how to access data and make corrections as needed.	Property managers understand how the technology works overall and knows how to utilize the website. Participant usage of website.	Participant interviews.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
10	Once a device is installed, it monitors the participant's hot water environment and displays the information on EDC's website. The device identifies problems and alerts property managers to them via automatically generated emails.	Hot water environments are functional. Problems are identified by EDC control devices and property managers are aware of them.	Number of problems identified by website. Interviews with participants, EDC. Activity reports by EDC.
11	If problems persist, EDC contacts the property manager and educates them on the problem and how efficiency can be gained.	Property managers understand the importance of addressing an efficiency problem identified by EDC's website.	Participant interviews. Participant usage of website.
12	When property managers are aware of a problem, maintenance concerns are addressed.	Identified problems are corrected.	Activity reports by EDC. Interviews with participants, EDC.
13	When a property manager is trained in using the web based tools, then they can access site specific information about their property and energy efficiency.	Property managers want to use the website to understand if their systems are working efficiently.	Interviews with participants. Website usage.
14	Site specific data is generated allowing property managers to receive real time data online about their systems.	Property managers seek program data from the website.	Participant interviews. Website usage.
15	When a property manager understands what to do with the data that they receive from EDC's website, they can proactively address the problem by themselves.	Property manager addresses a problem without guidance from EDC.	Interviews with participants, EDC. Website records.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
16	By reviewing and understanding data distributed on the internet, property managers are more knowledgeable of their building systems and are capable of taking responsibility for their systems. Property managers are more likely to use this gained knowledge in other building applications.	Property managers understand how their systems work and are committed to running their buildings efficiently.	Participant surveys.
17	When a property manager understands the relationship between building systems and energy use, they will be more likely to run the building in a more efficient manner thereby achieving long-term energy savings.	Participants experience increased energy savings beyond that which EDC technologies provide.	Participant surveys. Utility energy records.
18	When on-going maintenance is carried out, long-term operational savings are gained.	Customers realize long-term savings in operational expenditures.	Interviews with participants.
19	When on-going maintenance is carried out, long-term energy savings are realized.	Once problems are corrected, reported energy savings documented by EDC for sites should match the energy savings experienced by the utility for particular sites.	EDC's energy records compared to the utility's energy data (per site).

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12.4 2006-2007 Program Activities

12.4.1 Savings Summary

As of December 2007, the EDC program reports to have generated generated 38% of the 3-year savings goal of 297,000 therms, according to SDG&E's monthly report. The majority of the savings reported occurred in April 2007 and July 2007. Table 12-2 summarizes the therm savings data.

Table 12-2
SDGE's EDC Domestic Hot Water Program Therm Savings (Jan 2006-Dec 2007)

Month	Program Projected (Compliance Filing)	Installed Savings (Inception-To-Date)	Installed Savings (Report Month)	Total Commitments (Inception-to-Date)
Jan-06				
Feb-06				
Mar-06				
Apr-06	99,000			
May-06	99,000			
Jun-06	99,000			
Jul-06	297,000			
Aug-06	297,000			
Sep-06	297,000			
Oct-06	297,000			
Nov-06	297,000			
Dec-06	297,000	8,940	8,940	
Jan-07	297,000	8,940	-	
Feb-07	297,000	22,940	14,000	
Mar-07	297,000	22,940	-	
Apr-07	297,000	43,040	20,100	
May-07	297,000	48,180	5,140	-
Jun-07	297,000	48,180	-	-
Jul-07	297,000	77,100	28,920	-
Aug-07	297,000	77,100	-	-
Sep-07	297,000	77,100	-	-
Oct-07	297,000	77,100	-	-
Nov-07	297,000	100,800	4,425	-
Dec-07	297,000	114,100	13,300	

(SDGE.MR.200712.5; 200711.1; 200710.2; 200709.2; 200708.1; 200707.4; 200706.3; 200705.2; 200704.4; 200703.3; 200702.2; 200701.2; 200612.3; 200611.4; 200610.2; 200609.2; 200608.2; 200607.2; 200606.2; 200605.2; 200604.2

12.4.2 Budget Summary

Forty-four percent of the adopted program budget was utilized as of December 2007 according to the SDG&E monthly reports.

Table 12-3
SDGE's EDC Domestic Hot Water Program Budget & Expenditures (Jan 2006-Dec 2007)

Month	Adopted Program Budget (3 - Yr)	Program Operating Budget (3 - Yr)	Program Expenditures (Inception-To-Date)	Program Expenditures (Report Month)	Total Commitments (Inception-to-Date)
Jan-06					
Feb-06					
Mar-06					
Apr-06	$ 534,102.00	$ 534,102.00	$ -	$ -	$ -
May-06	$ 534,102.00	$ 534,102.00	$ 7,529.17	$ 7,529.17	$ -
Jun-06	$ 534,102.00	$ 534,102.00	$ 6,652.59	$ (876.58)	$ -
Jul-06	$ 534,102.00	$ 534,102.00	$ 6,892.48	$ 239.89	$ -
Aug-06	$ 534,102.00	$ 534,102.00	$ 29,682.73	$ 22,790.25	$ -
Sep-06	$ 534,100.00	$ 577,302.64	$ 34,117.56	$ 4,434.83	$ -
Oct-06	$ 534,100.00	$ 577,302.64	$ 35,748.75	$ 1,631.19	$ -
Nov-06	$ 534,100.00	$ 577,302.64	$ 36,662.33	$ 913.58	$ -
Dec-06	$ 534,100.00	$ 577,302.64	$ 60,127.33	$ 23,465.00	$ -
Jan-07	$ 534,100.00	$ 577,302.64	$ 64,020.41	$ 3,893.08	$ -
Feb-07	$ 534,100.00	$ 577,302.64	$ 85,004.55	$ 20,984.14	$ -
Mar-07	$ 534,100.00	$ 577,302.64	$ 119,377.19	$ 34,372.64	$ -
Apr-07	$ 534,100.00	$ 577,302.64	$ 123,604.12	$ 4,226.93	$ -
May-07	$ 534,100.00	$ 577,302.64	$ 133,181.14	$ 9,577.02	$ -
Jun-07	$ 534,100.00	$ 577,302.64	$ 135,687.54	$ 2,506.40	$ -
Jul-07	$ 534,100.00	$ 577,304.64	$ 174,212.17	$ 38,524.63	$ -
Aug-07	$ 534,102.00	$ 577,304.64	$ 178,854.69	$ 4,642.52	$ -
Sep-07	$ 534,102.00	$ 577,304.64	$ 179,370.61	$ 515.92	$ -
Oct-07	$ 534,102.00	$ 577,304.64	$ 183,815.11	$ 4,444.50	$ -
Nov-07	$ 534,102.00	$ 577,304.64	$ 213,810.40	$ 29,995.29	$ -
Dec-07	$ 534,102.00	$ 577,304.64	$ 236,272.67	$ 22,462.27	

Source: SDG&E Monthly Report, April 2006-November 2007. (SDGE.MR.200712.5; 200711.1; 200710.2; 200709.2; 200708.1; 200707.4; 200706.3; 200705.2; 200704.4; 200703.3; 200702.2; 200701.2; 200612.3; 200611.4; 200610.2; 200609.2; 200608.2; 200607.2; 200606.2; 200605.2; 200604.2

12.4.3 Participation Summary

EDC has installed control systems in 27 hotels in the SDG&E territory. Many of the hotels are managed by a single corporate manager at the time of installation. For example, one manager was able to install the EDC technology in 12 of the 27 participating hotels (44%). According to an interview with the 3rd party manager, nearly all customers he speaks to about the program are willing to participate. However,

according to interviews, some customers only install the system in some of their rooms. Interviewees cited this occurred because they wanted to test the equipment before installing it throughout the building, while some stated that the system was only compatible with parts of the hotel due to planned renovations.

12.4.4 Summary of Program Status

EDC performs most of their direct marketing meetings with upper-level hotel personnel in order to affect as many hotels as possible with one meeting. EDC often performs follow-up meetings with individual hotel managers or engineers as needed to confirm participation and review the website features of the program. As mentioned above, installations have occurred in 27 hotels, mostly in the spring and early summer of 2007.

12.5 Results and Key Findings

12.5.1 Interview Results

In-depth interviews were conducted with utility program managers, the 3rd party program manager, and participants in the program. Participant interviewees included Directors of Engineering, Chief Engineers, and General Managers; but for the purpose of this report, they will all be referred to as 'managers'. Results for these interviews are included in this section. One interviewee, who was thought to be a participant, actually did not install the system and his comments are included in the in-depth non-participant section. Also included are summarized results from the General Business Survey as they relate to the EDC program. The evaluation team also attended a SDG&E workshop that focused on the same target market as this program. This workshop, as it relates to the EDC program, is also described in this section.

12.5.1.1   Utility Program Manager Interview

The evaluation team conducted an in-depth phone interview with the program manager from SDG&E at the start of the evaluation to develop an understanding of the program and identify what has been working and what needs to be improved. Informal discussions with the program manager were held throughout the evaluation period to remain current with the program status.

Program Management

- Staffing: The utility manager did not cite staffing resources as a concern. Staff change did occur in June 2007 as part of the utility-wide management shift, resulting in a new program manager halfway through the program cycle.

- Roles: The program manager stated that she had uncertainty about her role as a program manager for 3rd party programs stating, "it's a bit unclear how much SDG&E should interact with EDC. I have to administer the job, but not do the job. It's a hard balance."

- Relationships: The program manager expressed that she had a good and friendly relationship with the 3rd party but that interactions between the two did not occur very frequently. She also stated that Account Executives have had difficulty working with EDC on developing marketing collateral, without which they could not talk to their clients about the program. The program

manager thought such a marketing effort would be a helpful way to distribute information about the program.

Program Implementation

- The program manager felt confident that goals would be met, but she did state that the program was behind schedule in meeting savings goals.

- The program manager reported that no formal marketing strategy within the utility was in place: "EDC told us that they did not need much help marketing because the program just sells itself."

12.5.1.2   Third Party Program Manager Interview

A formal telephone interview was conducted with the 3rd party manager at the beginning of the evaluation. The evaluation team also held a number of informal discussions with the program manager to remain updated on program status.

Program Management

- Staffing: The 3rd party manager expressed his concern with high staff turnover at the utility. He felt his resources were being spent explaining the program to new people rather than performing program implementation.

- Roles: The 3rd party manager expressed confidence in the role they played, although he was unsure at times whom he could talk to at the utility. For example, he stated there was a minor problem in the contract and did not know the best person to talk to about it.

- Relationships: The 3rd party manager stated that there was not much interaction between the 3rd party and the utility program manager. He had more difficulty working with other utility staff, such as members of the marketing office and Account Executives.
    o The 3rd party manager found it too time consuming to work with the marketing department despite understanding the role it could play. He stated that the marketing department would spend too much time focusing on small details. "Its not worth our time. The market for this technology would grow a lot faster if the marketing office would help."
    o He also had difficulty acquiring contact information for the program's target market, which would have been used to contact potential customers about the program: "SDG&E would not provide the data. I can go to Google, but it takes a lot longer."
    o Attempts to solicit Account Executives about the program also failed according to the 3rd party manager. He reported that they made comments stating that they were not allowed to speak to particular vendors or promote particular programs.

Program Implementation

- The 3rd party program manager stated that he was confident that goals would be met; therefore, he was not concerned by the fact that they were not at goal at the time of the interview.

- According to statements from the 3rd party program manger, no marketing was performed because the customers hear about the program on their own and want to participate. In fact, he stated, "we grow through attrition."

12.5.1.3   In-depth Participant Interviews

In-depth phone interviews were conducted with participants in the program in December 2007. All participating hotels were contacted, nine on-site hotel managers, who managed ten hotels, agreed to be interviewed. Two interviews were conducted with off-site corporate managers that worked with eight participating hotels in the SDG&E territory. One of these managers has also installed the EDC technology in three hotels outside of the SDG&E territory. Results from all of these interviews are described below.

Customer Characteristics

The hotels were owned and managed by a number of different corporations. They were often managed by one firm and owned by another. One of the corporate managers was responsible for twelve of the hotels that participated in the program, representing 44% of the participants.

While all of the hotels housed at least 100 guest rooms, on average they had 230 rooms. Occupancy rates varied throughout the year, but participants reported an average of 78% occupancy in their hotels with a reported range from 70%-89% for all of the hotels.

All of the managers interviewed stated that facility management decisions, such as those relating to energy use, are made both on-site as well as off-site in a corporate office. Some managers stated that decisions were typically made on-site with approval from a corporate office. Other managers stated that decisions were usually handed down from a corporate office.

Table 12-4
Site of Decision Making for Participating Hotels in EDC Program

Site of decision making	N
Primarily on-site	4
Primarily off-site	2
Not stated	3
Total	9

All of the managers stated that energy efficiency was a factor in their decision-making. All of the interviewees stated that they had performed other energy efficiency measures, typically lighting retrofits. Two of the eleven managers interviewed said their hotels participated in the Good Earth Keeping Program, a program sponsored by the American Hotel and Lodging Association, which addresses energy efficiency as well as other sustainability initiatives. One of the managers stated that he used Energy Star's Portfolio Manager for hotels, an on-line energy-tracking tool.

Participation

The two corporate managers interviewed stated their primary reason for participating in the EDC program was to save energy. On-site managers stated that the primary reason was either because they wanted to save energy costs; they were advised to participate from upper management; or they valued the monitoring capabilities of the measure. Secondary reasons for participating included to save energy costs, to be more green, to provide better monitoring services, or to increase customer comfort.

Table 12-5
Motivations to Participate in EDC Program

Motivation to participate	Number of responses (N=10)
Primary Motivations	
To save energy costs	4
Act on direction from upper management	4
To increase monitoring services	2
Secondary Motivations	
To save energy costs	2
To increase monitoring services	2
To be more green	2
To increase customer comfort	1

Two of the participants stated they found the EDC monitoring system to be incompatible with their hot water system. One of them claimed EDC informed them of a way to rework the hot water system to be more efficient and to work with the EDC control measure. The hotel manager decided to remove the EDC control system from the hotel but still utilized the monitoring service. They are planning to fix their hot water system and then to begin using the EDC control system again. The other hotel manager decided to remove the EDC measure entirely.

Relationship with EDC

All respondents stated to have a good relationship with EDC. After the initial installation, interviewees said there was minimal contact except for when problems arose with either the hot water system (as identified by the EDC measure) or with the EDC control system.

Use of Services

Interviewees were asked to describe their experiences with the website and the email service to better understand how customers used the services provided by the EDC technology.

- Website use: Both corporate managers stated that they used the website occasionally ("once a month" and "a couple times a month") to check performance on their hotels, especially if an alert was sent about a problem in one of their hotels. On-site managers typically reported to look at the site about once a month yet one manager stated he checked twice a week. Three of the managers stated that they were not aware of the website or that they did not use the site because they were too busy.

  Interviewees tended to use the site primarily to review problems that they were alerted to via email. They reported the website was helpful and easy to use; however, they also stated that it included a lot of unused data. One manager stated, "its like a dictionary, you don't need to look at all the information to know that its useful."

Table 12-6
Information utilized by participants on EDC website

Information utilized on EDC website	Number of responses (N=11)
Identified problems	5
General performance	3
Temperatures	3
Boiler run times	3
Savings data	2
Spikes in energy use	1

- Email use: One of the corporate managers said email alerts were sent directly to the local manager, while the other said email alerts were sent to him *and* to the local manager. They both were very satisfied with the email service. The majority of on-site managers also stated that they appreciated the email service. The three managers that did not use the website also did not use the email service. They relied on phone calls from EDC alerting them to problems and found this service very helpful. When problems were identified by EDC through email or phone, all of the managers stated they would then attempt to fix the problem.

Program Impacts

The program theory and logic model identified a number of outcomes for participants: energy savings, operational savings, and increased energy efficiency as a result of greater awareness of energy use in the facility. Interviewees were asked to comment on whether they experienced these outcomes.

- Energy use: While the majority of respondents felt they were experiencing energy savings, they also stated that it was too early to verify whether or not expected energy savings had occurred due to customary fluctuations in hotel energy use. Most managers stated they needed to collect an entire year's worth of data before evaluating the program. Since the majority of participants installed the system in the spring and summer of 2007, there had not been enough time to thoroughly understand energy impacts at the time of the interview. Only one manager claimed he believed he was not experiencing as much savings as he had hoped for, however he still required time to verify the accuracy of the statement.

- Operating expenses: While the majority of respondents said that the monitoring service saved time, they reported that it did not impact operating costs. One of the managers explained this by stating that while the technology provides constant monitoring of the boilers, it does not monitor everything. He still found benefits to performing visual monitoring inspections to address some of these concerns such as leaks or noisy equipment that could mean something is soon to break.

- Additional energy efficiency: While all of the hotels had reported participating in other efficiency activities, none stated this participation was a result of the EDC program.

Cost Effectiveness

All of the managers were pleased with the rebate offer. One of the managers said they participated in the program because it was nearly free. One of the corporate managers stated that knowing the value the technology brought to the hotel, he would probably have installed the equipment without the incentive.

He also stated that he has now started installing the equipment in hotels outside of the SDG&E territory. The other corporate manager also mentioned that he installed the equipment in hotels outside of the SDG&E territory, even though incentives were not as high as those offered by SDG&E. He said that he is waiting to verify the effectiveness of the energy savings before installing the technology in additional hotels where installation costs are not covered. One of the local program managers asserted the measure was only cost effective for hotels with more than 100 guest rooms. He claimed that after investigating the installation of the equipment in another hotel with only 80 rooms, he was able to conclude that it was not cost effective.

12.5.1.4   In-depth Non-participant Interview

One of the customers listed on the participant list provided to the evaluation team from the 3rd party said he had not participated in the program. He affirmed that he decided not to participate in the program because he needed to review "real data" on expected savings at the particular hotel. He was provided with comparison data from similar hotels, but found the information insufficient. He said he would be willing to participate if he could be provided with a three-month trial period free of charge.

12.5.1.5   General Business Survey, Hotel Sector

Telephone surveys were conducted with hotel customers who have not participated in the program to date as part of the General Business Survey. Thirty-seven customers were interviewed. Detailed data reports are provided in the General Market Study Appendix. Below are key results relating to the EDC program.

Non-participant Characteristics

The majority of respondents said that decisions regarding energy use were made on-site at the facility. Non-participants interviewed reported a wide variety of occupancy rates, with the majority claiming a 50-75% occupancy rating. The majority of respondents reported to contain 50-100 occupancy rooms in their hotels.

The majority of respondents stated they thought their hot water systems were somewhat efficient and that they were very unlikely to make changes to their hot water systems in the next year. The majority of respondents did comment that energy efficiency would be a very important consideration in making changes to their energy-using equipment in the future.

Nearly all respondents said that they had not heard of Energy Star's Portfolio Manager and nearly three-quarters of the respondents did not participate in the American Hotel and Lodging Association's Good Earth Keeping Program.

Marketing Efforts

While only six interviewees answered the question, two-thirds of the respondents were not aware of the EDC program. Out of those six respondents, half said they would be likely or very likely to participate in the program.

Slightly more than half of respondents stated that they remembered receiving information about energy efficiency since 2006. SDG&E Account Executives and mailed promotional material were cited as the

two primary sources of that information. More than half of the respondents said that mail from SDG&E was the best way to provide them with energy efficiency opportunities.

Applicability of Program Features

When asked to rate on a scale of 1 to 5, with 1 being not very helpful and 5 being very helpful, how helpful web-based services regarding energy efficiency would be to their business, the average response was "helpful." The same response, "helpful," was given when respondents were asked if they would find it helpful to receive email alerts announcing problems with their energy-using equipment on a similar scale of 1 to 5, with 1 being not very helpful and 5 being very helpful.

Nearly three-quarters of the respondents said that they used email for business purposes.

12.5.1.6   SDG&E Training Workshop: Energy Efficiency at Hotels

The evaluation team observed a training workshop entitled, "Energy Efficiency at Hotels." The five-hour workshop was marketed to hotel facility managers with the aim of training managers on efficiency opportunities throughout their facility. Twenty-five to thirty people attended the workshop, including facility managers, utility program staff, 3rd party program staff, and Account Executives. The majority of time was given to a trainer who reviewed a PowerPoint slide and a training manual relating to various energy efficiency opportunities including lighting, HVAC, and hot water systems. The last fifteen minutes was dedicated to the utility to discuss SDG&E programs and services. In addition, there were two break sessions where attendees could view tables where vendors displayed efficiency equipment and the utility had provided marketing materials about their efficiency programs. All attendees were given a training manual on hotel energy efficiency opportunities and information sheets on SDG&E efficiency programs. Attendees appeared to be engaged in the trainer's presentation and through informal communications commented that they found the workshop informative.

Results from the observations showed the training session did not adequately provide information on 3rd party programs, specifically the EDC program.

- The utility and the 3rd party manager were not involved in planning the event, despite it being targeted to their customers. When the organizer responded to the 3rd parties inquiry about why he was not included in planning the event she stated, "you need to let me know that you want to participate." In addition, EDC's utility and 3rd party program managers were not specifically invited to the event and originally were not planning to attend because they confused the mass email announcement with junk mail.

- The last 15 minutes of the five-hour workshop was insufficient time to discuss the array of efficiency programs offered by the utility. Since the programs were not discussed in direct relationship with the efficiency measures described during the training session, some participants may not adequately understand how to take advantage of the utilities efficiency opportunities. In addition, some 3rd party programs, specifically the EDC program, were not represented during this 15-minute discussion on utility program offerings.

- Marketing collateral given to attendees and presented at the utility's display table did not include information about the EDC program.

12.5.2 Key Findings

The results from these interviews are synthesized below to into a number of key findings. These findings are organized by the following three main categories:

- Program theory and design
- Project management
- Implementation

12.5.2.1   Program Theory and Design

Free Riders

SDG&E incentive funds cover the initial cost of installation and the participants pay a nominal monthly fee for the EDC service: $1 per room per month for continued monitoring service. Since costs are low and the technology provides varied services to participants, there is high potential for free riders. One participant, when interviewed, said the main reason for participating was that "the program was basically free." In addition, while the majority of participants signed up for the program to realize energy savings, many also touted the monitoring feature. This could be quite beneficial because the measure serves a hotel management need by providing monitoring services of the hot water systems and providing energy savings, which can often be overlooked.

One participant stated that after installing the equipment in hotels within the SDG&E territory, he began doing so outside of the territory, where incentives are not provided, because of the realized energy savings and its ability to serve as a management tool. The 3rd party program manager also stated that one of the participants used the technology to gain a competitive advantage over other hotels.

The management of free riders is balanced with cost effectiveness of installations for the entire market. One participant claimed they did not install the equipment in one of their other hotels, which had less than 100 rooms, because they felt it would not be cost effective and the majority of non-participants interviewed about the program contained less than 100 rooms.

Utility Alignment with Program Theory and Design

Account Executives are not aligned with 3rd party program goals such as those with the EDC program. Third party staff stated that when they approached SDG&E Account Executives about the program, the Account Executives informed the 3rd party manager that they were not allowed to promote the program. This was confirmed in interviews with Account Executives, which are summarized in the Account Executive Summary of this report. In fact, some mentioned their discomfort in talking about some 3rd party programs with their customers as it sounded like they were promoting a particular vendor. Lack of AE promotion of the EDC program may have hindered customer participation.

The utility's customer training and workshop events were also not aligned with 3rd party program goals. Utility representatives did not discuss the 3rd party program at an efficiency training session directed specifically at customers who could participate in the program. Program materials was not at all represented at the event, either verbally, in participant packets, or displayed at the SDG&E table. The 3rd

party program manager found this particularly frustrating because SDG&E's core programs were represented, while the EDC program was not mentioned at all. The lack of 3rd party program information, specifically EDCs, was a lost opportunity to attract participants to the program.

12.5.2.2   Project Management

Roles and Relationships

- SDG&E Role: SDG&E staff expressed uncertainty about how best to manage the 3rd party program initially. The program manager was directed to oversee the program, however she was unsure how much oversight was appropriate since the 3rd party was supposed to manage the program. As the program developed management roles also developed, however they are not specifically defined.

- EDC Role: The 3rd party manager was confident in his ability to manage the program and did not express any confusion on his role in the program.

Staffing Levels

- SDG&E staffing: Utility staff felt overworked with managing multiple 3rd party programs.

- EDC staffing: At the time of the initial interview, EDC did not mention any problems with the amount of staffing on the program. This may change as the program develops and more customers become familiar with the program and want to participate.

Program Schedule

While the program was delayed initially due to a lengthy contract negotiation period between the utility and the 3rd party, both the utility and the 3rd party program manager are confident that these delays will not impact program savings.

12.5.2.3   Implementation

Marketing & Outreach

Third party project managers and SDG&E project managers have had difficulty working with each other to develop marketing collateral that specifically focus on the SDG&E EDC program. In interviews with utility and 3rd party program managers, each felt the other to be unresponsive to marketing material discussions. The 3rd party program manager stated that SDG&E's marketing department was too focused on small details and could not generate marketing documents in a timely fashion. As a result, EDC developed its own marketing which might not be as successful as it does not appear to be aligned with SDG&E marketing messages. Subsequently SDG&E does not have copies of the marketing material to provide to their customers through internal channels, such as Account Executives. The SDG&E's progam manager said that the utility tried to request information from the 3rd party project manager to give to the Account Executives as marketing collateral, however the 3rd party was not responsive, limiting the ability of the utility to market the program to their customers.

The utility was also not able to provide EDC with a list of customers who would be eligible for the program. As a result, EDC used program resources to perform their own market research to gather participant contact information.

The 3rd party tended to market directly to managers at the corporate owner of the individual hotels. This was an effective way to target a large number of hotels through one marketing meeting. Some building engineers at the individual hotels stated in interviews that while they follow all directives from management, more often than not the individual engineers manage the facility decisions, not the corporate manager.

Participation

Results from in-depth interviews with participants show that the primary motivation to install the EDC controls was to save energy and monitor their hot water systems.

All of the participants who were contacted managed hotels with over 100 rooms and they all documented at least an average 75% occupancy rating. The majority of the hotels were owned by one corporation and managed by another corporation.

Some of the participants installed the equipment in the entire hotel, while others only installed the equipment in part of the hotel, because either it was incompatible with the parts of the hot water system or they wanted to perform a test on the technology before installing it elsewhere.

Installation

EDC successfully installed the equipment in participating hotels. Some participants cited minor problems with the installations, but EDC was able to address these concerns quickly and efficiently.

Web and Email Service

While many respondents appreciated the monitoring service provided by the feature, some stated that they were too busy to visit the website for detailed review of their systems. Of those that do access the website, the majority said it was infrequent, about once a month or less. They typically looked at the website when alerted to a problem. The majority of non-participants did say they thought such a service would be helpful.

Participants that did report seeing emails from EDC found the service very helpful and non-participants said they thought they would find such a service helpful. When participants were alerted to problems, either by email or by phone, those interviewed said that they addressed the problem. Three of the managers said they did not receive emails from EDC, but rather they are usually called by EDC about a problem. One engineer interviewed stated that he specifically requested EDC to call them if there were problems because he wanted to be alerted to problems at all times, not just when he was on the computer.

Program Impacts

None of the participants interviewed were able to effectively document energy savings because they had not collected enough data to fully understand how much savings could be attributed to the program. The

majority of those interviewed did state with confidence that they expected to see energy savings once data collection is finished. One participant did express concern that energy savings were not being realized however not enough data had been collected to assess the validity of the claim. The majority of the respondents did not access the energy savings data located on the website.

Operating costs

Participants interviewed asserted they did not see a reduction in operating costs, despite stating that they the measure made it easier to monitor the hot water systems.

12.6 Conclusions and Recommendations

In summary, the EDC program provides hot water controls to hotels that enable managers to monitor their equipment online. Participants are generally pleased with the results of the installation and have commented that they appreciate the monitoring feature of the technology, although some participants claimed they do not take advantage of the email and web service provided by EDC.

While program managers have stated confidence in meeting goals, the program has faced some hurdles relating to utility alignment, which is consistent with other 3rd party programs. Addressing these key utility-wide problems will not only help the EDC program reach their goals but other 3rd party programs:

- Account Executives did want to promote 3rd party programs, such as the EDC program, partially in fear that they might promote individual vendors.

- 3rd party programs were not all represented at a SDG&E sponsored efficiency training workshop specifically targeted to customers, such as EDC's target market.

- SDG&E and the 3rd parties had difficulty working collaboratively to generate marketing material in a timely fashion.

This section summarizes key findings described in the report using the Best Practices model and identifies recommendations for program development.

12.6.1 Best Practices Review by Program

Table 12-7 summarizes the research findings using the Best Practices Framework.

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Table 12-7
Best Practices Review

Best Practices Analysis	Y/N	Notes
Program Theory and Design		
Is the program design effective?	(-)	The program design is generally effective however some participants may have joined regardless of the program. Some participants reported that they do not take advantage of the website and/or email service.
Is the market well understood?	Y	The market is well understood by the utility and 3P staff.
Program Management: Project Management		
Are responsibilities defined and understood?	N	Roles are becoming better understood as time progresses. Particular roles and responsibilities of utility staff involved in the program are not clearly outlined or understood.
Is there adequate staffing?	Y	As the technology becomes more popular, 3P staff will become more limited at current staffing levels.
Program Management: Reporting and Tracking		
Is data easy to track and report?	Y	One of the features of the technology promoted through this program is that it can track and report energy savings data.
Are routine functions automated?	Y	The tracking feature of the program is automated, making reporting easy to customers and to the utility.
Program Management: Quality Control and Verification		
Does the program manager have a strong relationship with vendors involved in the project?	Y	In this situation, the manager acts as the vendor.
Does the program verify reporting system?	Y	All installations are verified by SDG&E prior to payment.
Are customers satisfied with the product?	(-)	The majority of customers are satisfied with the product, however many interviewees could not comment on the energy savings ability.
Program Implementation: Participation Process		
Is participation simple?	Y	Participation is made simple through direct sales calls be the 3P manager.
Are participation strategies multi-pronged and inclusive?	N	Participants need to sign up directly through the 3P manager. This has been an effective method, however participation make be more effective if other utility representatives in contact with hotels are also able to promote the program.
Does the program provide quick, timely feedback to applicants?	Y	Participants report to receive quick and timely feedback.
Is participation part of routine transactions?	N	Participation is conducted through direct marketing techniques via individual meetings with customers.
Does the program facilitate participation through the use of internet/ electronic means?	N	Participation is not facilitated through the internet.
Does the program offer a single point of contact for their customers?	Y	Customers know who to contact if they have problems.
Are incentive levels well understood and appropriate?	(-)	This is not certain since some customers were willing to install the measure without any incentives while other customers felt that it was not cost effective.
Program Implementation: Marketing and Outreach		
Use target market strategies?	Y	Meetings are held with hotel managers to introduce the program.
Are products stocked and advertised?	N	Product stock is controlled by the vendor. It could be stocked elsewhere, however there would need to be a means to start tracking services.
Are trade allies and utility staff trained to enhance marketing?	N	Utility staff are not familiar with the program and have denied ability to promote the program in fear of promoting particular vendors. The evaluation did not investigate the programs relationship with other trade allies, however at a SDGE training session on energy efficiency at hotels, the speaker could not support reported savings of the technology.

12.6.2 Recommendations

The following recommendations are based on the evaluation findings and are to be utilized by program staff and utility managers to support the EDC program's development and implementation.

12.6.2.1 Program Theory and Design

- Manage free rider effects associated with low costs and added management benefits from the measure. Ensure that incentive levels are appropriate to control for free riders but still allow for smaller hotels to realize cost effectiveness for the measure.

- Increase awareness of 3rd party programs throughout the utility. All utility representatives who are in contact with customers need to be aware of *all* efficiency programs. Those staff persons include: program managers, marketing staff, Account Executives, and staff responsible for customer training sessions. Communication channels and management direction must enable these staff persons to talk to each other so that efficiency goals can be met.

12.6.2.2 Project Management

Roles and Relationships

- Provide clear direction to utility managers of 3rd party programs. In order to meet utility goals, the utility needs to perform some type of 3rd party management to increase participation, provide 3rd party staff with direction, and maintain alignment with utility goals. In order to do so, SDG&E should offer clear management direction to utility staff working on 3rd party programs to increase staff awareness of their duties. Moreover, management should effectively allot staff time and resources to programs.

Staffing Levels

- Determine if staffing levels are sufficient at SDGE in light of more defined responsibilities.

- Consider increasing staff at EDC to manage the increased amount of customers to the program.

Program Schedule

- Continue soliciting hotels to meet the 3-year program goal on-time.

12.6.2.3 Implementation

Marketing & Outreach

- Continue to direct marketing to corporate managers so that marketing efforts are performed efficiently.

- The utility should provide EDC with customer data so that program funds are not wasted on gathering it and instead used for marketing to new customers.

- SDG&E and 3rd parties need to work collaboratively to generate marketing collateral in a timely fashion. 3rd party marketing collateral need to be aligned with other marketing materials generated by SDG&E so that programs look trust-worthy and reliable to customers and utility staff.

- Utilize the AE relationship to better market the program.

- Utilize customer training sessions to better market the program.

12.6.2.3.1 Website & Email

- Consider developing an alternative format to distribute information currently displayed on the website. Since many participants do not access the website, program managers might want to develop an alternative means for participants to access some of the data available on the website, such as the energy savings information. This could be performed through an email or through direct mail.

13. SDGE 3037 OASys/Dimmable T5 Demonstration Program

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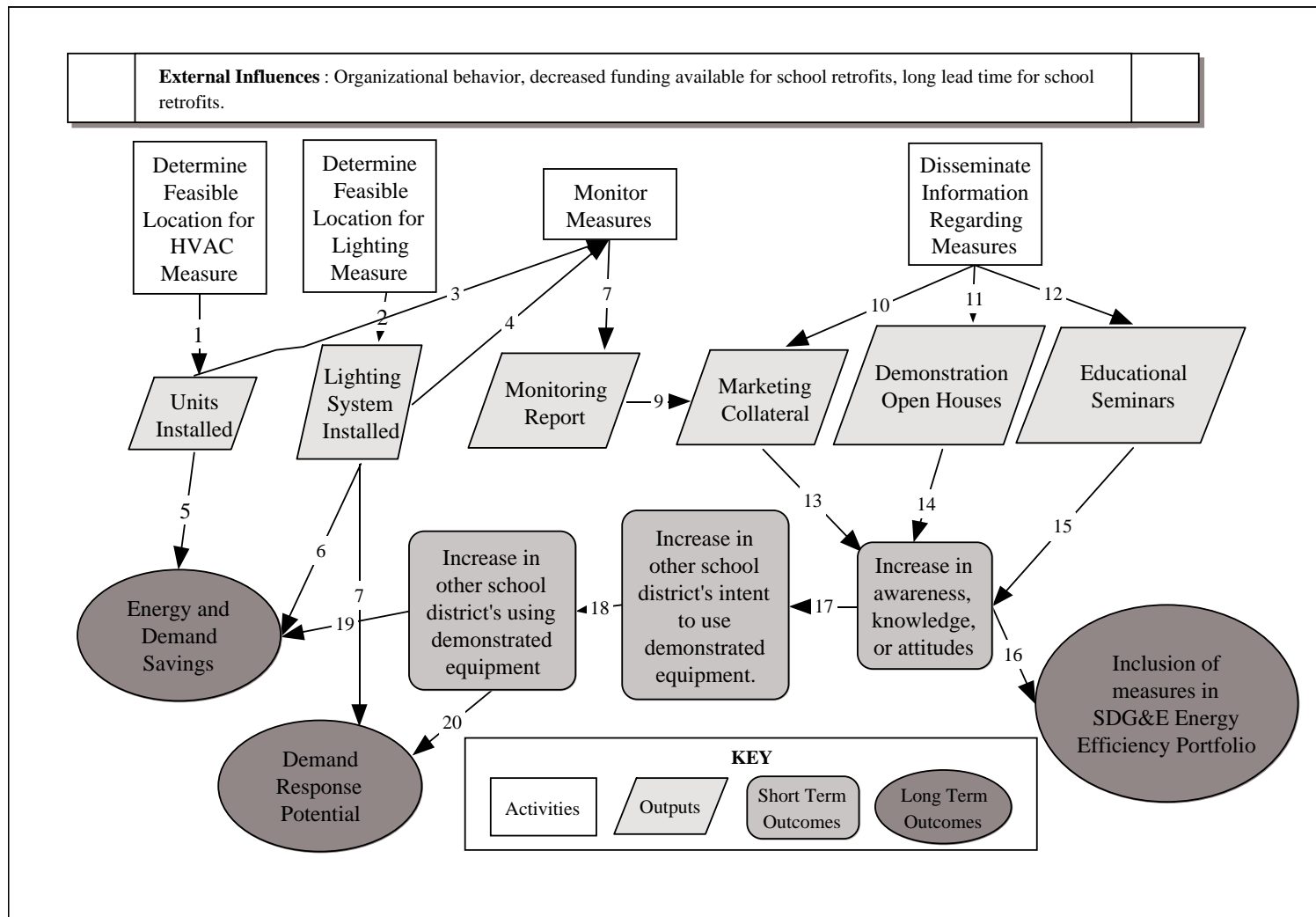
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13.1 Program Overview

This is a third party, information only program. Originally titled the Sweetwater Schools Demonstration Program, the name changed in 2007. It is now more accurate as the program actually has demonstrations in non-Sweetwater school districts. The program has installing two different measures in schools to demonstrate their applicability and potential energy savings. The first is an indirect/direct evaporative cooling system called OASys while the second measure is a lighting end use called the RetroLux dimmable T5 lighting system. The program is meter the demonstration units and will create a monitoring report and disseminate information based on the findings of the monitoring report. They have held two open houses to show others the installed measures as well as provide presentations to interested groups regarding the measures and monitoring results.

The program is attempting to overcome the barrier of performance uncertainty by providing a demonstration of the use of these two measures in a typical school setting. By providing others the chance to see the measures installed and working as well as hearing about how the measures performed in the classroom, they think that others will believe that such measures could work well in their schools. By disseminating the information to other schools as well as interested parties, they hope to reduce the cost to others of finding out about the measures (i.e., information search costs).

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Jeff Alexander	SDG&E	JAlexander@semprautilities.com	858-636-5762
Project Manager	Jack Rosenthal	Intergy	jack.rosenthal@intergycorp.com	626-256-0526

Figure 13-1
Program Logic Model for SDGE3037 – Sweetwater Schools Demonstration Project

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Table 13-1
Program Theory Description for SDGE3037 – Sweetwater Schools Demonstration Project

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	There are multiple structures located within the Poway Unified School District and Escondido Union High School District. The program will find the schools in which the HVAC system is most feasible (in specific climate zones).	Explanation of why specific rooms were chosen as demonstration sites.	Feasibility studies and program manager.
2	There are multiple structures located within the Poway Unified School District and Escondido Union High School District. The program will find the schools in which the lighting system is most feasible	Explanation of why specific rooms were chosen as demonstration sites.	Feasibility studies and program manager.
3	Because these are new technologies, the program will competently monitor the energy use to provide information regarding savings seen at the site in the dissemination portion of the program.	Monitoring plan is complete and includes pre and post monitoring. All possible reasons for differences in energy use are discussed.	Monitoring plan and report.
4	Because these are new technologies, the program will competently monitor the energy use to provide information regarding savings seen at the site in the dissemination portion of the program.	Monitoring plan is complete and includes pre and post monitoring.	Monitoring plan.
5	Installation of the HVAC system will engender energy savings.	All possible reasons for differences in energy use are discussed.	Monitoring report.
6	Installation of the lighting system will engender energy savings.	All possible reasons for differences in energy use are discussed.	Monitoring report.
7	Installation of the lighting system will increase the potential for demand response (DR).	Discussion of DR capability as installed.	Monitoring report.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
8	Monitoring report clearly conveys actions involved in the installation and monitoring of the measures. Clear and complete reporting increases credibility of the report findings.	Clarity of monitoring report.	Responses of a few evaluation experts.
9	Information from the monitoring of the new technologies is crucial to the dissemination of the viability of the systems.	Perception of those who view the data.	Survey of those who receive any of the information put out by the program.
10	The program can create case studies and handouts that provide relevant information.	Marketing collateral is clear and complete.	Focus group of customers similar to the group for whom the collateral is targeted.
11	The program can induce multiple market actors to attend the planned open houses and view the new technologies as installed.	Number of people who attend the open house events.	Sign up sheets at the open house events.
12	There will be some market actors who are unable to attend the demonstrations, but are interested in the products. The program has the ability to provide educational seminars for those market actors. Educational seminars will increase the number of customers who hear about the measures.	Number of people who attend an educational seminar.	Sign-in sheet of those attending educational seminars.
13	When reviewed, the information provided in the marketing collateral increases the awareness, knowledge, or attitudes regarding the two measures.	Self-reported increase in awareness, knowledge, or attitudes regarding the two measures.	Survey of those received marketing collateral.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
14	Onsite demonstrations of technologies as used in the classroom increase the awareness, knowledge, or attitudes regarding the two measures.	Self-reported increase in awareness, knowledge, or attitudes regarding the two measures.	Survey of those attended an open house.
15	Educational seminars of the technologies as used in the classroom increase the awareness, knowledge, or attitudes regarding the two measures.	Self-reported increase in awareness, knowledge, or attitudes regarding the two measures.	Survey of those who participated in an educational seminar.
16	Increased knowledge regarding the cost-effectiveness of the measures causes the utility to include the measures into their portfolio of energy efficiency measures offered to customers.	Cost effectiveness of measure.	Monitoring report.
17	Increase in awareness, knowledge or change in attitudes causes an increase in the intent to purchase and use the demonstrated equipment in other school districts.	Self-reported intent by customers to purchase the equipment.	Survey of those who receive any of the information put out by the program.
18	An increase in intent leads to actual purchase and use of the demonstrated equipment in other school districts within 2-3 years.	Customers purchase the equipment.	Survey of those who receive any of the information put out by the program.
19	Installation of the new technologies will engender energy and demand savings.	Gross energy and demand savings.	Monitoring report and impact evaluation.
20	Installation of the new technologies will increase the potential for demand response (for the lighting measure).	Demand Response potential.	Monitoring report and impact evaluation.

Barriers Addressed by Program

Information Search Costs. The market actors to whom this program is addressed (schools) do not have the time or ability to research the best energy using devices for their facilities. Newer type measures are even more difficult to obtain useful information.

Performance Uncertainty. The capital budgets for schools are often constrained and carefully used. There is little risk desired. New technologies may offer high rewards, yet the uncertainty that may surround their operation could cause schools to look at more typical equipment.

Strategies to Overcome Barriers

Demonstration of New Technology. The program is installing the new technologies in typical school buildings, monitoring their use, and writing up the savings. Through providing real-life examples of how the new technologies work and showing that they work well in the school setting, the program hopes to decrease the possible anxiety others may feel around the specific technologies.

Dissemination of Information. The program is offering tours of the installation sites so that others can see the technologies in action. They have created a PowerPoint presentation that they are using with groups who cannot attend the open houses. Through spreading the word around how the new technologies have worked in the current pilot schools, they hope to increase the awareness of others so that, when decisions regarding HVAC or lighting equipment is made, they will be better informed about possible energy saving equipment to choose.

13.2 2006-2007 Program Activities

13.2.1 Savings Summary

This program has no energy savings goals.

13.2.2 Budget Summary

As of the end of November 2007, the program had spent 74% of the total 3 year adopted budget of $249,798.

13.2.3 Participation Summary

As of the end of November 2007, demonstration systems have been installed at two school sites. There have been open-houses at these sites – one at Westwood Elementary (9/26/07) and the other at Escondido High School (11/19/07). During these open-houses, the program invited local school personnel to attend, gave a PowerPoint presentation, and showed the newly installed equipment to the open-house participants. The Westwood open house had seven participants while the Escondido open house had four participants (i.e., people present who were not affiliated with the program).

13.2.4 Summary of Program Status

The program has installed equipment at two demonstration sites. According to the quarterly reports, the Westwood Elementary site has four OASys units and 48 Retrolux fixtures. The Escondido High School site has two OASys units and 178 Retrolux fixtures installed.

13.3 Findings, Conclusions and Recommendations

13.3.1 Findings

There have been two observations of outreach efforts of this program. We provided some feedback to the implementer after the first open house which were applied by the implementer during the second open house. For example, we suggested that benefits to the school be included in the PowerPoint, and they were included. Additionally, our suggestion of including more about other energy efficiency programs at SDG&E was incorporated into the second open house.

The timing of installing the new equipment in the schools has been lengthy. The program signed with SDG&E on June 2, 2006 and installed the first OASys system in mid-May 2007. The other five OASys systems were installed over the summer of 2007. The lighting systems appear to have been installed during the summer of 2007 as well. However, based on the experience of the evaluation team, this length of time is typical for working with school systems and does not reflect poorly on the implementer.

Participation during the open houses was sparse. The November open house occurred shortly after the San Diego fires and was during a school break. These two points most likely were part of the lower attendance in November. The program implementer had invited school administrators and members of local school boards, but none attended. Those who did attend, though, appeared quite interested in the equipment and rated the overall seminar a 3.8 (on a scale where 1=poor and 5=excellent).

The ability of participants to "touch and feel" the new equipment appeared to be a good approach. Several of the participants asked pertinent questions throughout and moved right up to the OASys unit to see the interior and how it worked. The ability to see the dimming of the lighting systems either through the Internet or by a hand help at the site was enjoyed by all. Many commented on not being able to tell that a 10% dimming had actually occurred.

Both the OASys and Retrolux systems can be considered emerging technologies. There were kinks being worked out in the installation of the equipment as well as the operation. The cost to install the OASys at one site almost doubled due to needing to bring water piping through multiple materials. The humidistat setting in the classroom was originally able to be manipulated by those in the classroom. The students in the classroom did adjust it, frequently, until the ability to do so was removed. The custodial break room was cooled by the other OASys system, but had no humidistat. However, there were swings in the room temperature without it. During the demonstration, one of the OASys systems had blown a fuse. The mechanic was on the spot and able to fix it during our demonstration. The Retrolux system's control through the Internet occurred, but more slowly than expected by the group.

The OASys was indicated to be able to hold temperature until ~78 degrees, then it needed a regular DX system. However, one facility manager stated he needed to keep his rooms between 72 and 74 degrees while another said that just to move his teachers to 76 degrees had been a huge struggle. To obtain these

types of temperatures, a dual system would be required. The facility manager at the demonstration site, though, indicated he had heard no complaints regarding the OASys system in either the classroom or the custodial room.

13.3.2 Conclusions and Recommendations

As of November 2007, the program has implemented demonstrations at two school sites and is currently monitoring the energy use. The monitoring results are not yet available. Although lengthy, the time it took to install the new equipment is considered typical for the school segment. The implementer is moving forward with the program and performing the activities as stated in their program implementation plan.

Our evaluative conclusions are based on a small level of qualitative observation and should be viewed as a point to consider. The two open houses were attended by different people, though, who had similar observations. At this point, the lighting system appears to have somewhat more promise as a retrofit for schools than the OASys system. The costs associated with installation of the OASys appear to be widely variable, which could make it less desirable as it could appear risky. Also, the potential difficulty maintaining the desired classroom temperatures without another system in place (or perception of being unable to do so) may be a barrier that cannot easily be overcome. Many of the schools have already converted to T8 fixtures and the cost to retrofit again to the dimmable T5 system (at about $120/fixture[29]) may also be cost prohibitive to cash strapped schools. That being said, both the HVAC and lighting systems show signs of being good technologies to save energy and, in the lighting case, shed demand. Based upon the responses heard in the open houses, though, there may be more uptake in a different market.

Based on our two site observations we recommend:

- The program implementer should obtain class room temperatures throughout the monitoring period to determine what the interior temperatures are with the OASys system. Additionally, make sure the post-installation customer/use/occupant surveys are anonymous to allow for complete candor when being asked about comfort. Use this information to help determine the viability of this equipment in a school setting. If found to work well and maintain comfort, use the results of the surveys in any future marketing.

- Explore other market niches in which the OASys may work better. That is, sites in which the need to hold the temperature low are not as crucial.

- Explore the potential cost savings if the T5 system can be used in load shedding (i.e., by dimming by 10 percent) in both the school and other markets.

- In future demonstrations of the lighting system, set the expectations of the group prior to using the Internet to control the lighting. If the control lag seen in one of the demonstrations is typical, let the group know that beforehand so they do not think it is a system with problems.

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[29] Estimated cost based on equipment, labor to install, and all controls.

13.4 Best Practices Review by Program

13.4.1 Program Theory and Design

- *Is the program design effective?* Not addressed.

- *Is the market well understood?* Not addressed.

13.4.2 Program Management

13.4.2.1   Project Management

- *Are responsibilities defined and understood?* Not addressed.

- *Is there adequate staffing?* Not addressed.

13.4.2.2   Reporting and Tracking

- *Is data easy to track and report?* Not addressed.

- *Are routine functions automated?* Not addressed.

13.4.2.3   Quality Control and Verification

- *Does the program manger have a strong relationship with vendors involved in the project?* Not applicable.

- *Does the program verify reporting system?* Not applicable.

- *Are customers satisfied with the product?* The facility manager at one of the demonstration sites had no problems with the installed products.

13.4.3 Program Implementation

13.4.3.1   Participation Process

This program provides in-situ demonstration of two technologies. Much of the participation process is not applicable.

- *Is participation simple?* Not applicable.

- *Are participation strategies multi-pronged and inclusive?* Not applicable.

- *Does program provide quick, timely feedback to participants?* Not applicable.

- *Is participation part of routine transactions?* Not applicable.

- *Does the program facilitate participation through the use of internet/electronic means?* Not applicable.

- *Does the program offer a single point of contact for their customers?* Not applicable.

- *Are incentive levels well understood and appropriate?* Not applicable.

13.4.3.2   Marketing and Outreach

- *Use target marketing strategies?* Not addressed.

- *Are products stocked and advertised?* The two products demonstrated within this program are commercially available. The extent of marketing by the companies of those products is unknown

- *Are trade allies and utility staff trained to enhance marketing?* Not applicable.

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14. SDGE 3039: Mobile Energy Clinic

14.1 Program Overview

14.1.1 Program Summary

The Mobile Energy Clinic focuses on improving energy efficiency for small nonresidential customers by providing diagnostics and maintenance of HVAC equipment and small boiler tube cleaning; implementing no-cost/low-cost measures to improve energy efficiency; and by providing recommendations through energy audits.

14.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the Mobile Energy Clinic program in order to develop and refine the program logic and theory. This models served as part of our guide for data collection activities in the following evaluation tasks as well as enabling subsequent impact evaluators to have a consistent type of theory and logic model to help focus their efforts. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested using survey or other primary data collection methods.

Figure 14-1
Program Logic Model for SDGE3039 – Mobile Energy Clinic
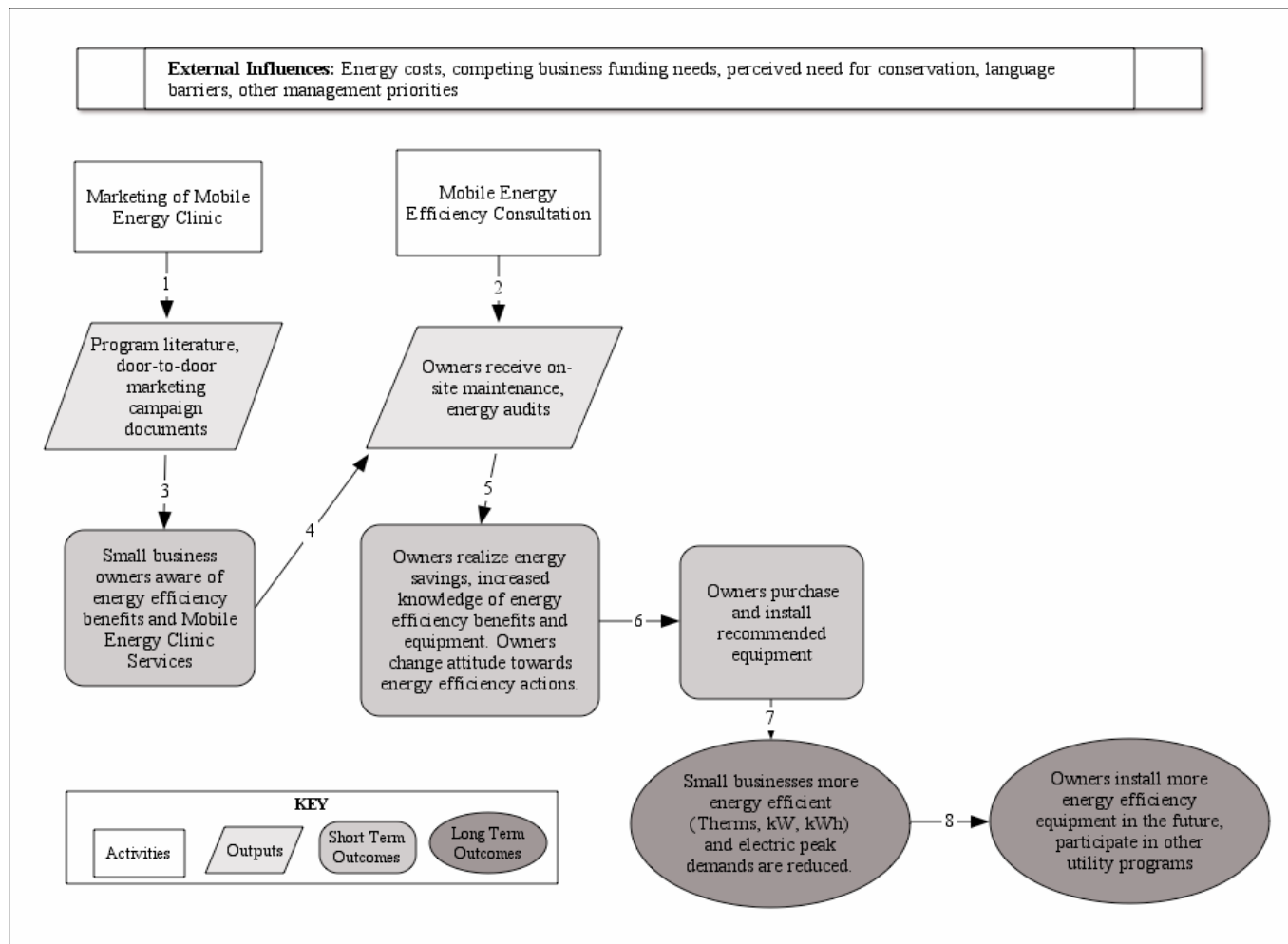
Table 14-1
Program Theory Description for SDGE3039 – Mobile Energy Clinic Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	While small business owners are business-savvy and responsive to ways to reduce their costs, they generally do not have time to read and digest materials that are sent to them regarding energy efficiency investments. The marketing component is focused on implementing personal, door-to-door outreach to directly inform business owners and operators of energy efficiency benefits and free/low cost services that are available immediately through the program.	Marketing presentations and materials are created that have a clear and compelling message. They are easy to understand with specifics regarding energy efficiency benefits and available program services.	Focus group of business owners regarding the marketing presentation and program services information. Survey of businesses contacted but not participating Presentation review by marketing experts
2	In many cases small maintenance improvements can lead to significant energy savings. Furthermore, small business owners often do not have sufficient capital to make efficient equipment investments. To address this, the program offers free/low cost HVAC diagnostic and maintenance services, energy efficiency measures and audit-based recommendations.	The program services are defined and available to potential participants. Participation eligibility and requirements are established.	Program tracking data Interviews with program managers

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
3	Small business owners desire to have information brought to them. Door-to-door outreach in mobile vans successfully reaches small businesses like convenience stores, laundromats, and non-chain restaurants (about 20 kW of electricity, less than 5,000 square feet of floor space) where heating and cooling needs are high. Program provides information during time periods that are acceptable to the customers.	Mobile Clinic teams effectively explain the program to small business owners. Small business owners become aware of the Mobile Energy Clinic's services and understand the benefits to their business.	Survey of small business owners receiving the marketing pitch Program tracking data, number of outreach teams deployed, businesses contacted

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4	Time and money are significant obstacles that prevent small businesses from investing in energy-efficient equipment. Free and immediate maintenance services are therefore sufficient incentives for small businesses to participate in the program. Owners want to receive diagnostics and maintenance of HVAC equipment to correct airflow and refrigerant charge, and small boiler tube cleaning. Customers desire free and low cost measures such as refrigerant line insulation and CFLs. While the owner's interest is high, the mobile team also conducts an on-site energy audit and presents a checklist of further products and services to increase the business's energy efficiency. Since the owner is already engaged, he or she is more receptive to the audit recommendations.	Percentage of small business owners that participate in the program (out of total number of sites visited), self-reported motivation for participating in the program.	Program tracking database, Customer feedback survey

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
5	Before the on-site maintenance service, business owners were not aware of the basic upkeep required to maximize the energy efficiency of their existing equipment. They now have the knowledge to maintain their equipment in the future. Owners are concerned about the missed opportunities of the past and acquire a pro-active attitude. As a result of the audit, owners are aware of the next steps necessary to increase energy efficiency. They are aware of the potential cost-savings and motivated to move forward.	Self-reported change in awareness, knowledge and attitudes because of maintenance services and audit.	Customer feedback survey
6	Owners experience immediate efficiency gains from the Mobile Energy Team's maintenance service and measures installation, and knowledge of these savings serves as an additional incentive to follow the audit recommendations. Owners utilize the rebates and incentives information they have been given to mitigate their capital constraints and install additional efficient equipment.	Owners purchase and install recommended equipment.	Customer feedback survey, self-reported motivation for purchasing equipment recommended in audits Program tracking data on new program participation
7	Installation of the recommended equipment causes energy and peak demand savings.	Gross savings from installed measures.	Program tracking data Customer feedback survey Impact analysis.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
8	Because of the positive experience of the mobile energy clinic and knowledge gained, owners change the way they operate their business. They routinely maintain existing equipment. They are aware of the benefits of energy efficiency and are receptive to other efficient technology and utility programs in the future.	Self-report of equipment maintenance, energy efficient equipment purchases, new utility program participation	Customer feedback survey Program tracking data

14.2 2006 – 2007 Program Activities

14.2.1 Savings Summary

The Mobile Energy Clinic has achieved 179 percent of its net annual kWh savings goal, 1,973 percent of its kW savings goal, and 240 percent of its therm savings goals. Table 6-2 below lists the savings totals in terms of both kWh and kW.

Table 6-3 is a summary of the Mobile Energy Clinics gas savings.

Table 14-2
Electric Savings Summary (Q1 2006 through Q4 2007)[30]

Table Gas Summary through	Net Annual kWh Savings	2006-2008 Goal	% of Goal	kW Savings	2006-2008 Goal	% of Goal	14-3 Savings (Q1 2006 Q4 2007)
	2,346,429	1,308,419	179%	758	38	1,973%	

Therm Savings	2006-2008 Goal	% of Goal
82,418	34,303	240%

14.2.2 Budget Summary

As shown in Table 5-2, the program 93 percent of its total operating budget.

Table 14-4
Expenditure Summary (Q1 2006 through Q4 2007)[31]

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
612,903	662,028	93%

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[30] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

[31] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

14.2.3 Participation Summary

As of December 2007, the Mobile Energy Clinic operates two vans that perform maintenance and audit services for a combined total of six to seven business sites per day. Since the program's inception, the program has accomplished over 700 Mobile Energy Clinic audits for small businesses (convenience stores, Laundromats, and non-chain restaurants) that are less than 5,000 square feet.

14.2.4 Summary of Program Status

Areas with high concentrations of small businesses have been identified, and the program has been marketed door-to-door to customers with less than 5,000 square feet of floor area. Visiting individual businesses for face-to-face marketing allows the information about lighting, HVAC, and refrigeration measures to be customized to each particular facility or store, thereby increasing the probability that the owner/operator will have the information and motivation necessary to follow up and to participate in other programs (e.g., Express Efficiency).

14.3   Findings, Conclusions and Recommendations

14.3.1 Survey Results

This section of the report describes the results of the participant phone surveys that were completed in November 2007. This survey collected information from seventy individual businesses asking questions about their initial satisfaction after receiving a free energy audit of their location from the Mobile Energy Clinic. The survey also addressed questions relating to what effect the audit had on maintenance procedures and the degree of recommended measure implementation at each of the surveyed businesses. Selected results from the phone survey are discussed below.

Figure 14-2 shows that the primary reason a customer participated in the program was to save money on his/her energy bill. The perception of potential cost savings is cited more than twice as frequently as the next reason for participation (that it was free).

Figure 14-2
Why did you decide to participate in the Mobile Energy Clinic program?
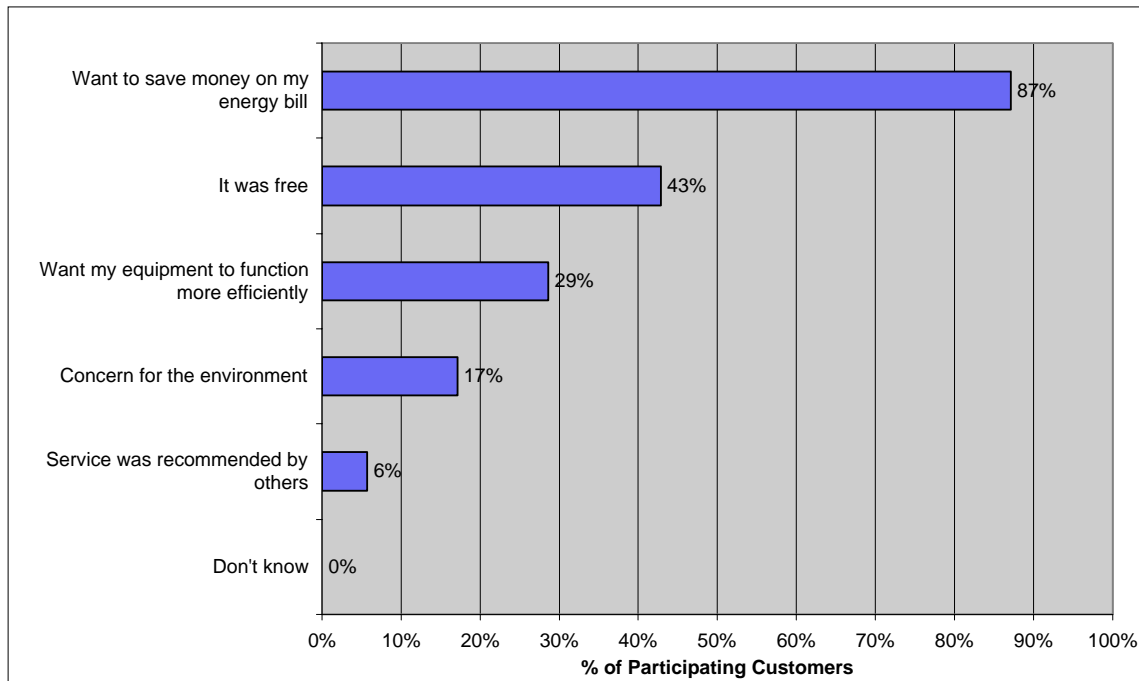
Note: N = 70, total exceeds 100 percent due to respondents citing multiple motivations

When asked about the recommendations that were made during the audit, over half the respondents said the audit recommended replacing incandescent lighting with compact florescent lighting. The other categories consisted of recommendations such as installing locking covers on thermostats, checking ducts and pipe insulation for damage, replacing old HVAC systems with new energy-efficient systems, installing blinds or solar screen shades, adding strip curtains to walk-in doors, keeping refrigerators full, replacing some or all electric cooking equipment with gas-fired equipment, and turning off unused and backup equipment during low production periods from survey (See Figure 14-3).

Figure 14-3
What recommendations were made during the walk-through audit?
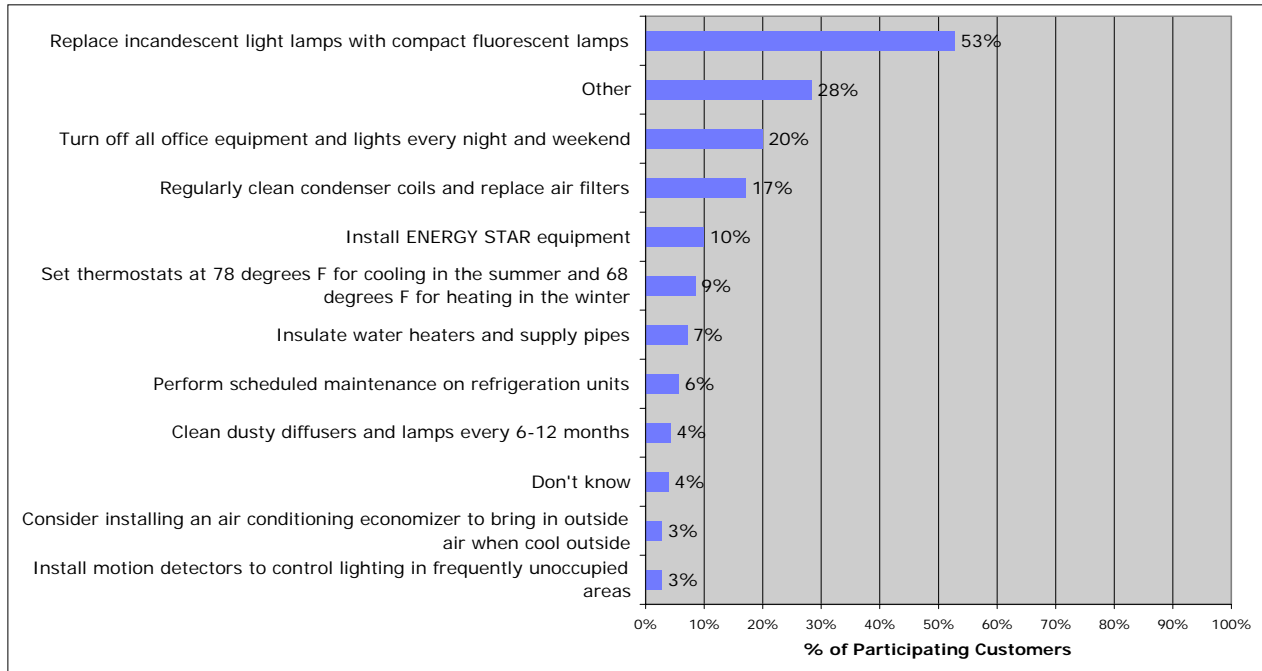
Seventy percent of the customers surveyed said they acted on the recommendations of the Mobile Energy Clinic audit. Of those who acted on the recommendations, Figure 14-4 on the next page lists the specific measures that were implemented or the behaviors that were changed as a result of the audit. For the customers who implemented the audit recommendations eighty-six percent reported they did so in order to save money on their energy bill (See Figure 14-5, next page). Improving equipment life and performance through maintenance and helping out the environment all came in a distant second to reducing energy costs.

Figure 14-4
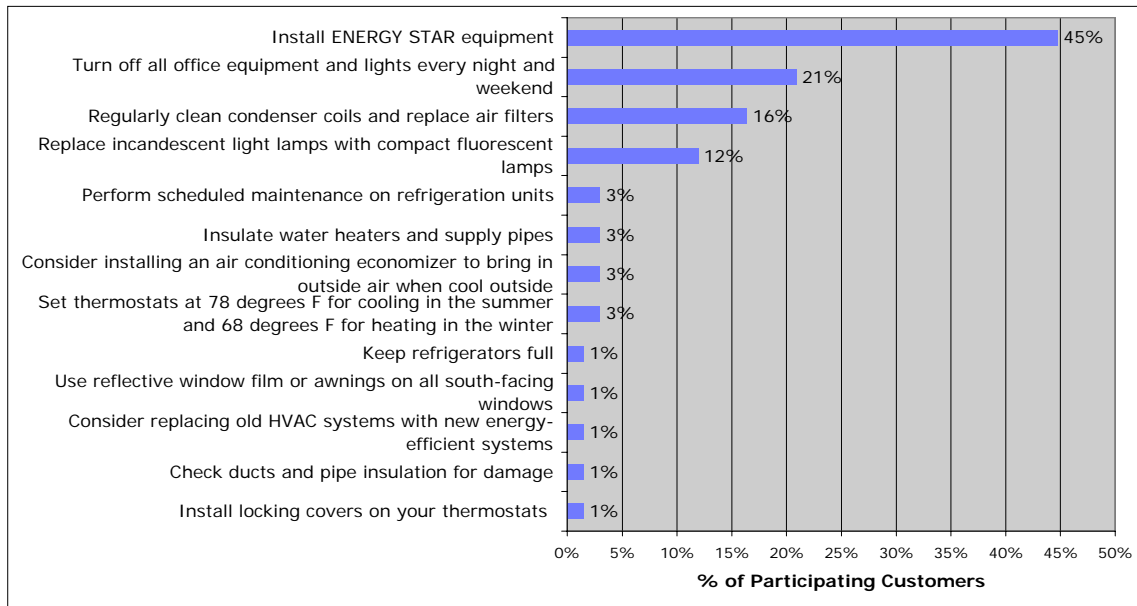**Which of the recommendations made in the audit did you implement?**

Recommendation	% of Participating Customers
Install ENERGY STAR equipment	45%
Turn off all office equipment and lights every night and weekend	21%
Regularly clean condenser coils and replace air filters	16%
Replace incandescent light lamps with compact fluorescent lamps	12%
Perform scheduled maintenance on refrigeration units	3%
Insulate water heaters and supply pipes	3%
Consider installing an air conditioning economizer to bring in outside air when cool outside	3%
Set thermostats at 78 degrees F for cooling in the summer and 68 degrees F for heating in the winter	3%
Keep refrigerators full	1%
Use reflective window film or awnings on all south-facing windows	1%
Consider replacing old HVAC systems with new energy-efficient systems	1%
Check ducts and pipe insulation for damage	1%
Install locking covers on your thermostats	1%

Figure 14-5
What do you consider the primary benefit of implementing these changes?

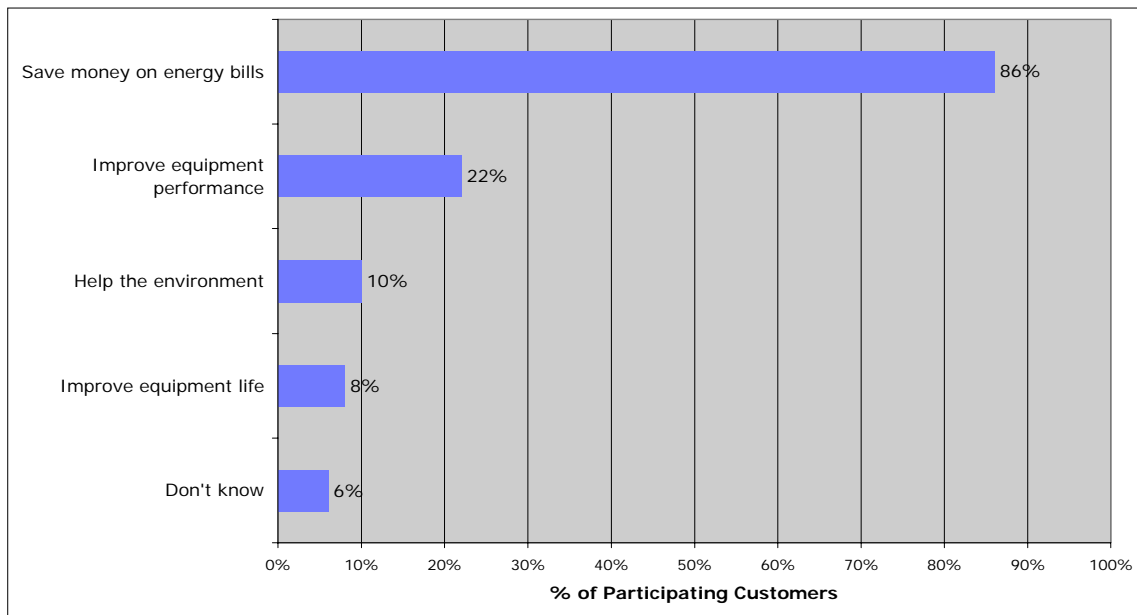| Benefit	% of Participating Customers
Save money on energy bills	86%
Improve equipment performance	22%
Help the environment	10%
Improve equipment life	8%
Don't know	6%

Figure 14-6 illustrates equipment purchases as a result of the Mobile Energy Clinic audit. Twelve respondents (17 percent) indicated that they purchased some type of equipment as a result of the Mobile

Energy Clinic audit, and most of these (50 percent) purchased compact florescent lighting or lighting fixtures (42 percent). Of the remaining purchases, three reported purchasing air conditioning and two reported purchasing programmable thermostats.

Figure 14-6
What equipment did you purchase as a result of the audit?
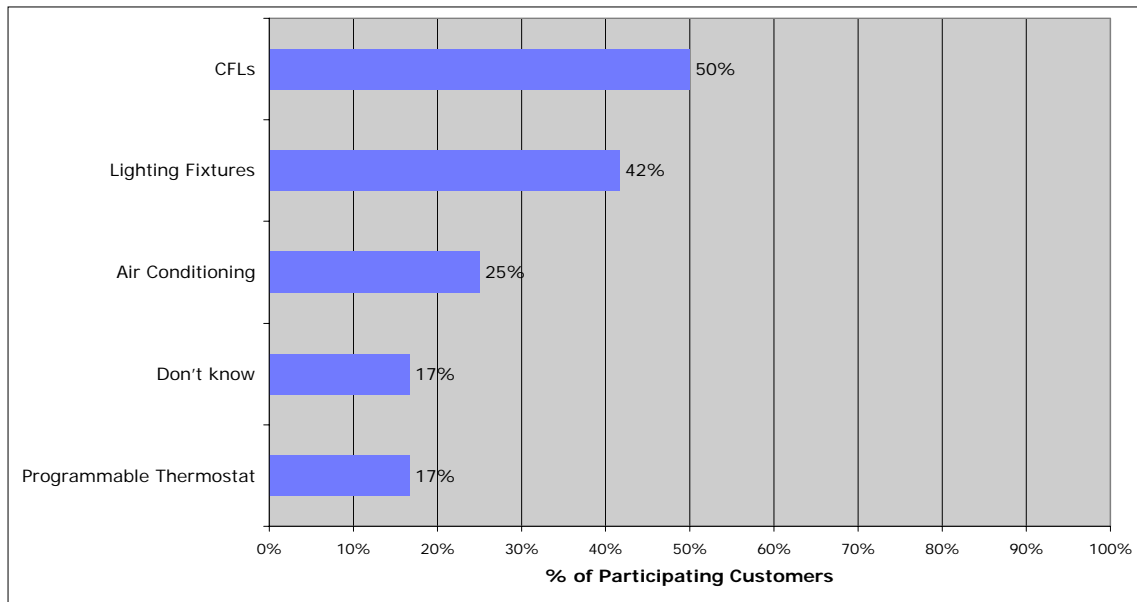
Every customer surveyed reported they did not implement at least one or more of the recommendations from the audit. Thirty-three percent of the customers surveyed cited reasons such as "I didn't need all these light bulbs", "nothing was recommended", and "I just didn't think about it" as reasons for not implementing the recommended measures. Figure 14-7 shows the remaining reasons cited for not implementing the recommended measures.

Figure 14-7
For the audit recommendations that you didn't do, what prevented you from implementing these recommendations?
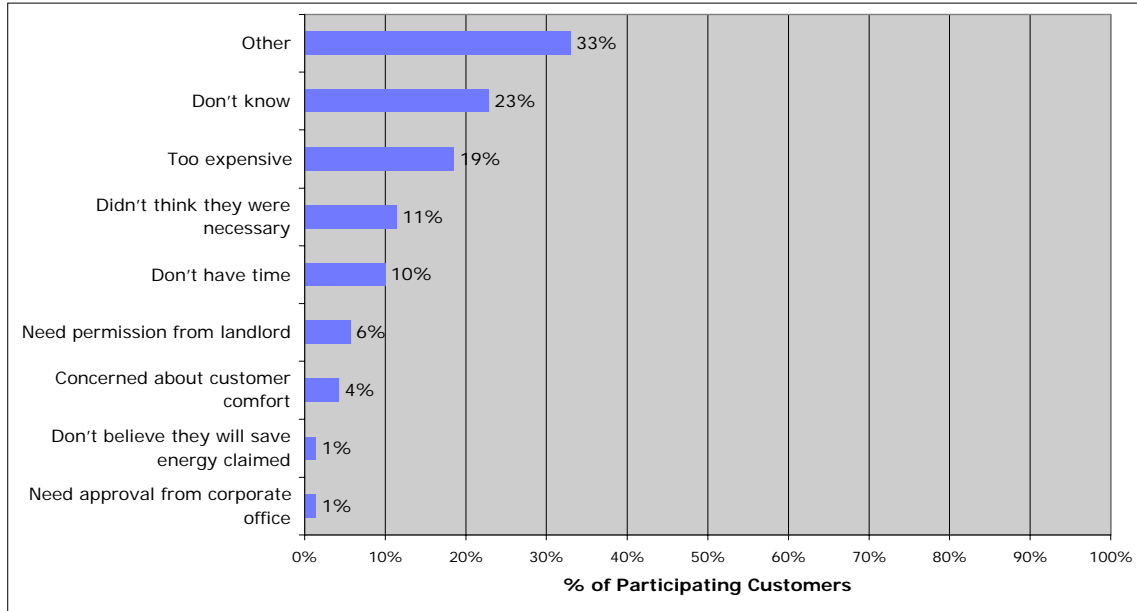
When asked to rate their overall satisfaction with their Mobile Energy Clinic audit, where a score of 5 = very satisfied and 1 = very dissatisfied, participating customers were generally very satisfied with all aspects of the program (see Figure 14-8). To further illustrate this point, seventy percent of customers gave a 5 out of 5 overall satisfaction rating.

Figure 14-8
Participating Customer Satisfaction
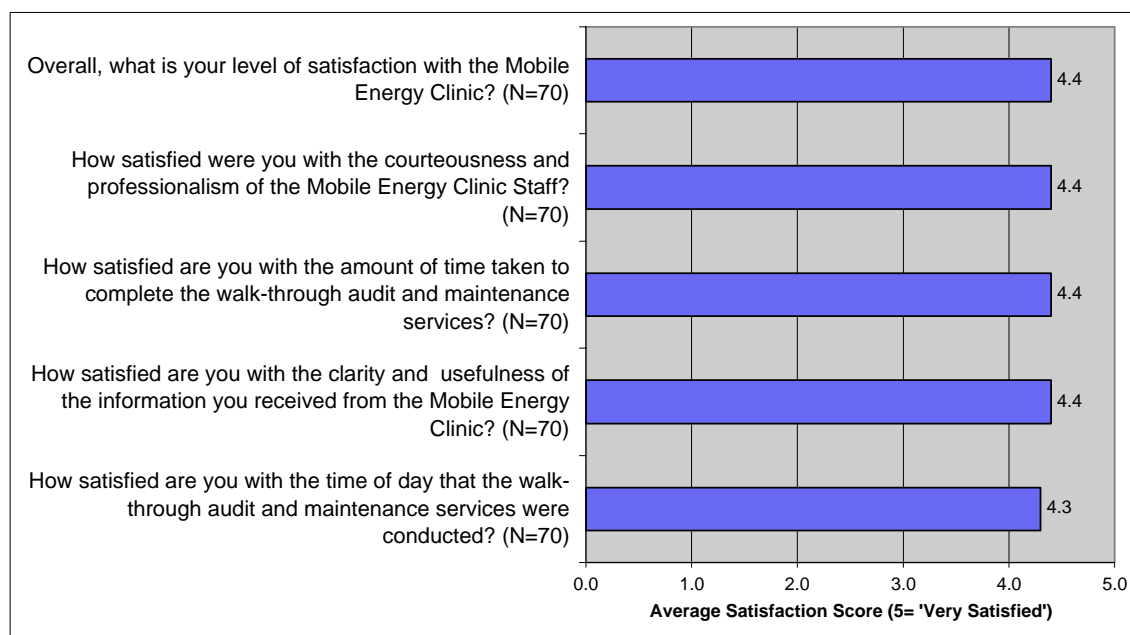
14.3.2 Conclusions

The following general conclusions are drawn from the survey data presented in this report:

- **In general, it appears the participating customers are very satisfied with their Mobile Energy Clinic audit.** On average, all satisfaction responses were well above the somewhat satisfied response range. Participating customers looked favorably upon the third-party maintenance vendor responsible for implementing the business energy audits. Furthermore, the amount of time to complete the audit was not a factor in determining customer satisfaction and the clarity and usefulness of information was also well received by participants.

- **The replacement of incandescent lighting was most popular among measures that were implemented.** This is not surprising considering the cost and ease of implementing compact florescent lighting. Perhaps more surprising were the limited recommendations for implementing temperature set point adjustments. Increasing the room temperature by six degrees F in the summer and cooling the room temperature by six degrees F in the winter is an easily implemented energy savings measure. Only three percent of respondents reported implementing this easy to do and cost savings measure.

- **Significant behavior modifications were visible in the survey results.** Changes in behavior such as turning equipment off during nights and weekends appeared to be a direct result of the Mobile Energy Clinic audit. Over 20 percent of the respondents reported that this behavior was instituted after the audit was conducted.

- **The Mobile Energy Clinic audits appear to have resulted in a significant number of ENERGY STAR equipment purchases.** Twenty-five 25 respondents reported to have installed

ENERGY STAR equipment after the audit was conducted. However, the question remains whether or not they would have purchased this equipment regardless of the audit. The appearance is that the audit may have acted as a catalyst in some of these purchases.

- **Economic incentives proved to be the major motivating factor behind measure implementation.** Perhaps the most visible aspect of the survey is that the overriding motivation behind these changes in behavior and equipment purchases stems from the potential for economic gain. Respondents overwhelmingly cited the potential savings on their energy bills as the reason for implementing the audit recommendations. This observation is valuable as it shows both the proportion of customer who responded to this incentive and that these individuals are concerned with the amount of their energy usage.

14.3.3 Recommendations

Based on the survey findings, we make the following recommendations:

- **Increase the Mobile Energy Clinic's emphasis on easy to do, cost effective measures.** Energy efficient measures such as adjusting the temperature set point in winter and summer by four to six degrees F, performing scheduled maintenance on refrigeration units, and installing programmable thermostats were overall a small portion of the measures recommended and implemented. These measures are easy to perform, cost effective, and can have a large impact on the overall energy usage of a small business.

- **Perform follow-up inspections, visits or follow-up phone calls.** The on-site collection of data can help to determine which businesses are regularly adhering to audit recommendations and which businesses are showing a decay in activity over time. The recommendation is that those customers receiving audits where the most potential for energy savings is found should receive follow-up visits, calls, or marketing materials for other energy programs they may be eligible for to include On-Bill financing, Energy Savings Bid, or Small Business Super Saver.

- **Increase the number of vans that perform audits.** The potential to reach those customers who can benefit mostly from an energy audit is a source of valuable information for SDG&E. At this time there are only two Mobile Energy Clinic vans performing audits. Expanding this number will dramatically increase the utility's reach into the small business community and could potentially become a source for data collection back to the utility. This data collection could than be used to identify customers with a potential for further efficiency gains and/or future program participation.

- **Marketing of the Mobile Energy Clinic directly to customers should become a program goal.** Currently, there exists no marketing plan or marketing activity for the Mobile Energy Clinic program. The marketing plan should be geared toward those small businesses with the greatest potential for energy savings and should include the most cost effective measures listed above in addition to CFL installation. The marketing plan should have a deeper reach with fewer measures rather than a broader sweep with many measures.

- **Uniforms.** The Mobile Energy Clinic teams operate by performing random visits to small businesses that are surprised by the possibility of a free energy audit. Without the appropriate uniform it is hard for the mobile teams to establish credibility. Mobile energy team members lack SDG&E clothing which creates confusion and distrust among clients. Overall, potential Mobile Energy Van participants sometimes decline service due to credibility concerns.

14.4 Best Practices Review by Program

14.4.1 Program Theory and Design

- *Is the program design effective?* The program design seems to be effective as the program is meeting its goals. A gain in efficiency could be realized by instituting a targeted, well-tailored marketing plan and increasing the number of audit teams.

- *Is the market well understood?* There is a large amount of time is wasted searching for appropriate clients. More information is needed on which areas to target and what time of day is appropriate to approach the correct businesses. Currently, the approach is to sweep an area with little or no information about the businesses. Measure recommendation is broad and performed on-site.

14.4.2 Program Management

14.4.2.1   Project Management

- *Are responsibilities defined and understood?* The responsibilities of program staff and audit personnel are simple and straightforward. However, the utility could greatly benefit from training audit staff to gather more information during each audit and report this data back to the program staff. Currently, only the contact information of the business and the recommendations made during the audit are reported back to program staff. Data such as overall energy efficiency potential and likelihood of implementation goes unreported.

- *Is there adequate staffing?* The program manager highlighted the need for additional audit personnel. Expansion could help increase the number of audits and data available to the utility. Furthermore, additional staff could be used to perform more audits or to perform audit follow-up and site selection.

14.4.2.2   Reporting and Tracking

- *Is data easy to track and report?* Yes. The participant database is extensive and has few errors. A computerized database is used to track specific types of information for each business visited by a mobile energy team and to evaluate the progress of the program. The information tracked includes the following:
  o   Name and address of each small business visited;
  o   Basic characteristics of the business (e.g., square footage); and
  o   Energy efficiency measures recommended for the business.

  During the course of the program, the tracking system is used to prepare monthly reports that detail the previous month's activities and progress towards meeting the goals of the program. Each monthly report includes information on the number of businesses contacted, their characteristics and locations.

- Are routine functions automated? This was not observed.

14.4.2.3   Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* The program manager is familiar with the third party maintenance personnel but the strength of the relationship was not observed.

- *Does the program verify reporting systems?* The verification process was not addressed in this evaluation.

- *Are customers satisfied with the product?* The results of the participant phone survey highlight that customers are very satisfied with the service. Overall satisfaction with the program was high and few complaints were logged.

14.4.3 Program Implementation

14.4.3.1   Participation Process

- *Is participation simple?* Participation is voluntary and free. The customer must only take time out of their schedule to follow along with the audit. In most cases, the customer's presence is not mandatory as the third party maintenance personnel can perform most of the audit without the customer.

- *Are participation strategies multi-pronged and inclusive?* Not addressed.

- *Does program provide quick, timely feedback to applicants?* The audit results are delivered to the customer on the spot if not the next day.

- *Is participation part of routine transactions?* Not addressed.

- *Does the program facilitate participation through the use of internet/ electronic means?* No. There is no marketing for this program other than word of mouth. The program is not directly marketed to customers.

- *Does the program offer a single point of contact for their customers?* No. The third party maintenance personnel serve as the points of contact for participants.

- *Are incentive levels well understood and appropriate?* There may exist a problem with the incentive for third party maintenance personnel to perform a thorough audit as opposed to a less intrusive walk through. The audit personnel do not collect information pertaining to the likelihood of customers implementing the audit recommendations and third party maintenance incentives are not tied to implementation.

14.4.3.2   Marketing and Outreach

- *Use target-marketing strategies?* There is not marketing performed. Third party maintenance personnel simply drive up to a potential site. A lot of time is wasted searching for appropriate clients. More information is needed on which areas to target and what time of day is appropriate to approach the businesses. Newer buildings typically claim to have regular maintenance, and so these businesses usually are not interested, although many would benefit from the program. The program intent is to increase small business participation by adding personnel to ramp up direct implementation activities. The institution of a marketing plan will help reach this goal faster.

- *Are products stocked and advertised?* Not applicable.

- *Are trade allies and utility staff trained to enhance marketing?* Third party maintenance personnel do not perform any type of coordinated marketing activity. There is no concerted marketing effort by program management and maintenance staff is not trained to do so.

15. SDGE 3040: Business Energy Assessment Program

15.1 Program Overview

15.1.1 Program Summary

The Business Energy Assessment Program (BEAP) provides small and medium businesses with an assessment solution that delivers practical energy efficiency recommendations and links them to the appropriate SDG&E rebates and services. The program is designed as a solution to the poor results of conventional audits, which are completed by technical staff members. Such assessments rarely elicit action because managers make decisions about energy efficiency equipment and practices. As a result, marketing material focuses on raising awareness and participation at the top where decisions are ultimately made.

The on-line assessment tool powered by EnVINTA, "Energy Challenger," uses a series of non-technical questions to evaluate the business's energy efficiency in terms of management practices and equipment. The process requires 10-15 minutes and separate questions address the needs of small and medium business. The results benchmark the business's energy efficiency with its peers, summarizes its strengths and weaknesses, and produces a customized action plan with priority measures to increase energy efficiency. Each recommendation on the action plan is coupled with links to the necessary rebates, products and services, and self-help information to implement the measure. The action plan includes both immediate "quick-fix" energy efficiency recommendations and longer-term strategies to improve management practices.

15.1.2 Program Theory/Logic Model

One of the first evaluation tasks was to collect background information on the Business Energy Assessment program in order to develop and refine the program logic and theory. This logic model served as part of our guide for data collection activities in the following evaluation tasks as well as enabling subsequent impact evaluators to have a consistent type of theory and logic model to help focus their efforts. The structure of a logic model is one that links activities and outcomes and is a very useful tool for identifying specific program assumptions that could be tested using survey or other primary data collection methods.

Figure 15-1
Program Logic Model for SDGE3040 – Business Energy Assessment Program
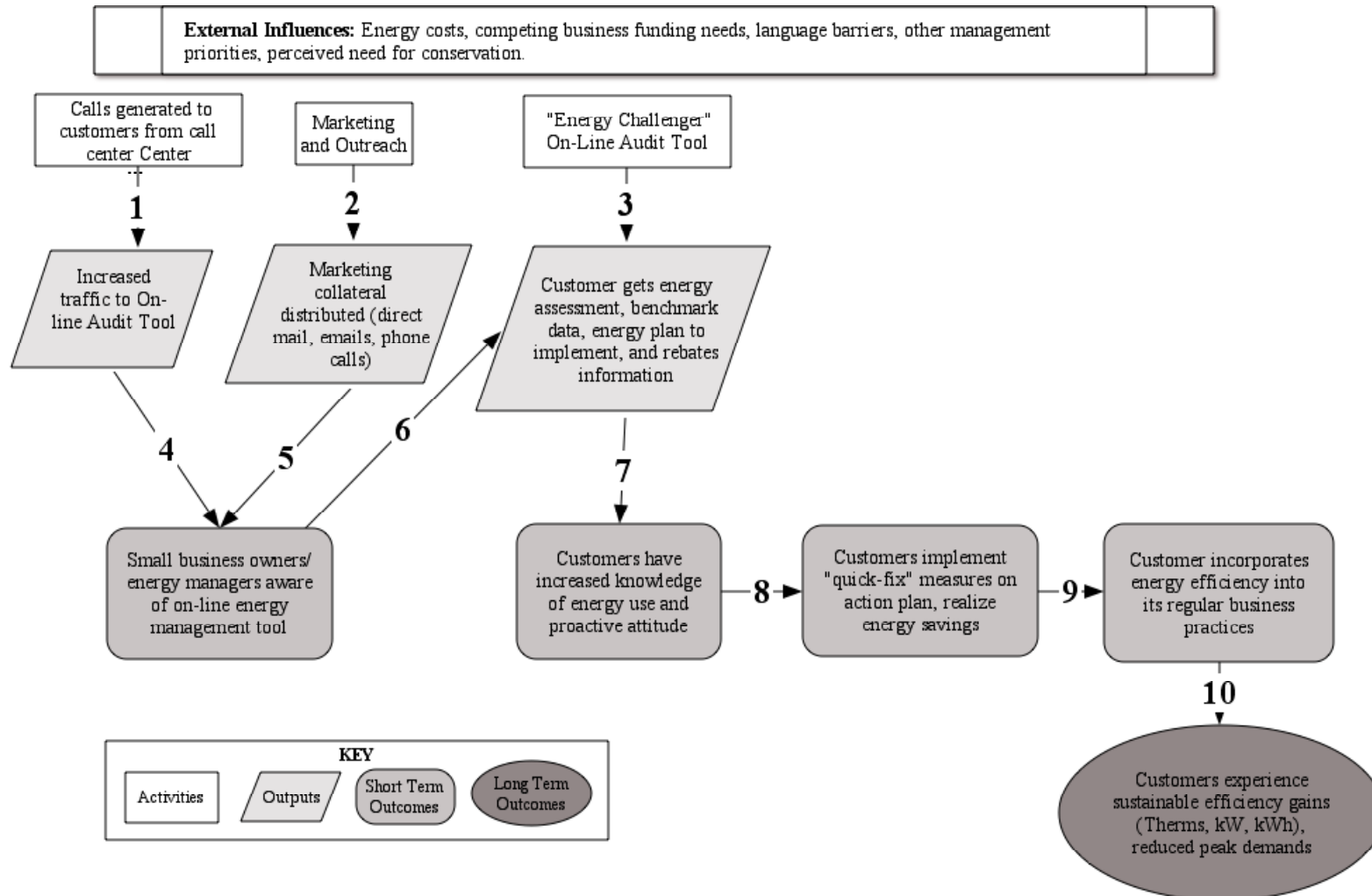
Table 15-1
Program Theory Logic for SDGE3040 – Business Energy Assessment Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Most on-line audit programs suffer from lack of participation. The Business Energy Assessment Program has incorporated the help of a call center to overcome this barrier. The call center contacts current customers and directs them to the audit website. This approach to driving traffic to the site is in addition to the account representatives calling on customers to generate on-line assessments.	The on-line assessment provides a quick report detailing the number of completed audits. This report is readily available to program staff via the software provider and the call center.	Participant CATI surveys. Data available from the on-line energy assessment tool.
2	"Audit-oriented" energy assessments that are typically completed by engineers rarely elicit action because decisions about energy efficiency equipment and practices are made by management, who value "outcome-oriented" evaluations and action plans and need to buy into the process from the outset. Thus, marketing materials for the Energy Challenger program focus on raising awareness "at the top", where energy efficiency decisions are ultimately made. Marketing materials convince managers that it is necessary to adopt energy efficiency technology and ongoing energy management practices, and informs them of a pragmatic new audit and planning tool they can use to better manage their energy use and improve business competitiveness.	Clear and compelling marketing collateral and messages are created. It is clear that managers are the target audience and is easy to understand how to participate in the program.	Focus group of business managers reviewing the collateral.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
3	Businesses often do not complete or implement energy audits because: they take too long to complete, require too many data inputs, are too technically focused/hard to understand, are not designed for their industry, and/or do not include practical ongoing action plans (among other reasons). The program develops on-line energy audit software geared towards management that addresses these issues. Management desires to know where their company's energy use stands compared to others in their industry.	An on-line energy assessment and planning tool is developed and available that: is easy to use and understand, can be used relatively quickly, is relevant to many industries, addresses equipment, behaviors and processes, and recommends both low and higher cost investments as part of a strategic plan. The tool also provides benchmark data regarding industry/region specific energy consumption so users can assess their competitiveness.	Program tracking data Interviews with program managers Software review by relevant experts
4	The increase in on-line assessments will potentially increase the number of customers that sign-up for energy efficiency and demand response programs. After completion of the on-line audit, the Energy Challenger assessment tool directs the customer to information concerning the demand response and energy efficiency programs that are applicable to their business practices.	Audits completed by managers aware of the on-line energy assessment tool.	Participant CATI surveys. Data available from the on-line energy assessment tool.
5	The program targets the management of small to medium sized businesses (about 20kW to 500kW energy demand). The program knows where to place marketing collateral for managers and places it in appropriate areas to be seen by managers.	Managers are aware of the new on-line assessment tool and it's potential benefits for their company.	Self-report of managers who do not participate in the Energy Challenger program, but were exposed to the marketing.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
6	Managers are persuaded that the energy assessment and planning tool is easy to use and will produce useful results that will help them to manage their business's energy use on an ongoing basis.	Managers participate in the program.	Program tracking data Self-report of managers who do not participate in the Energy Challenger program, but were exposed to the marketing.
7	Managers who complete an Energy Challenger session have new knowledge of their own energy use, their competitive position, and what immediate and long-term strategies they can implement to reduce their energy use. As a result, managers acquire a pro-active attitude towards managing their energy use.	Self-reported change in awareness, knowledge, and attitudes because of Energy Challenger session.	Participant manager feedback survey
8	Each recommendation on the action plan is coupled with links to the necessary rebates, products and services, and self-help information to implement the measure. Therefore, it is easy to purchase measures and implement the action plan. Managers are motivated to implement the immediate low-cost, quick-fix measures listed on their action plan because of new knowledge and awareness, the desire to be more competitive with their peers, and the ease and low-cost of locating and adopting the necessary products and services to execute the plan.	Managers implement low-cost "quick-fix" measures	Other programs participation data Participant manager feedback survey, self-reported reason for implementing the low-cost "quick-fix" measures

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
9	Managers see immediate efficiency gains (Therms, kW, kWh) from the quick-fix measures. Furthermore, managers are aware of the potential efficiency savings if they execute the longer-term measures on their action plan. Due to the web-links, it is easy to locate the necessary information and products and services to implement the long-term recommendations. Because of the past savings and the desire to be even more competitive with their peers, managers are motivated to pursue future actions and find it convenient to implement the longer-term management strategies on the action plan.	Managers implement the longer-term and more expensive components of the energy action plan and install additional efficient equipment.	Other programs participation data Participant manager feedback survey, self-reported reason for implementing the long-term efficiency measures
10	Managers are excited by the positive results of executing the action plan. They integrate energy efficiency into their regular decision-making and budget processes and repeat Energy Challenger sessions to track their progress.	Participating companies experience long-term efficiency gains and energy savings as a result of implementing all or most of their customized action plans.	Programs participation BEA data Participant manager feedback survey. Impact evaluation.

15.2 2006 – 2007 Program Activities

15.2.1 Savings Summary

The Business Energy Assessment program is a resource acquisition program that does not have documented savings.

15.2.2 Budget Summary

The Business Energy Assessment program has spent 77 percent of its total operating budget through Q4 2007.

Table 15-2
Expenditure Summary (Q1 2006 through Q4 2007)[32]

Expenditures	Total 3-Year Operating Budget	% of Budget Spent
473,448	617,790	77%

15.2.3 Participation Summary

The Business Energy Assessment program is on target. The Energy Challenger tool was released on the SDG&E web site on November 7, 2006. As of third quarter 2007, 1437 assessments have been performed. The program is on-track to conduct 2,000 assessments over the 2006-2008 period and has exceeded its goal of 1,000 assessments by September 2007.

15.2.4 Summary of Program Status

The 1437 audits performed under the Business Energy Assessment program were conducted primarily with small manufacturing companies and hotels. Seventy percent of the surveys were conducted over the phone[33] and the remaining thirty percent were completed on-line. To help drive traffic to the on-line tool, the creator of the Energy Challenger website, EnVinta, used a call center to target these small manufacturing companies and hotels.

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[32] Data from SDG&E December 2007 Monthly Report (http://eega2006.cpuc.ca.gov)

[33] A customer service representative fills out the on-line tool for the customer while on the phone and then sends the customer a link to the report results.

Table 15-3 shows the progress of the Energy Challenger in terms of the number of completed assessments since its inception.

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Table 15-3
Summary of Program Status

Month	Number of Businesses for Month	Cumulative Total	Cumulative Total as % of Program Goal
December 2006	4	4	0.2 %
January 2007	18	22	1.1 %
February 2007	173	195	9.7 %
March 2007	249	444	22.2 %
April 2007	188	632	31.6 %
May 2007	246	878	43.9 %
June 2007	130	1008	50.4 %
July 2007	114	1122	56.1 %
August 2007	156	1278	63.9 %
September 2007	159	1437	71.8 %
Program Goal	2000		

15.3 Findings, Conclusions and Recommendations

15.3.1 Survey Results

This section of the report describes the results of the participant on-line survey that was completed in January 2008. This survey collected information from 51 individuals asking questions about their satisfaction with the program, what energy efficiency measures they implemented and what other energy efficiency programs they joined as a result of completing the Energy Challenger assessment.

15.3.1.1   Business Characteristics and Motivations

The survey's participants represent firms from about a dozen business sectors. The two most represented sectors were manufacturing (39 percent) and retail or wholesale (16 percent). 62 percent of respondents owned their facility, while 38 percent rented. The size of the firms was fairly evenly distributed throughout the sample. The most frequent categories were 1 to 5 employees (25 percent), 11 to 20 employees (23 percent), and 21 to 50 employees (21 percent).

When asked why they took the Energy Challenger, the respondents' foremost response (as seen in Figure 15-2) was that they received an email from SDG&E regarding the assessment.

Figure 15-2
Why Participants Took the Online Energy Challenger
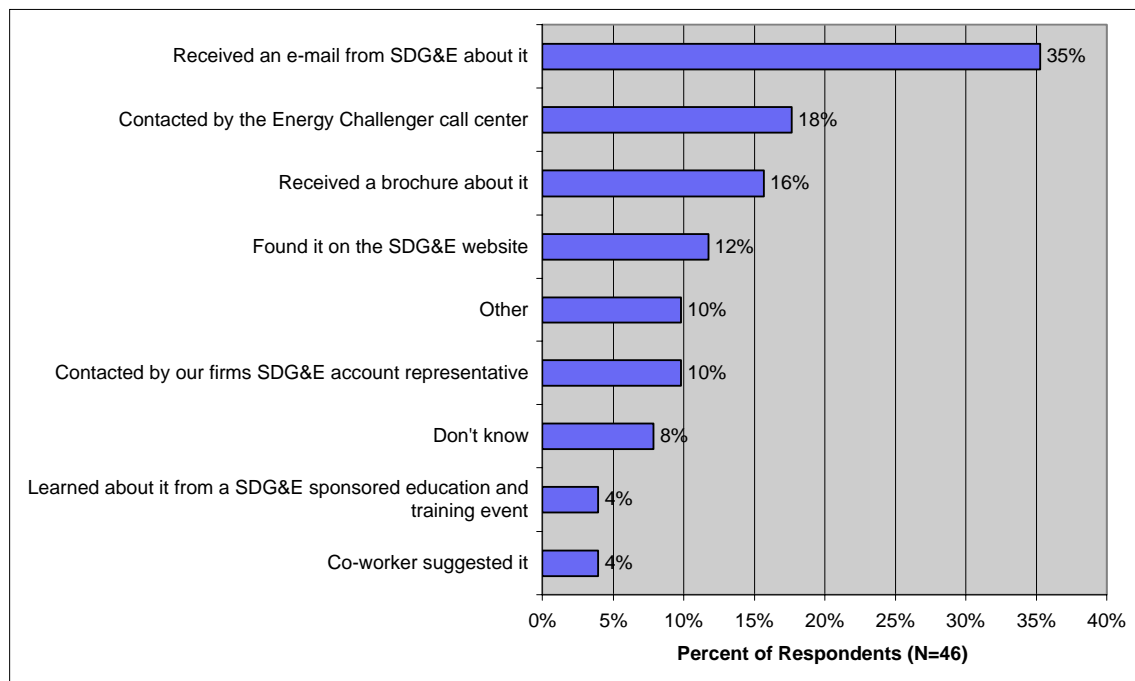
Note: Percentage total exceeds 100% because respondents are able to choose multiple responses.

### 15.3.1.2   Energy Challenger Recommendations

The core of the participant survey investigated if the Energy Challenger motivated its participants to implement its action plan recommendations. For the participant survey, Energy Challenger recommendations were categorized among Lighting, HVAC system, Demand Response, and Other measures. All participants were asked if they received any recommendations for a given category, such as Lighting. The respondents in the subset who answered "yes," were then asked to identify which lighting measures they implemented as a result of the Energy Challenger. Therefore a smaller pool of respondents recounted which measures they installed for each category. Table 15-4 shows that most respondents (74 percent) recalled receiving recommendations for their business's lighting, 25 percent recalled receiving HVAC system recommendations, and 26 percent recalled receiving demand response recommendations.

Table 15-4
Energy Challenger Results by Measure Category

| Did your Energy Challenger results include any recommendations to…	Yes	No	Don't Know
Change your business's LIGHTING? (N=49)	74%	18%	8%
Change your business's HVAC SYSTEM? (N=48)	25%	56%	19%
Join DEMAND RESPONSE programs? (N=47)	26%	34%	40%

Figure 15-3 shows that 92 percent of respondents that recalled receiving lighting measures implemented at least one of the lighting recommendations on their action plans. After taking the Energy Challenger, half of respondents replaced their incandescent lights with CFLs and 42 percent upgraded interior fluorescent lighting to more energy efficient lighting.

Figure 15-3
Energy Challenger Recommendations Completed- Lighting
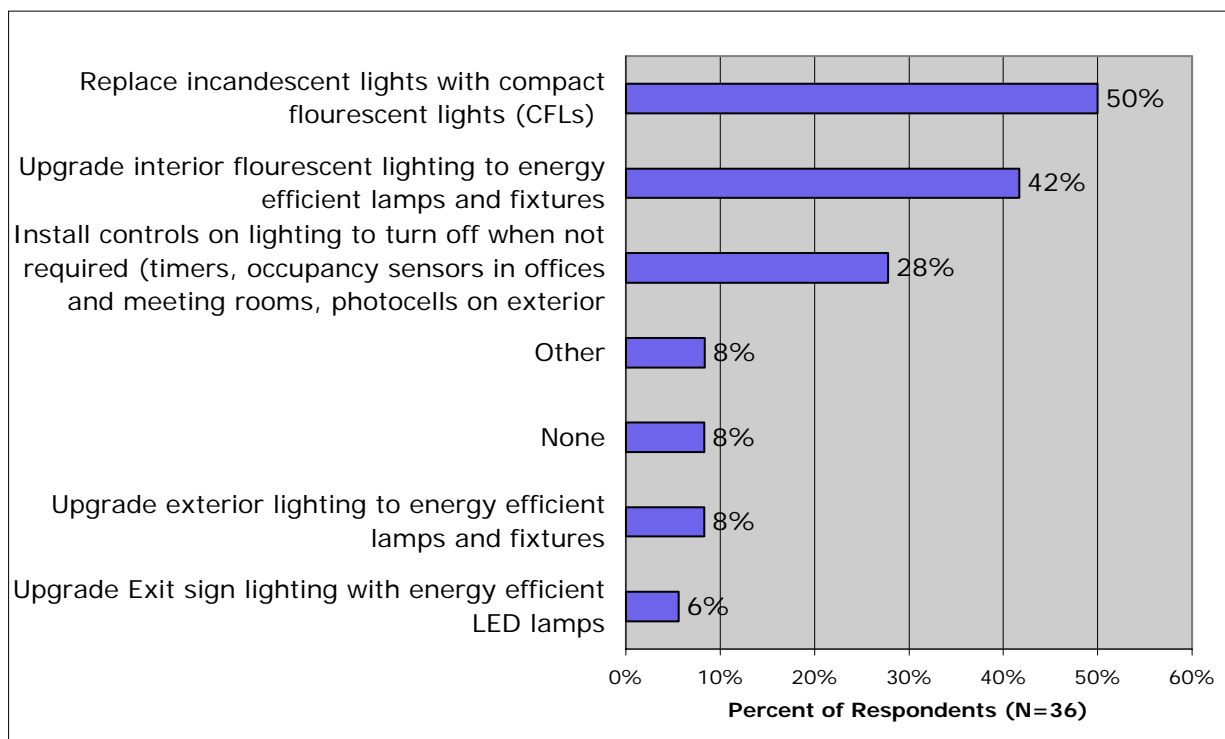
It is difficult to make several valid statements from the data in Figure 15-4 about how effective the Energy Challenger was in motivating HVAC measure installations for all Energy Challenger participants because the number of respondents who said they received these measures is a small subgroup of the survey population (only 12 respondents out of 51). However, a positive statistic gleamed from this figure is that only two respondents (17 percent) said they did not implement any of the measures they had received from the Energy Challenger. This is a noticeable indicator of the Energy Challenger's ability to initiate energy saving activity from those businesses who participate.

Figure 15-4
Energy Challenger Recommendations Completed- HVAC Systems
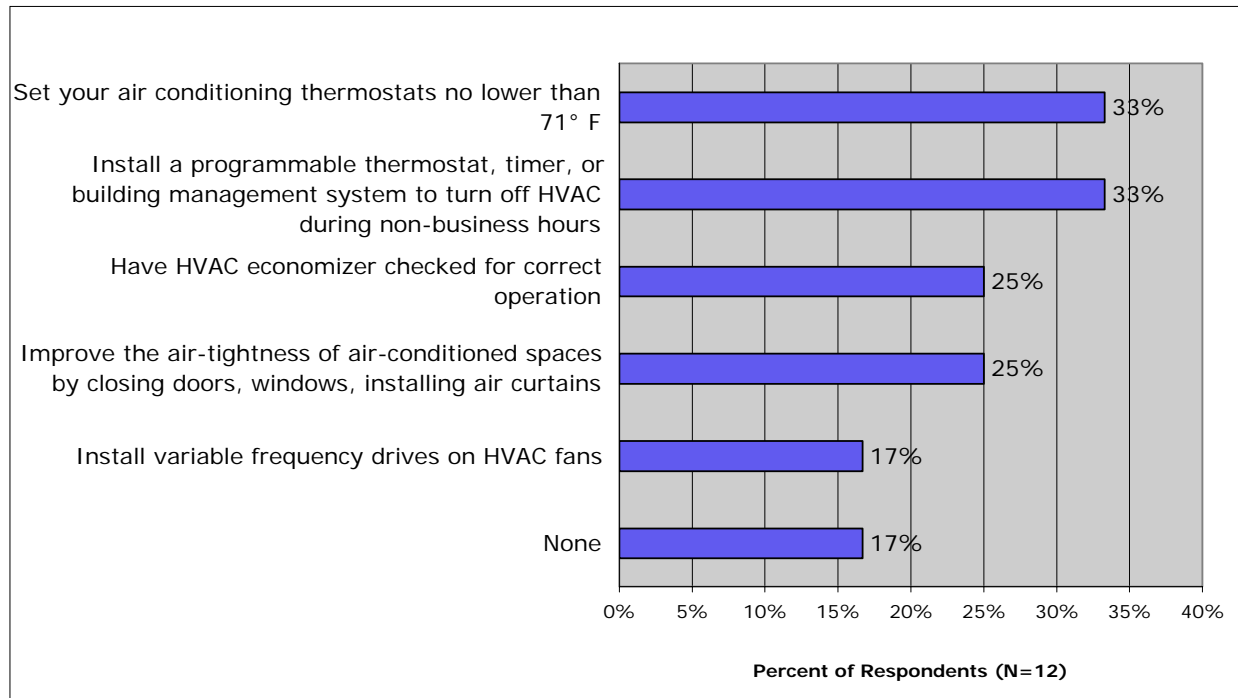
The data in Figure 15-5 for Demand Response programs has the same issues as the data in Figure 15-4 for HVAC systems. Only 12 respondents indicated they had received recommendations concerning Demand Response programs. Like before, the data shows a significant completion of the measures for those respondents who did get these types of recommendations. Clearly the Energy Challenger has prompted more participation in SDG&E demand response programs.

Figure 15-5
Energy Challenger Recommendations Completed- Demand Response Programs
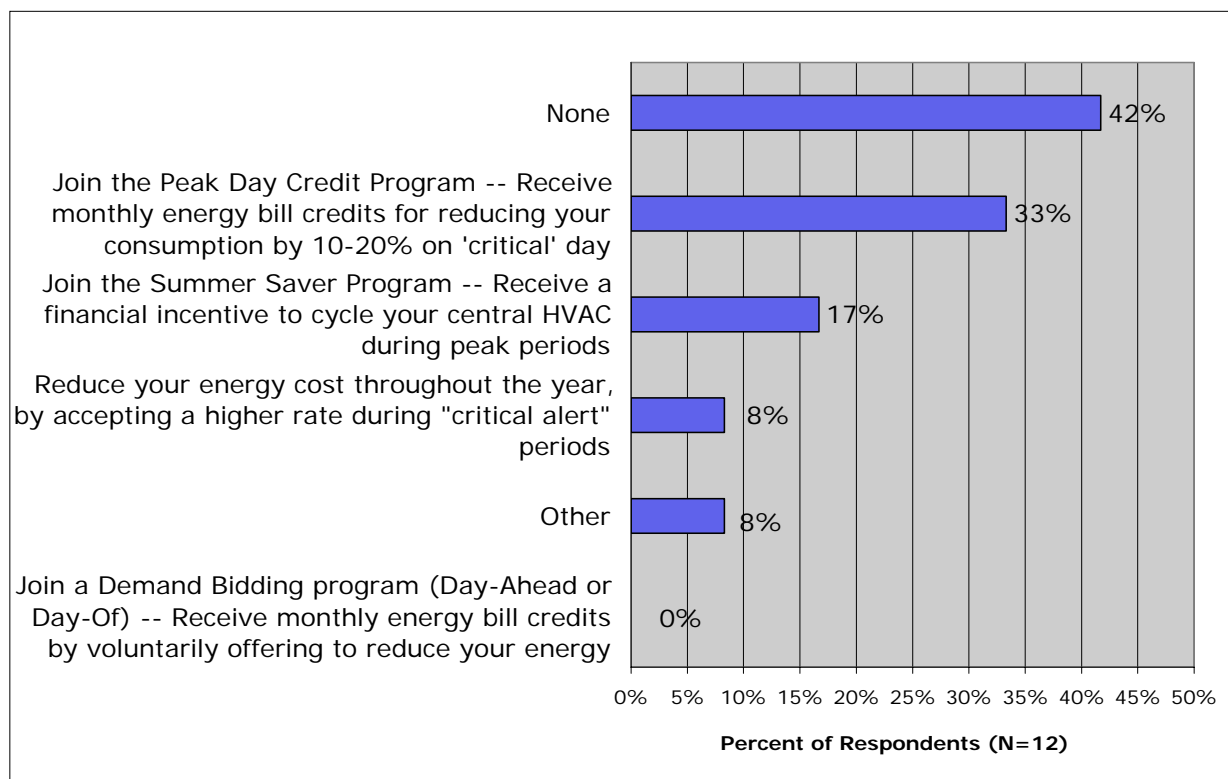
In the last question of the recommendation series, the respondents were given a list of all the Other behavorial measures that came out of the Energy Challenger. 83 percent of respondents implemented at least one of these Other measures as a result of the Energy Challenger assessment. In fact, on average, each respondent gave 2.7 responses to this question, indicating they completed several measures from this category after completing the Energy Challenger

The measures with the largest percentage of respondents indicated they had completed them as a result of the Energy Challenger were:

- Tell staff about ways they can reduce energy costs at work

- Introduce procedures to encourage staff to turn off equipment when not needed (such as after hours and on weekends)

These measures have a few things in common; they take little time to complete, they require no equipment to buy and are free. It is understandable that these measures were completed so often.

**Figure 15-6
Energy Challenger Recommendations Completed- Other Recommendations**

Percent of Respondents (N=46)
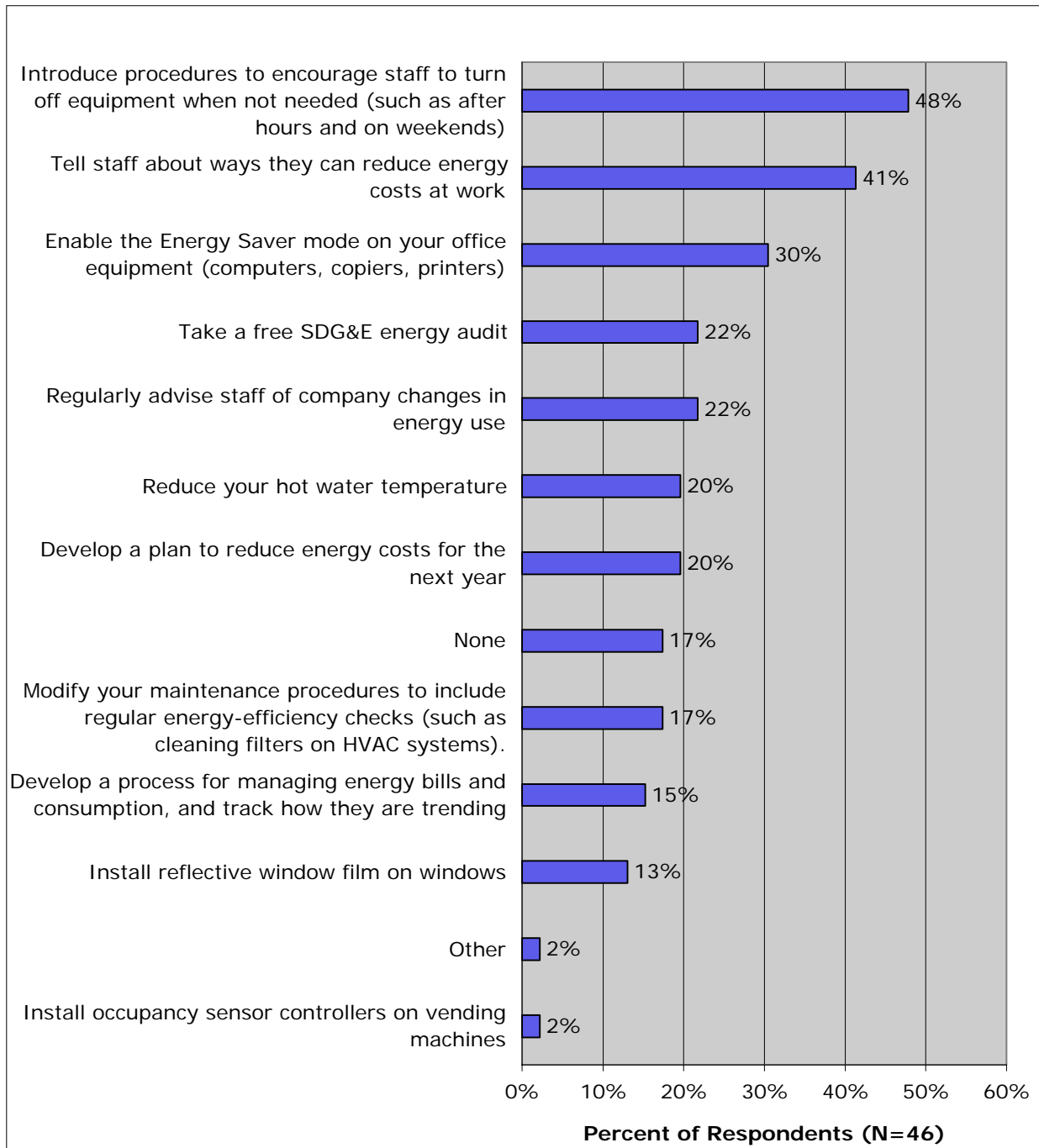
Furthermore, 13 out 47 respondents (28 percent) purchased new equipment as a result of the Energy Challenger recommendations. Figure 15-7 shows that the most popular equipment purchases were lighting (CFLs, controls for lighting, and T8 or T5 lamps). Four respondents from this group received

rebates for their purchases, three from SDG&E and one from the California Energy Commission. Only one respondent was able to identify the name of a SDG&E program through which he/she had received the rebate (Express Efficiency program).

Figure 15-7
Equipment Purchased due to Energy Challenger
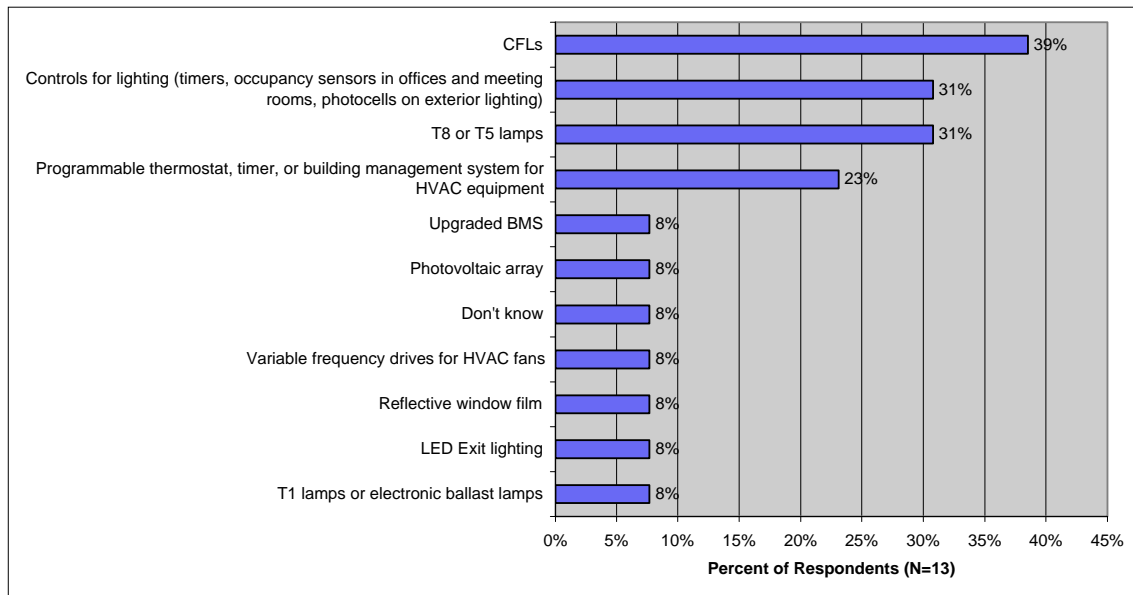
15.3.1.3   Energy Challenger Results and Experience

When respondents were asked what prevented them from implementing the measures they had not yet installed, the top two responses (as shown in Figure 15-8) were that they were too expensive and they needed permission from the landlord.

Figure 15-8
Reasons Why Respondents Did Not Complete All Recommended Measures
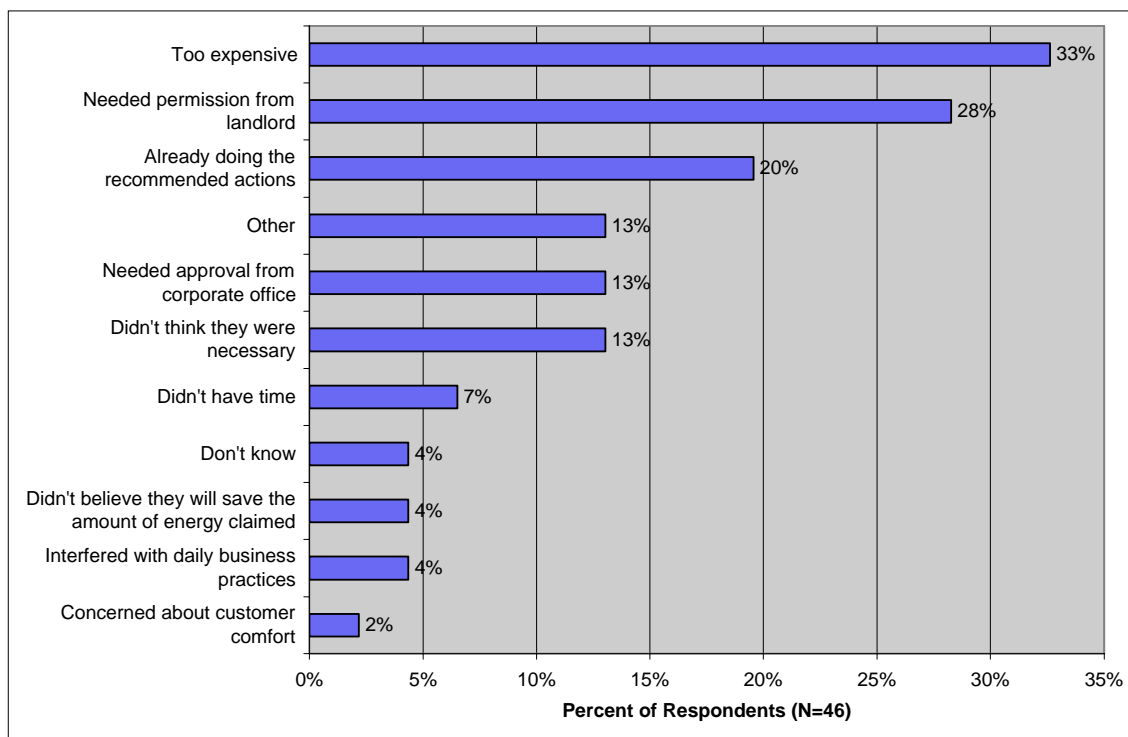
Survey respondents were also asked if the Energy Challenger motivated them to seek out further energy efficiency information and join other SDG&E energy efficiency programs. Figure 15-9 shows that most respondents (76 percent) visited the SDG&E website to learn more about energy efficiency. This statistic demonstrates that the Energy Challenger does provoke some further action. However, as shown in Figure 15-10, only 19 percent of respondents participated in other SDG&E energy efficiency programs. The Energy Challenger successfully referred respondents to some programs, most notably five participants enrolled in the Small Business Super Saver program.

Figure 15-9
Activities Done as a Result of Using Energy Challenger
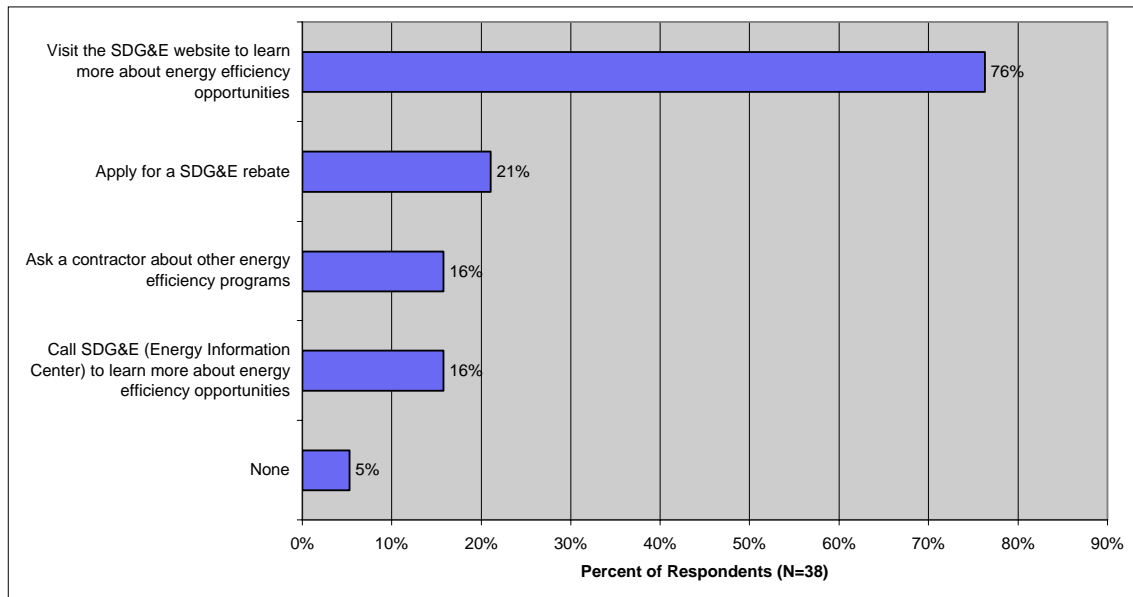
Figure 15-10
Which Programs Participants Joined as a Result of Taking the Energy Challenger
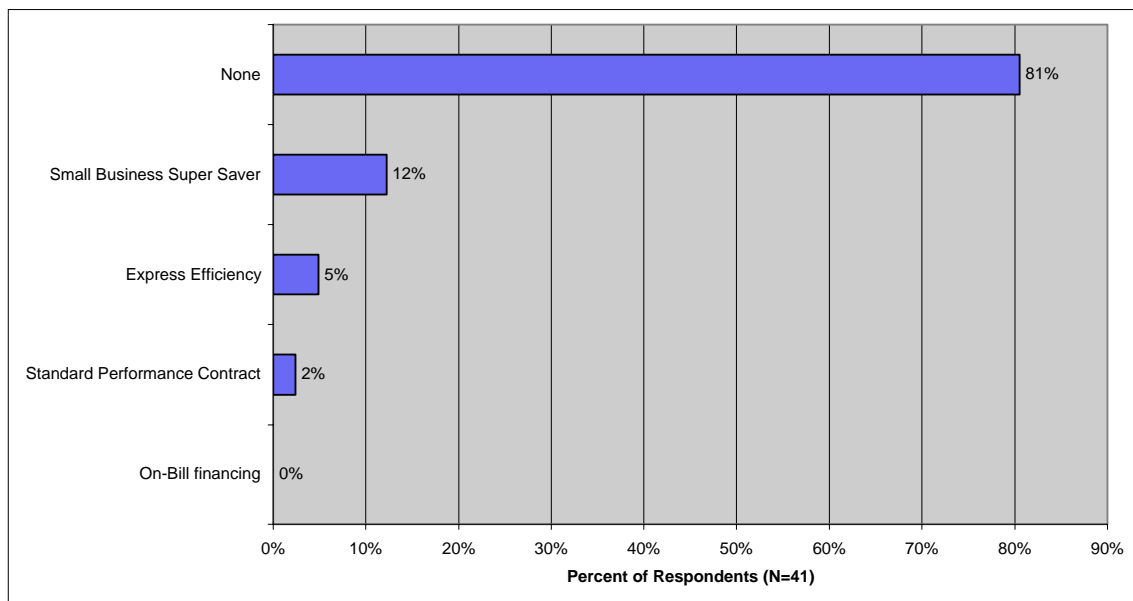
Moreover, 17 out of 46 respondents (37 percent) said they did receive a follow-up phone call to go over their Energy Challenger results. When the 17 were asked if the follow-up call motivated them to implement any of the assessment recommendations, six respondents said it was motivating. Most of these respondents implemented lighting recommendations after their follow-up calls.

15.3.1.4 Satisfaction with the Energy Challenger

The Energy Challenger Customer Evaluation asked participants to rate their satisfaction with different aspects of the Energy Challenger and the survey as a whole. The respondents were asked to rate their satisfaction from one of five categories, where very satisfied is scored as a 1 and very dissatisfied is scored as a 5. Figure 15-11 shows that the respondent's satisfaction with different facets of the Energy Challenger fell primarily between "somewhat satisfied" and "neither satisfied nor dissatisfied," always closer to somewhat satisfied.

Figure 15-11
Respondent Satisfaction with Energy Challenger
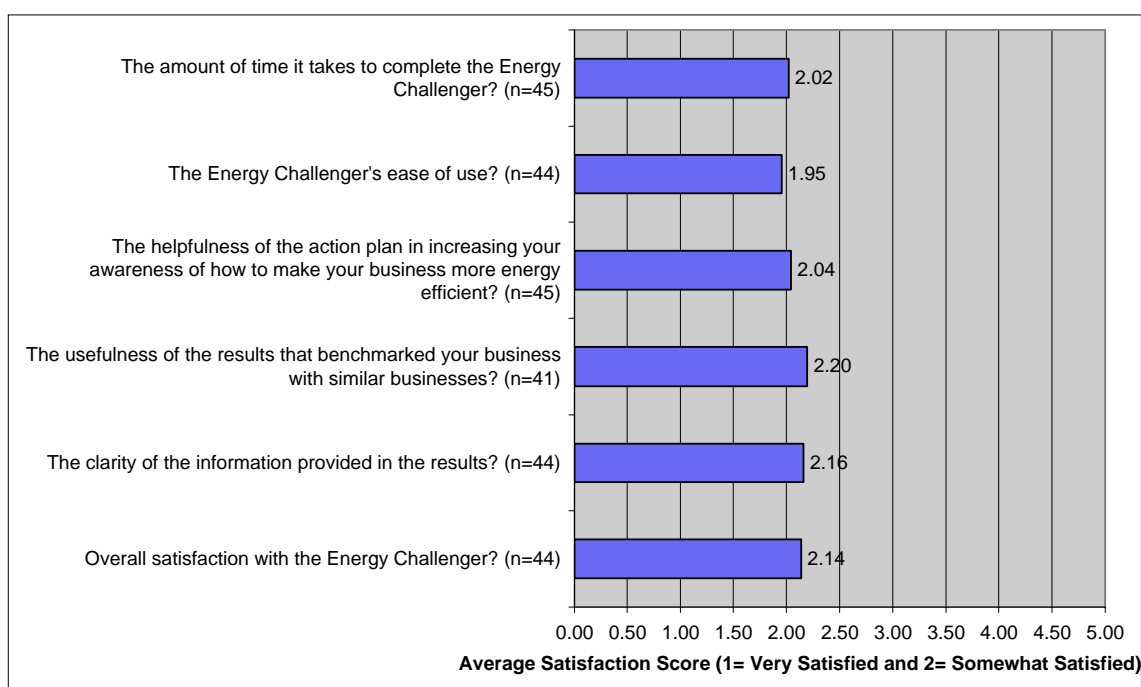
15.3.2 Conclusions

The following general conclusions are drawn from the survey data presented in this report:

- **The participant survey results indicate that the Energy Challenger assessment prompts some action.** Energy Challenger participants are implementing a share of the recommendations on their action plans. The highest adoption rates are in the lighting category, notably highest with the familiar measures that require little capital investment (CFLs, replacing interior fluorescents, etc). The most frequently implemented recommendations are also behavioral practices (such as changing thermostat settings).

- **To a lesser extent, the Energy Challenger is channeling its participants toward other energy efficiency programs.** Almost 80 percent of respondents visited the SDG&E website, but only about 20 percent of respondents participated in other energy efficiency programs (Express Efficiency, Small Business Super Saver, etc) to subsidize the cost of equipment upgrades. Very

few respondents (four) used rebates to purchase energy efficiency equipment as a result of the Energy Challenger. About half of the 12 respondents that received demand response measures on their action plans joined a demand response program.

- **The top two barriers to implementing various action plan recommendations are cost and landlord permission.** One-third of participants said that they did not implement some (or all) of their action plan recommendation because they are too expensive. 28 indicated that they did not adopt the measure(s) because they needed the landlord's permission.

- **Satisfaction levels with the Energy Challenger are generally high.** The majority of respondents were somewhat satisfied with the various aspects of the Energy Challenger assessment tool.

- **E-mail blasts are the most effective marketing tool for the Energy Challenger.** About one-third of the respondents learned about the Energy Challenger assessment tool from an e-mail blast. Furthermore, 18 percent of respondents were prompted by a phone call from the customer call center, and 16 percent took the audit due to a mailer. Thus, cold calls and mailed brochures are also valuable methods to enlist participation.

15.3.3 Recommendations

Based on the on-line survey results, we make the following recommendations:

- **Create more direct links from the action plan to other SDG&E energy efficiency programs**. While some of the program participants are executing their action plan recommendations, there is room for improvement. The most commonly implemented recommendations are familiar low-cost measures, such as installing CFLs, or easy behavioral practices, such as changing thermostat settings. The Energy Challenger design can be modified to encourage more action. Rather than sending participants to the generic SDG&E energy efficiency website, the action plan should connect its participants directly to the web resources that can assist participants with implementing the recommendations.[34] Recommendations for demand response programs and equipment upgrades should be paired with web links that launch participants directly to the appropriate SDG&E program websites (Express Efficiency, Critical Peak Pricing, etc). Sending participants directly to specific rebate and other energy efficiency programs that offer financial assistance should increase program enrollment rates and increase the number of recommendations installed (one-third of respondents reported that some or all of the recommendations were too expensive).

- **Target the program marketing material to landlords**. Many business owners rent their space (almost 40 percent of our sample) and therefore have less control over their building's equipment. Twenty-eight percent of respondents did not implement action plan suggestions because they needed landlord permission. The Business Energy Assessment program should consider methods to engage landlords in the Energy Challenger assessment.

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[34] Many of the current web links direct participants to the general SDG&E business energy efficiency website. Then, the customer must click around various menu options to find the appropriate rebate or demand response program website.

- **Refine the current follow-up process**. The Business Energy Assessment program already has a follow-up system in place. SDG&E can potentially claim energy savings for the Business Energy Assessment program if correct metrics are tracked and accurately recorded.

15.4 Best Practices Review by Program

15.4.1 Program Theory and Design

- *Is the program design effective?* The idea of a straightforward, quick and easy-to-use assessment tool that provides small to medium sized businesses with energy efficiency recommendations is an effective program design. The action plan is easy to read and the measures provided are often low cost and/or simple to complete. Earlier problems regarding the survey having too many introductory questions (which frustrated users and lengthened the assessment) have since been resolved.

- *Is the market well understood?* Yes, the program is clearly designed and marketing efforts are targeted towards SDG&E business (commercial and Industrial) customers that have an energy peak demand between 20 and 500 KW. The program's goal for 2006-2008 is to get 2,000 SDG&E customers to join the program by completing the Energy Challenger assessment.

15.4.2 Program Management

15.4.2.1   Project Management

- *Are responsibilities defined and understood*? The Energy Challenger BEA is managed by a contracted third party, EnVinta. The program managers did not report problems regarding communication and execution with this program. Both groups know their roles and act accordingly.

- *Is there adequate staffing?* The program managers and program implementers did not report any staffing issues.

15.4.2.2   Reporting and Tracking

- *Is data easy to track and report?* The Energy Challenger tracking database was not reviewed for this evaluation.

- *Are routine functions automated?* The Energy Challenger tracking database was not reviewed for this evaluation.

15.4.2.3   Quality Control and Verification

- *Does the program manager have a strong relationship with vendors involved in the project?* Based on the project manager interviews, it seemed that both SDG&E and EnVinta communicate regularly and that their relationship is satisfactory for both parties. The Business Energy Assessment program manager was satisfied with EnVinta's management of the program and neither side expressed any level of concern with this program's coordinators.

- *Does the program verify reporting systems?* The verification process was not addressed in this evaluation.

- *Are customers satisfied with the product?* The results of the customer evaluation for the Energy Challenger suggest that participants are somewhat satisfied with the entire Energy Challenger process. Very few respondents were dissatisfied with the various aspects of the tool.

15.4.3 Program Implementation

15.4.3.1   Participation Process

- *Is participation simple?* Participation in the program is pretty simple, much simpler than previous online energy audits. The program manager indicated that in general, online audits require a great deal of technical information, and can take as long as 30-45 minutes. Many businesses end up quitting before they finish the entire audit, because they do not feel that they have enough time to spend dedicated to the process. With the Energy Challenger, participants just need to be an SDG&E business customer with a KW peak load between 20 and 500 kW. Participants (usually business or energy managers) need estimates of their current energy costs, knowledge of their equipment, and only about 10 minutes of their time to participate in this program.

- *Are participation strategies multi-pronged and inclusive?* With the support of a multi-dimensional marketing plan, EnVinta has been able to successfully motivate customers to participate, which is why they are currently ahead of their program goal for participation. The Energy Challenger was designed to provide easy to understand energy solutions to the decision makers in a company. Marketing through phone calls and written materials is targeted to business decision makers, in a top-down strategy aimed to increase a business's energy efficiency and provide management with sound advice so that they will be able to translate energy efficiency measures into long term sustainable energy savings.[35]

- *Does program provide quick, timely feedback to applicants?* Yes, the participant gets an immediate action plan upon completing the Energy Challenger. This detailed, yet easy to understand, report includes kW estimates of energy savings, an assessment of current strengths and weaknesses in reference to how energy use is managed, a prioritized set of seven measures the business can implement (including easy, low-cost efficiency measures for fast savings) and rankings that let a business see where they stand in reference to competitors in the industry. Plus, each measure has a link to more SDGE services like programs, equipment, vendors and Energy Efficiency information.

- *Is participation part of routine transactions?* No, SDG&E customers must initiate participation. Either they are motivated to complete the Energy Challenger due to advertising efforts by EnVinta or SDG&E, or they complete the Energy Challenger entirely on their own initiative (i.e., by way of personal reference or stumbling upon it on the SDG&E website).

- *Does the program facilitate participation through the use of internet/ electronic means?* Yes, the internet is used heavily to attract participation in this program. In fact, the only way to participate

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[35] See SDG&E 2006 Third Quarter BEA narrative for more details on their participation strategies. These reports can be found at http://eega2006.cpuc.ca.gov/DisplayPlans.aspx?ID=9

is to take the Energy Challenger online telephone marketing tries to increase traffic to the assessment webpage. Emails have also been sent out by SDGE&E; their first campaign was set for May 2007 and according to the 2007 third quarter narrative, SDG&E plans a second email campaign to be launched by January 2008 (See footnote 1).

- *Does the program offer a single point of contact for their customers?* By their contract, the third party is supposed to administer the program. However, SDG&E has taken on more of the load in recent months. According to the EnVinta PM, operators at SDG&E's Energy Savings Center have had training to become knowledgeable with the BEA and help answer questions. He said they have been a helpful outlet and he believes their participation is a requirement to initiate interest from Energy Challenger participants in other SDG&E commercial programs like Express Efficiency. So, although EnVinta (and the subcontractor call center) remain the official primary point of contact, SDG&E has been able to help out.

- *Are incentive levels well understood and appropriate?* It seems that participants understand the benefits of taking the Energy Challenger very well. Their incentive for taking the assessment tool is the prospect of saving their company money through installing energy efficient equipment and adjusting policies to become more energy conscious. There is no direct monetary incentive for participation in the BEA program, but in the business world, it is well understood that saving or using less energy translates into lower energy bills and more money staying with the company. Since this assessment tool takes little time, is very easy to use and provides information about SDG&E programs, vendors and rebates, there is already plenty of incentive to participate.

15.4.3.2 Marketing and Outreach

- *Use target-marketing strategies?* Yes, this program is extensively marketed to target audiences, primarily SDG&E commercial and industrial customers that fit into the KW demand requirements. Marketing strategies fit into three basic categories; over the phone, direct mail and email. Phone marketing is targeted towards eligible businesses through the call center, and there is also a retention campaign in place that contacts customers to check on how the BEA session went and to encourage follow with company's action plans. The EnVinta PM did indicate that despite the retention campaign, follow up on audits has not been satisfactory enough. For direct mail, he mentioned a 7,000 mailing that achieved just mediocre response. The second email campaign is due to begin very soon. Although there was a good response on the first email campaign, many people did not complete the assessment, which is why marketing needs to focus on streamlining the process to ensure complete Energy Challenger sessions.

- *Are products stocked and advertised?* Not applicable for this program.

- *Are trade allies and utility staff trained to enhance marketing?* Marketing falls primarily on the shoulders of EnVinta, though they work with SDG&E and get approval from them before initiating new strategies. However, the training of SDG&E operators at the Energy Information Center has definitely supplemented marketing strategies. The ability of SDG&E operators to provide information enhances the limited capabilities of the Energy Challenger to direct participants to SDG&E rebates and other programs. Customer service and a human voice provide much more help and direction to inquisitive businesses than an online assessment could ever do.

16. SDGE 3042: Commercial Laundry Program

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16.1 Program Overview

This is a third party, resource acquisition program. It attempts to influence coin-operated Laundromats and multi-family sites to adopt high efficiency clothes washer machines. An incentive is provided for each machine installed and sites obtain free lighting upgrades and hot water pipe wrap when they also perform washer installations. Efforts are made to work with water municipalities and provide a larger incentive per washer. The program is working with route operators and leasing agencies to attempt to influence them to install high efficiency washers for their customers.

The program process is streamlined to attempt to reduce the hidden or transaction costs of installing washers. They are using both a cash incentive as well as the other measure installations as a way to influence the owners to install the high efficiency washers.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Margaret Finley	SDG&E	MFinley@semprautilities.com	858-636-5732
Project Manager	Jeremy Price*	Synergy	jeremy@synergycompanies.org	

*Mr. Price is no longer the project manager of this program.

Figure 16-1
Program Logic Model for SDGE3042 – Coin Op Laundry Program
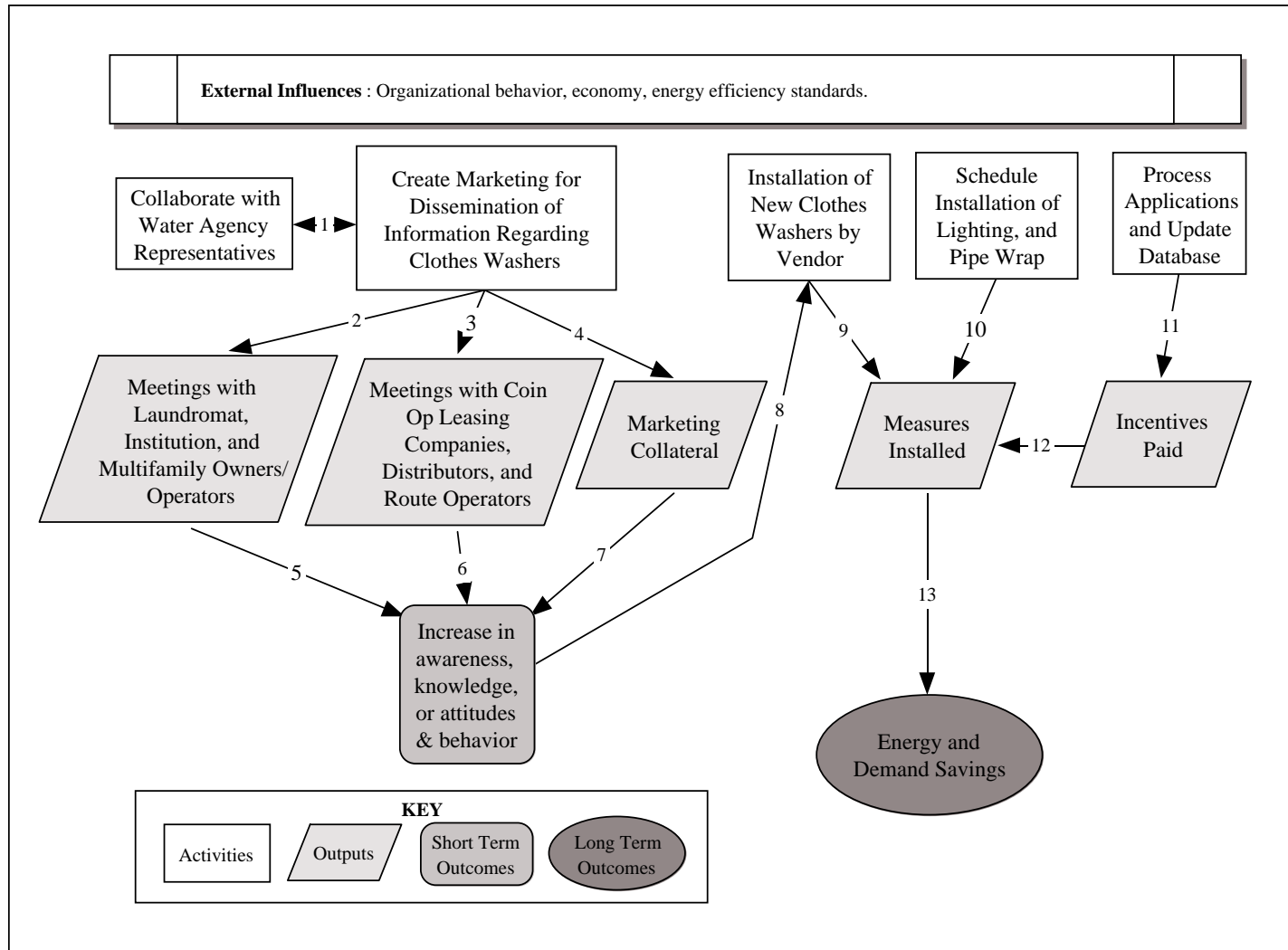
Table 16-1
Program Theory Description for SDGE3042 – Coin Op Laundry Program

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Energy rebates alone do not motivate customers to install high efficiency clothes washers. Collaboration with water agencies which have water rebates will increase the participation in the program. Identification and enrollment of sufficient number of customers to meet the savings goals of the program will be difficult unless there is collaboration with water agencies.	Level and quality of collaboration.	Customer lists provided to Coin Op program from water agencies. Program marketing materials. Interview of program managers at Coin Op program and water agencies.
2	Laundromat, Institution, and Multifamily Owner/Operators are unaware of the magnitude of the potential energy savings that could be gained from high efficiency clothes washers. Often, it is assumed that the savings may be at the expense of their customers comfort and satisfaction.	Self-reported awareness of potential for savings and belief regarding high efficiency clothes washers.	Survey of program participants and nonparticipants in relevant sectors.
3	The sales model of coin operated leasing companies, distributors, and route operators do not focus on the operational benefits for early change-out of washers to high efficiency washers. In some cases, the business model is not conducive to installing front loading machines. .	Self-reported sales model around operational benefits of high efficiency clothes washers.	Survey of leasing companies, distributors, and route operators.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
4	There is a lack of useful marketing collateral that can be provided to customers to increase awareness of the benefits of high efficiency washers. The program can create effective marketing collateral that clearly describes the benefits of high efficiency washers and the participation process. The ability to work with the local water agencies will increase the effectiveness of the collateral.	Clear, easily followed, marketing collateral.	Focus group of targeted customers.
5	Meetings between the program staff and Laundromat, institution, or multifamily owners/operators will engage the owners / operators and increase their awareness, knowledge, or change in attitudes towards high efficiency clothes washers.	Self reported change in awareness, knowledge, or attitudes towards high efficiency washers.	Survey of customers with whom program has had meetings.
6	Meetings between the program staff and coin operated leasing companies, distributors, and route operators will engage the market actors and increase their awareness, knowledge, or change their attitudes towards high efficiency clothes washers. Information provided will encourage changes in sales practices to the extent practicable.	Self reported change in awareness, knowledge, or attitudes towards high efficiency washers. Self reported flexibility of sales model of company.	Survey of leasing companies, distributors, and route operators with whom program has had meetings.
7	Marketing collateral will be placed appropriately and in sufficient quantity to reach the targeted audience.	Location and number of marketing collateral disseminated.	Program tracking database. Discussion with program staff.
8	The increase in awareness, knowledge or change in attitudes engendered from multiple sources, along with a financial rebate, will cause owners / operators to have washers installed at their sites.	Number of high efficiency washers installed.	Program tracking database.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
9	High efficiency clothes washers that are eligible for the program are installed by vendor to the satisfaction of the owner.	Self-reported "hassle" factor and satisfaction of schedule and installation of the clothes washer by customer.	Survey of program participants who are owners.
10	Scheduling and installation of lighting and pipe wrap measures is hassle-free. Installation is carried out to the satisfaction of the owner.	Self-reported "hassle" factor and satisfaction of schedule and installation of the lighting and pipe wrap measures by customer.	Survey of program participants who are owners.
11	Processing applications is effective if performed by the program. Quality assurance performed by the program increases the collection of all application data. Incentive payments will be correct and timely. All data regarding applications will be updated regularly in the program database.	Number of days to process applications and pay incentives. Quality of data in database.	Program tracking database.
12	Incentives help cause high efficiency clothes washers to be installed.	Influence of incentive on decision to install washers.	Survey of program participants.
13	Installation of high efficiency clothes washers, efficient lighting, and hot water pipe wrap brings about energy savings.	Gross kWh, kW, and therm savings.	Impact evaluation.

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Barriers Addressed by Program

Hassle or Transaction Costs. Coin-op laundries tend to be small business owners for whom it tends to be difficult to obtain information regarding efficiency. Multi-family sites tend to be larger property owners. The washers may be areas of lower priority.

High First Cost. The initial high cost of purchasing energy-efficient equipment often deters all sectors from replacing their old inefficient equipment. The current California standards push the eligibility of Energy Star clothes washers that are above the standards to the highest tier (and the highest first cost).

Strategies to Overcome Barriers

Use Leasing Companies to Market and Install New Washers. The program is using leasing companies already under contract with coin-op laundries as a way to market and install the washers. The installation and operation of the washers are already under the purview of these companies, making it easy for the customer. Where there is no leasing company, the program attempts to assure a hassle-free installation.

Provide Rebates for Installation of Energy Efficient Equipment. The program provides rebates for installation of energy efficient equipment. This money increases the likelihood that customers will purchase the higher efficiency equipment. The program is working with water agencies to attempt to coordinate rebates and increase the overall value to the customer.

16.2 2006-2007 Program Activities

16.2.1 Savings Summary

As of November 2007, the monthly summaries showed that the program had obtained 7 percent of their net kWh goals and 9 percent of their net therm goals.

16.2.2 Budget Summary

As of November 2007, the program had spent 25 percent of the three year adopted budget of $1,641,650.

16.2.3 Participation Summary

The program implementer was requested to send their program tracking database to obtain participation numbers as of the end of 2007. According to their records, the program has installed close to 1,200 washers since the inception of the program (326 in 2006 and 858 in 2007, totaling 1,184). About 3 percent of the installed washers garner electric savings. They are averaging 74 washers installed a month. According to the program implementers records, there have also been 894 CFL's, 137 T8 fixtures, and 1,592 pipe wrap installations.

There is a discrepancy of unknown origin between the program implementer and the SDG&E third quarter report. The third quarter participation numbers for washers are shown as 909 in the SDG&E

quarterly report while the program implementer has 218 more washers installed for the same period (i.e., inception to end of September 2007). This difference does not appear to be explained by any one or two month's participation, but could be due to certain installations being disallowed by SoCalGas. There is a large difference in the CFL fixtures (894 in implementers database versus 478 in the 3rd Quarter 2007 report) and the pipe wrap (1,592 in implementers database versus 54.6 in the 3rd Quarter report). The SDG&E report did not show any T8 fixtures at all. The evaluation team did not have time to verify the reasons for the discrepancy prior to this report.

16.2.4 Summary of Program Status

The program implementer had some strong washer installation months in the second quarter of 2007 and is averaging 74 washers installed a month. If this average can be maintained through 2008, the program may double their current gas savings, but will fall far short of the 3 years estimated savings. Electric savings will be short as well.

16.3 Findings, Conclusions and Recommendations

There were two data collection efforts for this program. A telephone survey consisting of multi-family managers and an on-site audit of Laundromats. The on-site audit collected counts of washing machines that could be retrofit through the program. As such, large machines (>20 pounds laundry) were counted, but are not included as machines available for retrofit. Multi-family managers were asked about the number of units at the site and number of washing machines available for communal use.

16.3.1 Findings

One of the main outputs of the evaluation was to provide the penetration of Energy Star washing machines in the commercial Laundromat and Multi-family sectors. There was insufficient sample across the two service territories to provide statistical data by service territory for the Laundromat sites. The data have been combined.

Table 16-2 shows that there are about 30,000 washers that wash less than 20 pounds of laundry (item 8 in Table 16-2). Of those, most are top loaders (87 percent, shown in item 10). The number of Energy Star washers seems low (item 9). The auditors stated they had some difficulty in the field verifying which units were considered Energy Star. While we obtained make and model number for some of the units, and those we obtained were not Energy Star, this is a weakness of the data collection effort and the data in item 4 should be viewed as a low value. While not all front loading washers are Energy Star compliant, even using the known number of front loading machines as a proxy for an Energy Star machine indicates that there is a low penetration of Energy Star machines in the Laundromat sector in SoCalGas and SDG&E service territory.[36]

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[36] The average number of Energy Star top loaders and Energy Star front loaders were not used separately as neither met the criteria of having a 95% confidence interval around the mean value that did not include zero.

Table 16-2
Number of Washers In SoCalGas and SDG&E Laundromats

Item	Variable	SoCalGas & SDG&E	Lower Bound*	Upper Bound*	Source of Data
1	Number of Sites	1,423	-	-	Purchased Population
2	Average washers / site	44.68	41.19	48.17	From sample
3	Average washers LT20 / site	20.69	18.44	22.94	From sample
4	Average washers All_ES / site	0.561	0.046	1.076	From sample
5	Average washers LT20TL / site	18.04	15.67	20.4	From sample
6	Average washers LT20FL / site	2.65	1.00	4.31	From sample
7	Calculated washers all sites	63,580	58,613	68,546	Calculated
8	Calculated washers LT20 all sites	29,442	26,240	32,644	Calculated
9	Calculated washers LT20ES all sites	798	66	1,530	Calculated
10	Calculated washers LT20TL all sites	25,671	22,298	29,029	Calculated
11	Calculated washers LT20FL all sites	3,771	1,423	6,133	Calculated

LT20 = Less than 20 lb; ES=Energy Star; TL=Top Loader; FL=Front Loader
*at a 95% confidence interval around the mean value

The information from the multi-family owners should be considered less reliable than the Laundromat data, just because no on-site audit occurred to verify the information provided. A number of sites provided a 1:1 match between the number of sites and the number of washing machines at the complex. It was assumed that these are really units located inside an apartment and were dropped from the determination of the average units/site and washers/unit.

Table 16-3
Number of Washers In SoCalGas and SDG&E Multi-family Sites

Variable	SoCalGas	SDG&E	Source of Data
Number of Sites	6,279	1,600	Purchased Population
Average units / site	85.51	107.26	From sample
Average washers / unit	0.1062	0.1062	From sample
Calculated washers per site	9.08	11.39	Calculated
Calculated washers all sites	57,021	18,226	Calculated

To determine the possible washers available for rebates, we queried whether any of the washers were the very large kind found in Laundromats. Sixteen percent of the sites indicated that some of there washers were of this larger type. However, when looking at the total number of different washer sizes and types, the majority were residential sized top loading washers (at 76 percent) with about one fifth (19 percent) of the washers being front loaders.

These percentages were not different by service utility, so the percentages were used for both. Of those who had front loading residential washers, 62 percent were indicated to have an Energy Star label.

Therefore, of all the washers possible at a site, 12 percent are considered to be Energy Star (i.e., 62 percent of the 19 percent front loading washers) and thought to be poor candidates for retrofits through the program. Removing the 5 percent of large washers which are not eligible for retrofits, there are 83 percent of multi-family washers that could be retrofit. The actual numbers by service territory are shown in Table 16-2.

Table 16-2
Possible Number of Washers by Service Territory for Retrofit

Variable	SoCalGas	SDG&E
Calculated washers all sites	57,021	18,226
Number not eligible due to size	(3,076)	(983)
Number not eligible due to Energy Star	(6,659)	(2,128)
Number eligible for Retrofit	47,286	15,114

These eligible retrofit values are though to be on the high side because there is the possibility that some of the top loading washers were Energy Star and less likely to be changed out for a more efficient washers.

There was no difference in the stated possibility of using a rebate between the three rebate levels provided in our study. Either the rebate is not as great a driver as expected, or the levels chosen were not different enough to create a change in the possible purchases.

Most of the respondents were favorable towards front loading washer attributes about which we asked. However, the size of the washers was a problem for about half of them. Also, the difficulty opening the door was indicated to be an issue. Opening the door was a problem due to the size of the machine as well as attempting to open it during the wash cycle.

16.3.2 Conclusions

There appears to be sufficient number of washers that could be retrofit to indicate the need for a program. According to our calculations, the program installed about 6 percent of eligible washers through 2007. Any new washers retrofit under the program will need to be front loaders. This may cause difficulties due to the perceived size differences and space requirements needed by front loaders versus top loaders. The rebate level could remain as it is since there was no indicated difference between a $130 rebate and a $250 rebate.

16.3.3 Recommendations

- The program should investigate the space requirements of top loading and front loading washers and be prepared to answer this type of question.

- Increase the marketing to multi-family sites as they appeared to be less aware of the program than Laundromats yet there are comparable number of washers. However, this group appears to have more space limitations and the program will need data regarding this issue when attempting to influence multi-family sites.

- Keep the rebate at $130.

16.4 Best Practices Review by Program

16.4.1 Program Theory and Design

- Is the program design effective? *Not addressed.*
- Is the market well understood? *Not addressed.*

16.4.2 Program Management

16.4.2.1 Project Management

- Are responsibilities defined and understood? *Not addressed.*
- Is there adequate staffing*? Not addressed.*

16.4.2.2 Reporting and Tracking

- Is data easy to track and report? *Not addressed.*
- Are routine functions automated? *Not addressed.*

16.4.2.3 Quality Control and Verification

- Does the program manger have a strong relationship with vendors involved in the project? *Not addressed.*
- Does the program verify reporting system? *Not addressed.*
- Are customers satisfied with the product? *Not addressed.*

16.4.3 Program Implementation

16.4.3.1 Participation Process

- Is participation simple? *Not addressed.*
- Are participation strategies multi-pronged and inclusive? *Not addressed.*
- Does program provide quick, timely feedback to participants? *Not addressed.*
- Is participation part of routine transactions? *Not addressed.*
- Does the program facilitate participation through the use of internet/electronic means? *Not addressed.*
- Does the program offer a single point of contact for their customers? *Not addressed.*
- Are incentive levels well understood and appropriate? *Not addressed.*

16.4.3.2 Marketing and Outreach

- Use target marketing strategies? *Not addressed.*

- Are products stocked and advertised? *Not addressed.*

- Are trade allies and utility staff trained to enhance marketing? *Not addressed.*

17. SDGE 3043: HVAC Training, Installation, and Maintenance

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17.1 Program Overview

This is a third party, resource acquisition program with a strong training component. It uses the existing four Verification Service Providers (VSPs) to train HVAC contractors in the technical aspects of quality installations, QI, (i.e., refrigerant charge and air flow (RCA), duct testing and sealing (DTS), economizer optimization, and condenser coil cleaning). The program trains the contractors in how to sell the quality installation products and provides them with marketing and sales tools. The HVAC contractors are able to access incentives only if they agree to participate by attending both a sales training, a technical training, and complying with the needs of the VSP platforms. The QI events occur on newly installed HVAC units. The incentive offsets about ½ of the cost to the contractor who charge different amounts to their clients. The incentive is buying down the service with program incentive payments made directly to the contractors.

The program is aimed at reducing three barriers: 1) product unavailability, 2) organizational customs, and 3) performance uncertainty. Through the training that occurs, more contractors will be capable of performing the QI actions, thereby increasing the products availability. Through education of the contractors and initial incentives, the programs aims to show the groups that it is in their best interest to adopt QI practices. By seeing how QI services can enhance the contractor, the program seeks to change organizational customers. Lastly, the belief that appropriately applied QI actions can create savings (i.e., performance uncertainty) is addressed through technical education and training.

Program Contacts	Person	Organization	Email	Phone
IOU Program Manager	Mark Jensen	SDG&E	MAJensen@semprautilities.com	858-636-6811
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Figure 17-1
Program Logic Model for SDGE3043 – Training, Incentives, & Maintenance Program (AC TIMe Program)
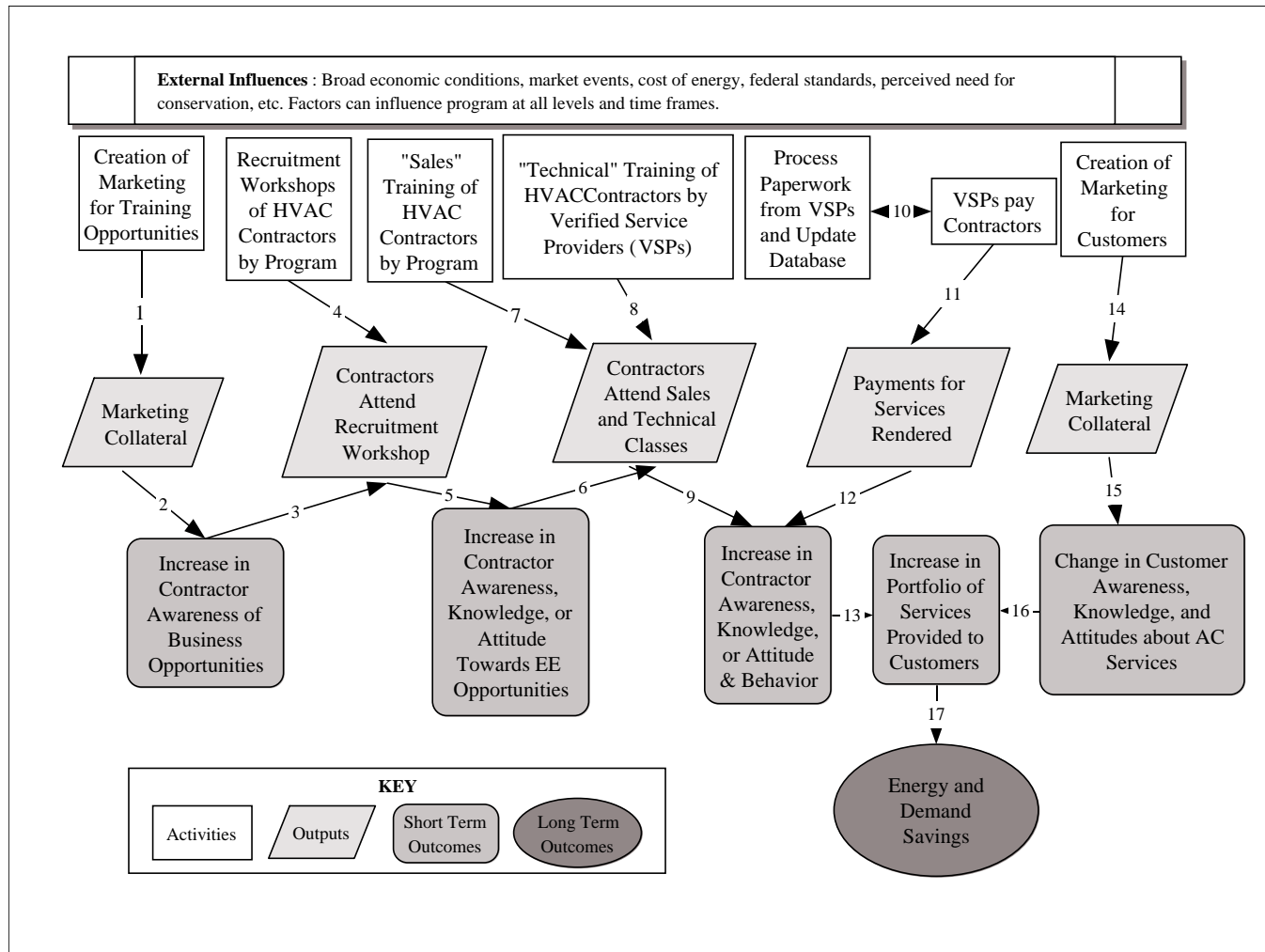
Table 17-1
Program Theory Description for SDGE3043 – Training, Incentives, & Maintenance Program (AC TIMe Program)

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Contractors often do not see a competitive advantage to providing specific services to their customers. Even if the contractor sees an advantage, they do not have the ability to train their staff in these activities. The marketing component is focused on getting the word out that there are various services that can help a contractor's business and that the program will train the contractor's staff to perform the activities.	Marketing collateral is created that has a clear and compelling message. It is easy to understand with specifics regarding training opportunities and how to participate.	Focus group of contractors reviewing the marketing collateral.
2	Program places the marketing collateral in appropriate areas to be seen by contractors.	Contractors are aware of training and business opportunities.	Self-report of contractors who do not participate in training classes.
3	Contractors want to increase their business opportunities and see value in the trainings offered. Contractors want to use the incentives and understand they must go through the training.	Contractors attend recruitment workshop and signs up for program (i.e., training with program and VSPs).	Self-report of contractors who choose not to participate. Recruitment workshop sign up sheets.
4	The program has enough complexity that to participate needs a defined period to discuss the details. The program holds recruitment workshops in sufficient quantity, in accessible locations, and during times in which interested contractors could attend.	Schedule of workshops.	Program tracking database. Report of nonparticipating contractors who are aware of opportunity.

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
5	Information provided during the recruitment workshop will be useful to the contractor. They will want to participate after learning of the opportunities created through participation.	Self-reported change in awareness and knowledge because of the recruitment workshop.	Program tracking of those who do and do not sign up after recruitment workshop.
6	Contractor will see the benefit in providing extra services to their customers, feel that the program can provide them with the needed training, and commit to further sales and technical training.	Contractors attend further training on sales and technical aspects of providing the portfolio of services.	Class sign up sheets.
7	Contractors do not have the knowledge needed to sell the services offered through the program to their customers. The sales training component is focused on educating contractors in how to approach their customers to make a sale. The program has the capability to train contractors in how to sell to their customers.	Training is desired by contractors and occurs during times that work with contractor schedules.	Self-report of contractors who do not participate in training classes.
8	Contractors do not have the knowledge needed to perform the specific program activities to meet program specifications. The training component is focused on educating contractors in the program specified implementation of these activities. The Verification Service Providers (VSPs) have the capability to train contractors in the specified activities.	Training is desired by contractors. Technical Training Manuals are complete and easy to use.	Survey of those that attended sales training. Review of training manual by Technical Training expert.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
9	Attendance in technical training classes or field training will be beneficial to the contractor. After the class or field training, they will be more aware of the portfolio of activities as options for their clients and know the specifics about how to perform the different activities. Contractors agree to use a VSPs service either by purchasing equipment or by agreeing to perform a specified number of jobs. Contractors do not have the knowledge needed to sell the services offered through the program to their customers. The sales training component is focused on educating contractors in how to approach their customers to make a sale. The program has the capability to train contractors in how to sell to their customers.	Self-reported change in awareness and knowledge because of the sales and training classes or field training.	Contractor participant survey after the training sessions.
10	By having the program process the paperwork from the VSPs on a regular basis, there is knowledge of where the program stands as far as goal attainment.	Program tracking database is maintained regularly with easily obtained information on current status of program services completed.	Program tracking database.
11	Because the VSPs have the direct contact with the contractors who are using their products, it is cost-effective to have the VSPs pay the contractors directly. Prompt payment by VSP will cause contractors to want to continue to participate.	Contractors are paid for services rendered in a time that is considered appropriate by the VSP and the contractor.	VSP tracking database.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
12	By providing payment only for activities actually completed, the contractors are more likely to perform the services. The two tiered incentive gives some incentive to contractors to try to incorporate the processes into their normal operations. The other half of the payment, for jobs that do not pass, gives incentive to fix units that were not in a passing state.	Self-report of participating contractors indicates that payment for services induces them to perform the service.	Participant survey.
13	Increased awareness and knowledge regarding the specific portfolio of services, combined with payment for rendering services, will change contractors behavior and cause them to provide the service(s) to their clients. HVAC systems that would normally have been left in an energy inefficient state will now become more efficient.	Increase in services provided by contractor. HVAC systems have passing conditions because of extra actions taken by the contractor that they did not perform in their prior system maintenance.	Participant survey.
14	Customers are unaware of the benefits of specific HVAC services. The marketing component is focused on getting the word out that there are various services that can help increase the efficiency and comfort of their home or business. Also the marketing is to increase awareness of the fact that there are trained contractors available to perform the services.	Marketing collateral is created that has a clear and compelling message.	Focus group of targeted customers reviewing the marketing collateral.
15	Program places the marketing collateral in appropriate areas to be seen by customers.	Customers are aware of services.	Self-report of customers who were exposed to the marketing.
16	Customer awareness and knowledge is increased and they are receptive to having the HVAC services performed.	Customer attitudes towards offered services.	Self-report of customers.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
17	When one or more of the portfolio of activities are completed, there are energy and demand savings.	Gross energy and demand savings.	Impact evaluation.

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Barriers Addressed by Program

<u>Product or Service Unavailability</u>. Many HVAC contractors have the ability to change the refrigerant charge, clean cooling coils, or give ideas about the air circulation in an HVAC system. However, quality installation (QI) services go beyond many of the contractors current abilities and provides a structured, data-driven, method to assure that the refrigerant charge is optimal, that air flow issues are thoroughly understood, and assess the results of changes in the HVAC system. This service is not available through many contractors because they have not been trained.

<u>Performance Uncertainty</u>. There is a belief that a "rule-of-thumb" approach to adjusting parts of an HVAC system is sufficient to optimization. The contractors may not believe that the QI services really leads to savings.

<u>Organization Practices or Custom</u>. Contractors have certain business practices that currently do not include providing QI services. Since QI may take extra time and effort (as well as requiring training), this is seen as a barrier to performing such services.

Strategies to Overcome Barriers

<u>Education and Training</u>. Through the training that occurs, more contractors will be capable of performing the QI actions, thereby increasing the products availability. Through education of the contractors and initial incentives, the program aims to show the groups that it is in their best interest to adopt QI practices. By seeing how QI services can enhance the contractor, the program seeks to change organizational customs. Lastly, the belief that appropriately applied QI actions can create savings (i.e., performance uncertainty) is addressed through technical education and training.

17.2 2006-2007 Program Activities

17.2.1 Savings Summary

As of October 2007, the program had shown 4% of the net kWh goals and 2% of the net kW goals. The net therm savings were negative from an unknown reason. Also, the SDG&E October and November 2007 reports had identical monthly values as well as inception to date values for the savings. It is unknown why this occurred. Therefore, we only included savings as of October, even though the November sheet was available.

17.2.2 Budget Summary

The program has spent 8% of their 3 year adopted budget of $10,749,247.

17.2.3 Participation Summary

The monthly reporting worksheets do not capture participation levels. As such, we requested the program tracking database from the implementer. According to this database, there have been 9,236 records with a

total paid kWh greater than zero through the end of 2007. (We are assuming that any record with a value in the paid kWh was one in which a test and adjustment occurred.) Of these, 90 percent occurred on units under 6 tons in size. These 90 percent of participant records were associated with 60 percent of the kWh. Seventeen percent of the kWh savings were from those few units greater than 20 tons (2 percent of the population).

The most participation occurred in July and August of 2007 when there were ~2,500 tests input each month. With the exception of these two large months, the program averages around 370 tests per month.

17.2.4 Summary of Program Status

This program had very large goals over the three years. There does not appear to be any way that they can meet these goals. They are currently averaging about 570 gross savings estimated kWh/test. If the program could sustain the participation of the best two months (i.e., 2,500 per month), they would need more than 2 years to make the current goal that ends this year.

17.3 Findings, Conclusions and Recommendations

There were three data collection efforts for this program: 1) an HVAC Contractor Telephone Survey, 2) two focus groups (one with commercial and one with residential customers), and 3) in-depth interviews with the four Verified Service Providers (VSP) involved with the program. We note that the findings for this program are identical to the findings for SDGE3029 (Premium Cooling & Motors Program) as the data collection efforts were performed to cover both programs. The writing is reproduced here for clarity.

The HVAC survey was designed to answer multiple hypotheses. Each is provided next along with the findings from the survey responses.

- Contractors do not participate in training because it is too costly or takes up too much time.

  This statement was agreed with for about 20 percent of the contractors. However, these two reasons were secondary to the stated belief that the training does not add anything to their business.

- Contractors do not participate in training because they have high turnover and it does not make sense to train people who leave soon.

  This statement was agreed with by only 5.5 percent of the contractors. This should not be considered an obstacle for training.

- Contractors do not see the advantage in spending the time being trained in QI.

  Slightly over ¼ of the contractors (27 percent) believe that the training does not add anything to their business.

- Contractors think the use of tools takes too much time.

  Close to 2/3 of contractors agreed with this statement when applied to the summer months, which is often their busiest period.

- Contractors do not think that the information gained by using the tools is valuable, or leads to recommendations that the customer will pay for.

Of those who have VSP trained technicians, fully ¾ of the contractors feel that this information is helpful some or all of the time. (Fifty seven percent stated some of the time and twenty percent stated the information was always helpful.) It seems that, once in use, contractors find value in the information provided through the VSP QI procedures.

- Contractors do not participate because they already do the type of procedures without the VSP tools.

    Close to 2/3 of contractors agreed with this statement. There may need to be more education about what constitutes QI services.

- Contractors are aware of VSP opportunities and actively participate.

    There are 65 percent of the contractors who are aware of the VSP opportunity, but only 12 percent are actively signed with a VSP. This is a low percentage. The in-depth interviews of the VSPs indicated that the programs were complicated, which was leading to low participation by the contractors.

- What is the market niche that the HVAC companies fill?

    Close to ¾ of the contractors state they attempt to sell their product based on high quality of the work, versus lower price. This was backed up by the fact that most contractors stated they receive work from repeat business or referrals. If the contractors work was shoddy, customer most likely would not be using the same contractor again, regardless of the price. This provides a possible marketing avenue for the programs by associating the desire to provide high quality work through QI and efficient installations.

- All contractors think what they do is energy efficient.

    Contractors reported that 21 percent of the units they install are 15 SEER or greater, a number that appears to greatly overstates the sale of high efficiency units.

Commercial Customer Focus Group Conclusion – This group was relatively knowledgeable about AC units. They all believed in preventive maintenance and the idea of adding in RCA as one of the tasks already performed made sense. They liked the idea of computerized diagnostics as part of the service, although did not understand the difference between an RCA service and what their current contractor already performed. They would not be comfortable using an outside contractor to have a RCA. However, it may be possible to create a demand for an RCA service among this group of market actors if this point was addressed in the program design.

Residential Focus Group Conclusions – The participants in this residential focus group had a few people that were knowledgeable about AC units and all were conscientious about changing their filters, though they changed them less frequently than the monthly to quarterly recommended practice. However, there was the sense that there was no need to do other maintenance as long as the unit was working. There was uncertainty and confusion around how an AC works and who would provide a service such as RCA and why that service was needed. The amount of education required to attempt to create a demand for the service among residential customers is most likely more that it is worth. Using HVAC contractors as the conduit (as is currently being done) and assuring that there is no cost to the consumer for the test and any change in refrigerant charge may elicit the highest number of residential units having an RCA service.

17.3.1 Recommendations

The recommendations for this and the AC TIMe program are derived from the information gathered in this evaluation and the past knowledge of one of the evaluators. These recommendations have been separated into the two groups for clarity.

17.3.1.1   Recommendations Based on Current Data Collection

- Continue using HVAC contractors as the conduit for customers. However, the program is too complicated to encourage contractor participation. If possible, the program should condense the number of variables required to be tracked and relax some of the current restrictions around climate zones.

- Education on what is involved in a quality installation is needed as contractors have difficulty differentiating what occurs under the program with what they already do.

- Most contractors like to sell their services as "high quality". The program should use this inclination and provide clear statements about the program that allows the contractors to fit "energy efficiency" into their paradigm of "high quality". Essentially, attempt to equate high quality and energy efficiency.

- Attempt to bring into the program those contractors who support commercial customers. These customers appear to understand maintenance and efficiency, yet are not prepared to trust a contractor they do not already know.

- Assure that there is no cost to the residential consumer for any testing or change in refrigerant charge. This may elicit the highest number of residential units having an RCA service.

There appears to be a relatively high degree of awareness of the VSP system in place in SDG&E, but low participation. However, if incentives could be increased (and complications reduced), contractor participation may increase. The next section provides a possible way to include a higher incentives.

17.3.1.2   Other Recommendations

The recommendations below combine some of the findings from the interviews, survey, and focus groups. They also build upon the expertise of the evaluators. Dr. Robert Wirtshafter has conducted process and impact evaluations of VSP and efficient HVAC equipment programs in the Northeast for Northeast Utilities, National Grid, NSTAR, Unitl, and the CapeLight Compact.. He includes some of that experience in drafting the following recommendations.

Emphasize Peak Saving Benefits

Both the ACTime and Premium Cooling Programs have struggled to obtain the energy saving results expected in their Program Implementation Plans. While there have been some start up and other implementation issues that may have stunted program growth, these issues are of secondary importance. The major concern is the structure of the programs themselves. As now structured, the air conditioning initiatives are relegated to a small role in the SDG&E portfolio. Despite the best efforts of the program managers, the ACTime or Premium Cooling have low participation, and produce few if any net benefits for the participating contractors, the customers, or SDG&E. Air conditioning programs can play a larger

role in SDG&E's portfolio, but it will require an adjustment in the benefits calculations to give more credit for the measures peak demand reduction potential.

The current structure bases its foundation on the potential energy savings that is achieved when AC measures are installed. The mild climate in much of the SDG&E service territory means that AC measures generate small energy savings. Not only does this make the energy savings per measure small, but it limits the number of eligible applications. This small return makes it difficult to leverage the substantial administration costs and the programs become hard to justify. It also frustrates contractors who cannot tell if the home they are servicing lies within one of the climate zones where the rebate is available.

Selling air conditioning improvements is already a difficult proposition. As the focus groups confirm, customers are only concerned with making sure the homes and offices are comfortable. They expect air conditioners to work when needed with little or no maintenance over the life of the equipment. Most importantly, they know little about how the systems work, and even less about how to tell what is required for a system to be efficient. To be fair to consumers, their lack of concern about the operation and efficiency of a unit is justified. Because of the relatively mild climate, the cost of operating a unit and the benefits of investing in efficiency are both quite small.

Contractors wishing to participate in the two programs must face the fact that even with the incentives, the measures they promote, investment in high efficiency units or in repairs to systems with airflow or duct leakage problems, are only marginally justified in applications that do not use air conditioning for a substantial portion of the year. Because consumers cannot differentiate between systems, the contractors who strive to sell high efficiency are putting themselves at a distinct competitive disadvantage.

If air conditioning were another type of energy consuming measure, it might be prudent for SDG&E to scrap its AC programs or continue to restrict them to areas and applications with larger cooling seasons. However, air conditioning's high coincidence with peak demand requires a second look. Our recommendation is that SDG&E and the CPUC **start assessing and operating AC programs as demand saving programs, not energy saving programs**.

The fact is that while air conditioners do not run many hours a year in San Diego, they almost all run during the peak events, and reducing their loads through efficiency gains lowers SDG&E's peak demand. In this light, AC efficiency is another demand response option. Utilities can invest in expensive systems to signal air conditioning units to shut off during peak events, or they can build that capability into the unit by making it more efficient.

One of the consequences of a peak demand perspective is that it should make all AC units in SDG&E eligible for treatment. Monitoring data in two other mild climates, Wisconsin[37] and Massachusetts/Rhode Island[38], have shown that peak loads in homes on extremely hot days may be similar to that of similar buildings in harsher climates. These studies have also found that peak demand is greatly affected by not only system efficiency, but also sizing and customer occupancy patterns and control of the thermostat.

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[37] Scott Pigg, "Cooling the Frostbelt: Central AC in the North;" 2007 *Affordable Comfort Conference*, Cleveland, OH, April 24, 2007.

[38] Wirtshafter, Robert et. al. "Do Quality Installation Verification Programs for Residential Air Conditioners Make Sense in New England*?; International Energy Program Evaluation Conference,* Chicago, IL, 2007.

Because the energy programs in California have been largely energy savings based, there is not a large body of monitored data regarding actual peak use that accurately defines peak demand impacts.

Addressing System Sizing

The most significant opportunity for saving peak capacity is to reduce the size of air conditioning units being installed. Most contractors now install systems that are much larger than specified by the industry standard. And fewer still actually perform the Manual J calculations, but instead do quick rule-of-thumb estimates that oversize the units.

Oversizing of units protects the contractor by reducing the chances of callbacks for insufficient cooling. It is the inexpensive way to achieve this protection, because it is easier and cheaper to increase the system size than it is to eliminate the inefficiencies caused by improper airflow and duct leakage. As an added bonus, the contractor makes a little extra profit on selling the larger system.

From an energy-saving perspective, there is little reason to be concerned about sizing as there is only a small energy penalty in running the larger system. Both systems provide the same amount of cooling in normal hours, but the larger system is running a smaller percentage of the hour than the smaller system runs. (The smaller system because it runs more consistently does do a better job of humidity control).

However, at peak times, the smaller system is likely to reach a point where it is running 100% of the hour to meet the peak demand. Under these conditions, a larger unit in the same home would be able to produce even more cooling and thus create a larger peak demand on the utility..

The system size also has implications as to whether a demand response control event will actually produce a reduction. If the AC unit is shut for 30 minutes in a home with a properly sized unit, that unit will not be able to gain back the lost cooling in the remaining 30 minutes it is on and the temperature in the home will increase. In the home with the oversized system, the larger system may be able to recover all or most of the unmet cooling demand that accumulated while the unit was shut off. In the former case, the utility load is reduced, while in the latter there may be no net demand reduction from the home. Yet, both homes are paid the same incentives, even though the one with the smaller unit is more likely to produce savings

Concentrating on sizing is important because it forces contractors to pay more attention to the other efficiency concerns. Contractors who size units to within 10% of the Manual J requirements (the currently proposed requirements for the ACCA Quality Installation Standard) are likely to pay far greater attention to other RCA and duct leakage to ensure their homes remain comfortable during peak conditions.

Overall Efficiency and ACCA Quality Installation Guidelines

One observable problem with the existing two programs is that they address efficiency measures in a piecemeal fashion. One program directs concerns about the equipment efficiency rating, but essentially ignores installation measures. The other concentrates attention on refrigerant charge, while doing almost nothing about airflow and duct leakage.

It is confusing at times to contractors who are required to talk to one program when dealing with an existing unit and another if a new system is of concern. This means contractors receive two separate

marketing messages, neither of which addresses the comprehensive potential for efficiency. This arrangement also suppresses the natural synergy between the VSP services and the installation of new equipment. One of the strongest arguments for VSP diagnostics is that it provides an independent, visual confirmation to consumers with older units that a system should be replaced.

The problem with the piecemeal approach is that it does not guarantee that the system installed is efficient. Having one component meeting an efficiency level is meaningless. The only way to ensure that a system is efficient is to make sure that the system meets all of the aspects of an efficient system. The ACCA Quality Installation Standard is such a standard that could be used right now. Some testing of this case study was performed in California with limited success. The low level of attention at first is not surprising, both because it will take a lot of time to transform this market and because it will require large compensation.

If the sizing component is strictly held to, SDG&E can offer incentives well in excess of $1000 for a verified ACCA Quality Installation. As we noted above, it is necessary to provide large incentives as neither the contractor nor the consumer has any financial incentive for installing a properly sized, quality installation. The other aspect of such a program will need to be an independent diagnostic test, that confirms sizing, RCA, and duct leakage. Without this verification, there is no way to confirm that a unit qualifies. The essential element of the verified ACCA Quality Installation is that it gives HVAC contractors who want to install at that quality the means to distinguish their work from others. Without the clear differentiation, contractors must rely on their own reputation, a prospect that the focus group results confirmed will not work.

17.4 Best Practices Review by Program

17.4.1 Program Theory and Design

- *Is the program design effective?* Not addressed.
- *Is the market well understood?* Not addressed.

17.4.2 Program Management

17.4.2.1   Project Management

- *Are responsibilities defined and understood?* Not addressed.
- *Is there adequate staffing?* Not addressed.

17.4.2.2   Reporting and Tracking

- *Is data easy to track and report?* Not addressed.
- *Are routine functions automated?* Not addressed.

17.4.2.3   Quality Control and Verification

- *Does the program manger have a strong relationship with vendors involved in the project?* Not addressed.

- *Does the program verify reporting system?* Not addressed.

- *Are customers satisfied with the product?* Not addressed.

17.4.3 Program Implementation

17.4.3.1   Participation Process

- *Is participation simple?* No. According to the VSP's this program is too complicated and detracts from HVAC contractor participation.

- *Are participation strategies multi-pronged and inclusive?* Not addressed.

- *Does program provide quick, timely feedback to participants?* Not addressed.

- *Is participation part of routine transactions?* Not addressed.

- *Does the program facilitate participation through the use of internet/electronic means?* Not addressed.

- *Does the program offer a single point of contact for their customers?* Not applicable.

- *Are incentive levels well understood and appropriate?* The incentive levels are complicated as they are based on climate zones and building type. A simpler incentive strategy could increase HVAC contractor participation. If incentives were based on peak energy savings rather than energy savings, the incentive levels most likely would be higher, which may be more appropriate for increasing HVAC contractor participation (along with an easy incentive strategy).

17.4.3.2   Marketing and Outreach

- *Use target marketing strategies?* Not addressed.

- *Are products stocked and advertised?* Not applicable as this is a service program.

- *Are trade allies and utility staff trained to enhance marketing?* Trade allies (i.e. HVAC contractors) are provided sales training through the program. Utility staff are not trained to help with the marketing of this program.

18. SDGE 3044: VeSM Advantage Plus

18.1 Summary of Findings and Recommendations

San Diego Gas & Electric's Value and Energy Stream Mapping (VeSM) Program is a third party program implemented by California Manufacturing Technology Consulting (CMTC). The VeSM program targets manufacturing companies and companies with production processes and is designed to increase energy efficiency through the improvement of these processes.

The program is not on target to meet its goals. As of December 2007, the program had only eight of the expected 50 projects signed.[39] According to monthly energy efficiency reports, through the same period, the program had spent approximately 8 percent of its budget—compared to an expected amount of 67 percent. Most of this spending has been on marketing and outreach.[40]

Much of the shortfall is due to difficulties in marketing this program. There is a clear misunderstanding between the implementer and the utility on the role that the Account Executives are expected to play in marketing the program. Account Executives are either not interested in the program, or do not understand the concepts and/or the differences between this and other programs, and therefore are not helping to promote the program.

Moreover, the program's target market is small (only about 60 companies have been identified as being eligible), and it is not aligned with the current segmentation of SDG&E's market. The program targets any large business customers with processes that could be improved, and therefore it cross-cuts SDG&E's market segments. As such, there is not one Account Executive with which the program can align its efforts, which makes it difficult to touch any of the small number of customers targeted.

Many of the customers targeted by this program are already familiar with Lean manufacturing and feel that they have in-house staff working to improve their operations. As such, the value of the program may not be readily apparent to many of the targeted customers.

In addition, there is a cost to participating in this program, while other programs, that are not easily able to be distinguished from this program, are free. In order to reap the value of the program (that is, the savings from any process improvements, the customer must first pay some of the upfront costs). The program requires an upfront investment of time and money ($7,500).

Findings from our process evaluation support the following recommendations:

- There is a clear misunderstanding between the implementer and the utility on the role that the Account Executives are expected to play in marketing the program.

- The VeSM program has spent most of its spending to date on marketing and outreach.

- Account Executives are either not interested in the program, or do not understand the concepts and/or the differences between this and other programs, and therefore are not helping to promote the program.

- There is a cost to participating in this program. In order to reap the value of the program (that is, the savings from the kaizens, the customer must first pay some of the upfront costs).

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[39] This number is based on estimated project activity provided by the third party implementer and may not include all signed projects through December 2007.

[40] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008

- Other programs, that are not easily able to be distinguished from this program, are free.

- Many of the customers targeted by this program are already familiar with LEAN manufacturing and feel that they have in-house staff working to improve their operations. As such, the value proposition from this effort is not apparent.
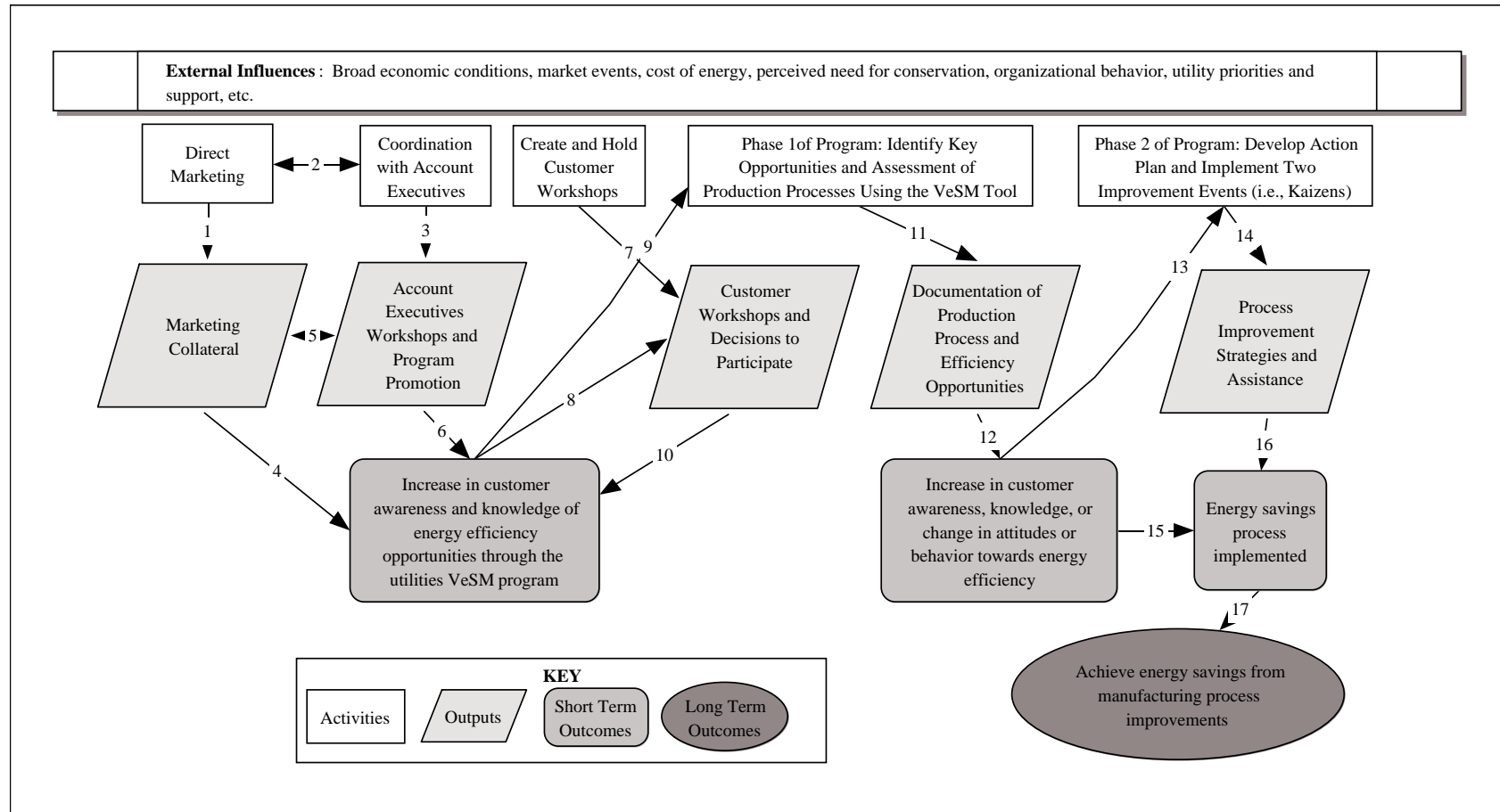
18.2 Program Overview

The VeSM Advantage Plus Program is a third party program implemented by California Manufacturing Technology Consulting (CMTC). The program is an established program that is being implemented in Northern California, and was started in 2006 in both SoCalGas and SDG&E territory.

The VeSM program targets manufacturing companies and companies with production processes. It is designed to increase energy efficiency through the improvement of production processes. The program offers workshops to increase customer awareness of the savings potential through the VeSM program and to educate utility Account Executives about the program. Customers pay an upfront cost of $7,500 to receive consulting services through a two phase implementation process that identifies energy savings and implements energy efficiency improvements. Phase 1 includes the identification of key opportunities for energy savings through the VeSM opportunity mapping tool that documents all actions in the production process. Customers then receive up to an additional $22,500 in services through Phase 2, the implementation of energy efficiency process improvements. These process improvements, called "kaizens," typically focus on productivity and capacity improvements, waste minimization, efficiency improvements, scheduling enhancements, materials handling, Lean manufacturing and equipment maintenance.

The program theory and logic model for this program is provided below.

Figure 18-1

Program Logic Model for SDGE3044 – Value and Energy Stream Mapping (VeSM) Advantage Plus

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Table 18-1
Program Theory Description for SDGE 3044 – Value Energy Stream Mapping (VeSM)

Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
1	Direct marketing can reach out to large manufacturing customers to alert them to opportunities through the VeSM program. While Account Executives (AEs) have existing relationships with many of these customers, there are other effective ways to reach out to these customers.	Number and types of marketing materials. Placement of these materials.	Review of materials; focus groups; in-depth interviews with participants.
2	Direct market campaigns by the program implementers coordinate with AEs through phone calls and emails since AEs have established relationships with targeted customers. This coordination helps to meet customer-specific needs and increase participation and overall satisfaction because the program learns of interested customers from the AEs and the AEs learn which of their customers have been approached and can "vet" the program to the customer.	AEs are informed of all customers interested in or participating in the program	Interviews with AEs and participants.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
3	AEs are the best channel to reach targeted customers but do not have the knowledge needed to promote the services offered through VeSM. Through communications and AE workshops, the program raises awareness and excitement for the program by educating AEs about the VeSM tool so that they can approach their customers with the benefits of the program.	AEs are aware of, and attend, VeSM workshops.	Interviews with AEs; attendance lists.
4	Marketing collateral, along with discussion with the AEs, increases the awareness and knowledge of targeted companies.	Number of contacts with targeted companies. Level of awareness and knowledge of targeted customers.	Program tracking database. Survey of those contacted by the program and AEs.
5	AEs use program-created marketing collateral to promote the program because AEs do not have the technical understanding of the tools.	AE use of marketing materials.	Interviews with AEs.
6	AEs have established relationships with targeted customers and use these relationships to raise awareness of the program.	AEs promote the program.	Interviews with AEs.

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
7	Customers lack sufficient information about VeSM before participating. Workshops provide orientation and awareness to manufacturing company representatives in order to encourage participation in the program. Workshops are held at times and locations that are convenient to customers	Targeted manufacturing company representatives are aware of, and attend, VeSM workshops.	Interviews with targeted customers; Attendance lists for workshops.
8	Marketing piques customers interest in the VeSM program, but they do not have the knowledge about the program and the attributes of the VeSM tool. They know when workshops will be held, believe that attending a workshop would be beneficial, and have the time to attend.	Number of customers attending workshops.	Interviews with targeted customers; Attendance lists for workshops.
9	Interactions with AEs or 1:1 contact with the program increases the awareness of the benefits of the program in the manufacturing company representatives who will want to participate in Phase 1 of the program even without attending a workshop.	Targeted customers participate in Phase 1.	Interviews with participating customers; review of participant lists

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
10	Workshop increases the knowledge of the benefits of the program causing customers to choose to participate.	Targeted customers participate in Phase 1.	Interviews with targeted customers who attended the workshops; review of participant lists
11	Customers do not know how the various processes in their manufacturing plant could save energy or do not have the time to fully determine potential energy savings. Program has the technical expertise to find and discuss possible energy savings actions. Program is given full access to the plant.	Knowledge of participants. Accessibility of plant to program.	Interviews with participants and program staff
12	The information being provided to the customer through Phase 1 is beneficial. After looking at the process map, they will be more aware of manufacturing process improvements they can make. By identifying customer-specific ways to achieve savings through manufacturing process improvements, the program raises awareness, knowledge and changes in attitudes towards energy savings.	Process maps are generated and participants receive them and find them to be valuable. Self-reported increase in awareness, knowledge and attitude as a result of Phase 1.	Interviews with participants

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Link Number	Program Theory Description	Potential Performance Indicator	Possible Data Source
13	Identification of the energy use and savings potential of production process improvements will cause customers to want to invest in the customer cost-share ($7,500) and follow through to implement improvement events, called Kaizen.	Customers in Phase 1 are interested in initiating implementation/Kaizen process.	Participant surveys; review of participant lists.
14	Customers will want to make the investment because of their awareness of the opportunities for savings and because of the support provided (in the form of free services from CMTC) through the program.	Kaizens are completed. Process improvements are wanted by customer.	Interviews with Participants in Phase 2
15	Phase 1 will increase the knowledge of the customers. Some customers will want to make improvements even without participating in Phase 2 of the program.	Customers take actions and make behavioral changes as a result of Phase 1. M&V of energy and demand savings	Participant surveys; Impact analysis
16	Utility-supported technical services provided through Kaizens will facilitate the implementation of process improvement strategies.	Recommended process improvements are implemented.	Program database.
17	Implementation of processes causes energy savings.	M&V of energy and demand savings	Impact analysis

18.3 2006-2007 Program Activities

18.3.1 Savings Summary

According to the program implementation plan, this program seeks to achieve savings of 810,750 therms and 5,170,000 kWh over the three year period. According to monthly energy efficiency reports, this program has not realized any savings through December 2007.

18.3.2 Budget Summary

Through December 2007, the program has spent $190,466, approximately 8 percent of its $2,365,000 adopted budget – compared to an expected amount of 67 percent.[41] The majority of this spending has been on administrative costs and marketing.

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[41] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008

Table 18-2

Budget and Spending Summary[42]

Adopted Budget				
	2006	**2007**	**2008**	**3 Yr Adopted Total**
	$627,050	$832,250	$905,700	**$2,365,000**
Expenditures				
	For the month	**Inception through:**	**% of Total Adopted Budget**	
Jan. 2007	$956	$43,539	2%	
Feb. 2007	$1,255	$44,794	2%	
Mar. 2007	$33,283	$78,077	3%	
Apr. 2007	$10,082	$88,159	4%	
May 2007	$458	$88,618	4%	
Jun. 2007	$22,484	$111,102	5%	
Jul. 2007	$22,552	$133,654	6%	
Aug. 2007	$1,793	$135,447	6%	
Sep. 2007	$9,484	$144,931	6%	
Oct. 2007	$23,958	$168,889	7%	
Nov. 2007	$1,632	$170,522	7%	
Dec. 2007	$19,945	$190,466	8%	

18.3.3 Participation Summary

This program had a goal of 50 projects, and it is not on target for meeting its goals. Through the fourth quarter of 2007, the program has secured eight projects.43

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[42] SDGE.MR.200712.5.xls, version 5, uploaded 2/4/2008; SDGE.MR.200711.1.xls, version 1, uploaded 1/3/2008; SDGE.MR.200710.2.xls, version 2, uploaded 12/5/2007; SDGE.MR.200709.2.xls, version 2, uploaded 11/9/2007; SDGE.MR.200708.1.xls, version 1, uploaded 9/28/2007; SDGE.MR.200707.4.xls, version 4, uploaded 9/11/2007; SDGE.MR.200706.3.xls, version 3, uploaded 10/25/2007; SDGE.MR.200705.2.xls, version 2, uploaded 7/30/2007; SDGE.MR.200704.4.xls, version 4, uploaded 7/30/2007; SDGE.MR.200703.3.xls, version 3, uploaded 7/30/2007; SDGE.MR.200702.2.xls, version 2, uploaded 7/30/2007; SDGE.MR.200701.2.xls, version 2, uploaded 7/30/2007

18.3.4 Summary of Program Status

Through December 2007, the program has signed eight customers, six of which are in Phase 1 and two of which have completed at least one kaizen. Additionally, CMTC has marketed the program both directly to manufacturers and to the Account Executives. These activities included:

- Developing PowerPoint Presentations for customers and Account Executives
- Developing program brochures and distributing case studies & re-prints of technical papers
- Workshops for key customers and Account Executives (4 complete)
- Direct mail and e-mails advertising the workshops
- Accumulating a solid list of potential customers
- Contacting/cold calling potential customers
- Providing marketing communication tools to selected utility customers
- Meeting with SDG&E project managers and account executives to secure support of the program
- Initiating a networking campaign among existing customers
- Presenting best practices and working papers at industry events

18.4 Findings, Conclusions and Recommendations

With only eight projects signed through December 2007, this program will most likely fall short of its goals. If SDG&E were to continue to offer and support this program, we recommend the following.

Review how the VeSM Program fits into overall portfolio:

The VeSM program specifically targets customers with production processes. In SDG&E territory, this is primarily defined by the manufacturing sector. As such, we recommend that SDG&E look at all of the programs available to manufacturing customers and identify how this program fits into the overall portfolio of program for this sector of customers. While the VeSM program is a unique offering, it can be difficult to understand the differences between the program and other utility programs which use similar techniques like lean manufacturing (e.g. the IEEA program). Because of this, many potential participants may not get a clear picture of the value of the VeSM program. Therefore, it needs to be identified how VeSM fits into the portfolio and how it differs from other programs. This will help to market the program to SDG&E customers.

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[43] This number is based on estimated project activity provided by the third party implementer and may not include all signed projects through December 2007.

Align the VeSM program closely with Account Executives (or Market Segment Coordinators) for the targeted customers, and include lead Account Executives from targeted sector in future program decision-making:

Although this program could serve any customer with production processes, the largest segment of these customers appear to be manufacturing facilities. In order to improve the success of this program, the program must be more closely aligned with the particular Account Executives that work with this targeted segment, and, as mentioned above, it must be clear to the Account Executives and customers alike how this program fits into the overall portfolio of programs.

Since Account Executives would be the most important channel for program delivery, it may make sense to reassign this program to be accountable both to an Evaluation staff person, and a lead Account Executive staff person in order to shepherd this program. In the future, we also recommend that the lead Account Executives for the targeted sectors be included in the decision making process for such targeted programs.

We also note that while the program has tried to reach out to Account Executives to market their program (through emails to Account Executives and workshops for Account Executives) this has met with little success. While the quality of the four Account Executive workshops improved over time, they were not always effective in providing Account Executives with the information needed to effectively market the program. While the VeSM simulation was well received, the rest of the workshop did not allow for adequate question and answer time nor did it provide the Account Executives, a non-technical audience, with the tools to market the program. Future workshops should ensure that Account Executives are not confused about the program, its goals and how it fits in with other programs, or how to present the program to their customers.

Better define the role of Account Executives in marketing and outreach of the program and better educate them on the value of the program:

There appears to be a misunderstanding of the role that Account Executives are expected to play in the marketing and outreach efforts for the program. Account Executives have contacted targeted businesses with information about the program and have made themselves available for meetings with CMTC and potential participants. However, CMTC anticipated that the Account Executives would provide greater support to their marketing efforts, while Account Executives are reluctant to associate themselves with a program that they do not completely understand. The VeSM simulation workshops have been a positive step towards helping Account Executives understand the program, however more progress is needed.

Currently, Account Executives are either not interested in the program, or do not understand the concepts and/or the differences between this and other programs, and therefore are not helping to promote the program. CMTC has conducted four workshops for Account Executives, however these have not been successful in translating a highly technical program into terms that a non-technical audience like the Account Executives can understand. A major portion of the workshop is a VeSM simulation exercise using legos. While successful in helping Account Executives to conceptualize what the VeSM program does, there is not sufficient reinforcement of the concepts during the rest of the workshop. In particular there is little time for questions and answers and marketing points of the program are not discussed, making it difficult for most Account Executives to feel comfortable bringing such a technical program to their customers. When Account Executives are not completely comfortable with their knowledge of a program, they are not going to jeopardize their relationship with their customers to promote it.

While the program is responsible for its own marketing, Account Executives have not provided customer contacts because they do not feel comfortable providing this information to a third party. Going forward, we do not recommend that they provide names since customers indicate that they trust their Account Executives and feel that Account Executives are an appropriate way to hear about this program. The Account Executives should be the single point of contact for programs targeted at the manufacturing sector and should work to promote the programs more actively; however SDG&E should continue work with CMTC and Account Executives to improve communication on marketing and outreach efforts of the program. Specifically, SDG&E needs to define the role that Account Executives are to play in this effort in such a way that both the implementer and the Account Executives understand. (It should also be noted, however, that the Account Executives deal most often with operations staff, while CMTC would like to deal directly with the company decision makers.)

Explore Alternative Messaging for Promoting VeSM Program:

VeSM's program tries to promote itself as a cutting edge cost cutting program. It tries to appeals to manufacturing companies that might be in need of Lean methods. However, many of the companies in SDG&E's territory are already employing the principles of Lean manufacturing. While there is always room for improvement, it may be difficult to convince a company to pay to do something that they feel they are already doing. Additionally, there is an issue with the "value proposition" of this program. Since the VeSM program is highly specialized, it is difficult to explain in concrete terms to prospective participants. This creates problems with promoting the value of the program, since companies are unable to see what exactly they will be getting for the money and time they invest. Additionally, as noted earlier, there are other programs with similar principles which are often viewed as similar to the program (including the IEEA program) and these programs do not have any cost associated with participation. SDG&E should explore the role of this program within the portfolio of programs offered, and talk to key Account Executives or Market Segment Coordinators to understand the market and come up with alternative messages for describing the value of this program to targeted customers.

Re-examine the Upfront Cost for this Program:

There is an outlay of $7,500 in order to participate in the program, yet it is not clear at the outset of the program what value is gained from participation. Until this program has proven success in this utility territory, or until the value of this program within the overall portfolio of programs is examined, the program should re-examine the upfront cost required by customers to see if this is one of the barriers to participation.

18.5 Best Practices Review by Program

Best Practice Analysis	Y/N	Notes
Program Theory and Design		
Is the program design effective?		
		The overall program design is largely untested in this particular market due to the fact that marketing efforts thus far have not been successful in generating program participation. However, it should be noted that the program design has been successful in Northern California.

Best Practice Analysis	Y/N	Notes
Is the market well understood?	Y	
		As discussed above, the program currently targets the manufacturing sector, which is served by SDG&E Account Executives who should have a good understanding of the target market. Additional coordination between the Account Executives and program staff is important.
Project Management: Project Management Are responsibilities defined and understood?	N	
		There is a clear misunderstanding between the implementer and the utility on the role that the Account Executives are expected to play in marketing the program.
Is there adequate staffing?	Y	
		Program staffing is adequate at this time.
Program Management: Report and Tracking Is data easy to track and report?		
		Data tracking methods are untested as the program has yet to calculate savings from the implementation projects or "kaizens"
Are routine functions automated?		Not Applicable
Program Management: Quality Control and Verification Does the program manager have a strong relationship with vendors involved in the project?		
		At the outset of the program the utility and the implementer appeared to have a difficult relationship; however this has improved over time.
Does the program verify the accuracy of application data, invoices and incentives to ensure the reporting system is recording actual installations by target market?		
		Verification methods are untested as the program has yet to calculate savings from the implementation projects or "kaizens"
Are customers satisfied with the product?		
		Customer satisfaction is untested as we were unable to contact any customers despite repeated attempts.
Program Implementation: Participation Process Is participation simple?	N	
		Participation in this program does require an investment of both time and capital by participants. Additionally, the participation process is time-consuming and can take months to complete. As such, participation in this program is not simple.
Are participation strategies multi-pronged and inclusive?	N	
		Participation strategies are not multi-pronged or inclusive.
Does program provide quick, timely feedback to applicants?	N	
		As mentioned above, participation in the VeSM program constitutes a significant investment of time.
Is participation part of routine transactions?		The VeSM program is an auxiliary program in that it constitutes an effort above and beyond routine transactions.
Does the program facilitate participation through the use of internet/ electronic means?	N	
		There is very little use of the internet/electronic means to facilitate participation. The Account Executives did make use of email to alert customers to the availability of the program
Does the program offer a single point of contact for their customers?	N	
		There are multiple points of contact for targeted customers. Account Executives should be the single point of contact.
Are incentive levels well understood and appropriate?	N	Incentive levels are not well understood, especially for a program with an associated cost to the participant.
Program Implementation: Marketing and Outreach Use target marketing strategies to ensure that hard-to-reach populations are informed?		
		The implementer has developed a targeted marketing list, however is unable to market directly to these customers without the support of Account Executives.
Are products stocked and advertised?		Not applicable

Best Practice Analysis	Y/N	Notes
Are trade allies and utility staff trained to enhance marketing?	Y	CMTC and the utility have made efforts to educate Account Executives through workshops in order to enhance their ability to effectively market the program.